

nology] is in the literature, how do you distinguish between what's transferred by license and what's transferred by textbook?"

As it happens, West Germany is transferring a great deal by "textbook." Nozzle enrichment technology has not been classified, and published technical papers on the subject go into far more detail than any available on gaseous diffusion or centrifuge technology. The firm of STEAG, in addition, takes the position that "local industry should . . . be permitted to participate in the project so as to obtain direct access to the technology."

To Latin American nations increasingly sensitive to "technological dependence" on

the industrial powers, this is a powerful enticement.

And yet, as analysts of the proliferation problem point out, the path to nuclear self-sufficiency is also the path to a nuclear weapons capability. A small number of explosives requires only a small siphoning of material and talent from the main objective of electric power generation. Moreover, as one nation acquires the crucial equipment for self-sufficiency the incentive grows for its neighbors to follow suit. Both Brazil and Argentina, for example, have long dreamed of Latin American hegemony, and neither is believed willing to let the other realize its dream on the strength of nuclear superiority.

Some analysts, like Mason Willrich of the University of Virginia law school, have suggested that nuclear rivalries might be restrained by placing enrichment, reprocessing, and fuel fabrication plants under regional control. Britain, the Netherlands, and West Germany have taken a step in this direction with a tripartite agreement to build centrifuge enrichment plants.

Old rivalries are more durable in Latin America, however, and the outlook for such communal agreement there is poor. For the foreseeable future, nuclear machismo is likely to prevail.

—ROBERT GILLETTE
(A second article will discuss South Africa's uranium enrichment intentions.)

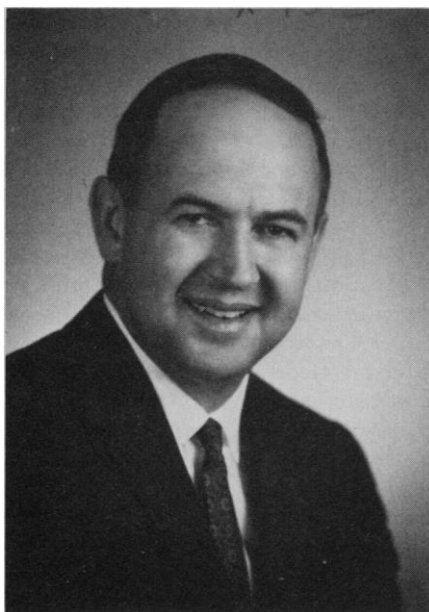
Stanley Hathaway: The Senate Looks at a Controversial Nominee

Taking the measure of a presidential nominee through questioning in a Senate hearing room is always a hit-or-miss process. But, as the result of such hearings, Stanley K. Hathaway is no longer so obscurely perceived as he was on first becoming President Ford's controversial choice for Secretary of the Interior. If environmentalists have been wrong to view Hathaway as an ogre, it appears that during his 8 years as governor of Wyoming he learned his lessons about resource management and environmental protection in a slow if not reluctant manner.

The Senate Interior Committee's 5 days of hearings on the Hathaway nomination, ending on 6 May, unfolded in a ritualistic manner. First, Hathaway was introduced and praised by members of the Wyoming congressional delegation. Later, an old-buddy network was brought into play when a panel of governors testified as to what a fine, able, and well-motivated fellow their former colleague was and is. The chairman of the National Governors Conference, Calvin Rampton of Utah, having hunted and fished with Hathaway, could certify that the nominee loves the land.

(Hathaway's outdoor-life credentials were reconfirmed last September when he made a kill early in Wyoming's annual One Shot Antelope Hunt, an event in which the governors of Colorado, South Dakota, and New Mexico also participated.)

Hathaway has been a truly popular figure in Wyoming, and the hearings reflected this. A succession of prominent people from his home state—such as officials of the Farm Bureau and the wool and stock growers associations—recommended him warmly to the Senate committee. Criticism of the nominee's record was left to spokesmen for environmental groups such as the Wyoming Outdoor Council, the Sierra Club, and the Environmental Defense Fund (EDF).



Stanley K. Hathaway

Although Hathaway's reputation back home is that of a man who can lose his temper when criticized, his manner before the Senate committee bespoke an unflappable cool. Moreover, this was in the face of sharp probing as to the honesty of a paper about his environmental record which had been prepared by some of his aides with plenty of puffery and some artful omissions. EDF had made a point-by-point analysis of the paper, and Senator Floyd K. Haskell (D-Colo.) made this EDF critique the basis of extensive questioning.

The confrontation between Hathaway and his environmental critics produced a substantial hearing record, and from it one can draw some conclusions about his performance as governor.

For one, it seems safe to say that Hathaway has not been indifferent to the need for environmental protection, as some have charged. But he has not generally tried to meet this need in an aggressive and far seeing manner. He often tended, especially during his first term (1967 to 1970), to push hard for industrial development even at the expense of his own administration's environmental protection programs. This was particularly evident in 1970 when he unsuccessfully sought to have new industry granted variances from air quality standards.

An uncritical bias in favor of industrial development also was plainly visible in 1968 when Hathaway and the state engineer tried to persuade the U.S. Bureau of Reclamation to lower the price of water from the Yellowtail Reservoir on the Big Horn River. The energy companies were already lining up to buy the water at the going rate. But Hathaway objected to the fact that the price was a few dollars higher per acre-foot than the price of water downstream in Montana, below Yellowtail and the associated hydropower turbines. Not

bothering to look beyond the parochial interests of Wyoming, Hathaway worried only that the price differential might give Montana a competitive advantage in attracting industry. He was quite willing to see a devaluation of the resource.

The most startling inconsistency in Hathaway's record relates to land use planning and regulation on the one hand and the wholesale leasing of state coal lands on the other hand. During the last several years Hathaway has shown what many regard as a commendable interest in land use regulation. In 1973 he succeeded in obtaining the enactment of a law establishing a Wyoming land use study commission, a step which led to the adoption this year of a state land use planning measure. Also under Hathaway, a task force for Wyoming's coal-rich Powder River Basin began looking at the multitude of problems that must somehow be faced if energy development is not to degrade the quality of life.

Yet, during the 8 years of the Hathaway administration, the Board of Land Commissioners, of which the governor is chairman, leased more coal land than the federal government has ever leased. In fact, the 1,862,000 acres under lease when he left office—triple the total leased when he took office—is about all the commercial coal land shown on Wyoming Geological Survey maps. Furthermore, this leasing was conducted under antiquated rules and conditions hardly in the public interest. There was no competitive bidding, no production requirements, and no land use planning. In addition, several companies, including Exxon, Mobil, Arco, and Kerr-McGee, were each allowed to acquire leases totaling more than 100,000 acres.

Nor was this simply a matter of massive leasing early in the Hathaway administration, before anyone knew better. To the contrary, more coal was leased during the last year of Hathaway's tenure than during the previous 7 years.

This indiscriminate coal leasing in Wyoming without any action by the governor to stop it has been in contrast to the policies followed by Montana and North Dakota, the other two Northern Plains states which have vast coal deposits. They have had a moratorium on coal leasing for several years now, as has the federal government.

In announcing that he would oppose Hathaway's confirmation, Senator Gary Hart of Colorado (who is not a member of the Interior Committee) said that what had happened in Wyoming was evidence that the nominee is "not qualified to assume stewardship of our nation's treasure of minerals, coal, and oil." Noting that the state had received only \$12,946 in coal

royalties last year (only one mine was producing on state land), Hart suggested that many of the leases had been bought by speculators expecting eventually to reap windfall profits.

Whatever pro-industry, pro-development biases may have marked his service as governor, Hathaway has tried to convince the Interior Committee that he would take a broader, more balanced approach as Secretary of the Interior. When asked for his views on certain pend-

ing environmental bills, Hathaway has in some cases taken positions that might conflict with Ford Administration policy.

For instance, with respect to the strip mining bill which Congress has sent to the White House, Hathaway said that it is a workable measure with similarities to Wyoming's open-cut reclamation law. But, knowing that President Ford might decide to veto the bill, Hathaway avoided a definite commitment by saying he was not informed as to what effect such a law would

NSF Violations of Personnel Code Alleged

For the past 2 years the National Science Foundation (NSF) has been negotiating with the government's personnel agency, the Civil Service Commission (CSC), about charges that NSF repeatedly violated government hiring regulations. A principal charge was that it used a clubby system of "colleague referral" to fill most key jobs and that this system "discriminated" against women and minority group members. The CSC also charged that many NSF employees hold government grades too high for the jobs they do.

The CSC never made its report public, however, and negotiations with NSF have gone on behind closed doors. The report was finally released on 6 May by Representative John E. Moss (D-Calif.), whose office is investigating both government personnel abuses and the CSC itself.

CSC spokesmen say that NSF currently is "substantively" in compliance with federal hiring rules, although the status of the jobs of about ten of the agency's top officials is still being debated.

The CSC investigators' report, dated March 1973, said:

► "Essentially all professional and many administrative positions are filled through 'colleague referral.' This is an effective recruiting source but it results in discrimination against women and members of other minority groups."

► "Program support and administrative positions throughout the Foundation are overgraded," which means that many employees were being paid higher salaries than their duties warranted.

► "Unnecessary supervisory layers have been established in several offices." Also, there is "excessive fragmentation of some small offices and divisions."

► Employees were regularly detailed from their official jobs to temporary positions at higher salary levels. The number of these has "far exceeded the legal limitations." The CSC ordered NSF to change the status of certain employees within 30 days.

John J. Lafferty of CSC, whose bureau compiled the original report and has since been negotiating with NSF, says that, today, "on all the major issues, the agency is either in substantial compliance or they have made satisfactory progress." But, Lafferty said, the positions of "fewer than ten" supergrade employees, whom he would not name but who generally earn approximately \$36,000 per year, are still being reviewed by CSC. Commission investigators want to make those jobs competitive within the Civil Service system, while the NSF maintains that they should be under the discretion of the director.

Like Lafferty, NSF officials say that they have made substantial progress toward reforming their weaknesses listed in the 1973 report. A look at NSF's hiring of minorities and women in the period since the report was issued, however, indicates things may not have improved all that much.

The report cited 1972 figures for women and minorities in the six top Civil Service grades, or GS-12 through GS-18. At that time, 3 percent of these employees were members of minority groups and 13.3 percent were women. By November 1974, despite the fact that NSF had added some 50 jobs to these grades, the proportion of minority group employees stood at only 4.9 percent while the proportion of women actually decreased, to 11.4 percent. NSF claims that its proportions of women and minorities in all grades compare to those in science generally.—D.S.

have on coal production and the economy. In the event of a veto, however, he promised to try to write strict reclamation standards into any new federal coal leases.

(The White House announced on 19 May, as this issue of *Science* was going to press, that the President will indeed veto the strip mining bill, a measure similar to the one he vetoed last December. Administrator Frank Zarb of the Federal Energy Administration said that the bill's reclamation requirements and mining restrictions would reduce coal output by 40 to 126 million tons a year. Sponsors of the legislation, who reject such figures as unfounded, believe that the veto will be overridden.)

On land use planning, Hathaway said he would "work toward administration support" of legislation in this field. And, in his opinion, the measure pending in the Interior Committee was a "good bill." President Ford has, for budgetary reasons, decided against sending a land use bill to Congress this year, having chosen instead to sponsor only a measure narrowly concerned with energy facility siting.

Also, in the hotly controversial matter of whether to relax standards preventing "significant deterioration" of air quality in

clean air regions, Hathaway said, "I would not want to see us develop energy in that way." Yet the White House wants Congress to amend existing law to allow such deterioration as may be compatible with human health.

Evasiveness Charged

Some senators on the Interior Committee, especially Richard Stone (D-Fla.) and James Abourezk (D-S.D.), believe that Hathaway responded to their questions evasively by qualifying his answers or pleading ignorance. For instance, Stone thinks, perhaps unfairly, that this nominee from landlocked Wyoming should have arranged to be better briefed about outer continental shelf oil development and the problems it will create for coastal states. Abourezk found Hathaway unconvincing on his priorities for the use of western water, although the nominee tried to assure the senator that he put industrial use behind municipal and agricultural use. Abourezk and Stone, together with Senator Haskell, are definitely committed to vote against this nominee at the 21 May meeting scheduled by the Interior Committee to act on his confirmation. But Hathaway seems assured of a favorable vote both in committee and on the Senate floor.

At the outset of the confirmation hearings, committee chairman Senator Jackson (D-Wash.) noted that the Senate has traditionally allowed presidents wide discretion in choosing Cabinet officers. (The only such nominee rejected in recent decades was Lewis Strauss, who in 1959 was denied confirmation as Secretary of Commerce.) And, however many the questions about Hathaway's performance as governor, no one has suggested that he is not of good faith and integrity.

In the latter regard, the committee staff actually turned up a testimonial in Hathaway's favor by pursuing a disquieting rumor about him. The rumor was that the American Bar Association (ABA) had uncovered damaging information earlier this year in investigating Hathaway's qualifications for a possible appointment to a judgeship. But the ABA had found nothing of the kind, and, as the committee was informed, it was prepared to recommend him as well qualified, or even exceptionally well qualified.

Even so, if Hathaway is confirmed, as now seems virtually certain, he will be a while in living down doubts about his capacity for prudent management of the public lands.—LUTHER J. CARTER

OECD: Report on Research System Says the Honeymoon Is Over

There is value, as Robert Burns wrote, in seeing ourselves as others see us, and such perspective is provided by the final volume* of a three-part study of national research systems by the Organisation for Economic Cooperation and Development (OECD) which gives an informed Western European view of research organization and science policy in the United States and Canada.

The survey started out as a study of the organization and financing of fundamental research and ended up documenting the decline of faith in such research in Western industrial nations.

The authors have had to contend with a moving target. The idea for the study was generated in the era of the "technology gap" in the middle 1960's, when the value

and virtue of basic research was little doubted and a lot of time was spent on such questions as what percentage of a country's gross national product should be devoted to support of R & D. and what portion of that, in turn, to basic research.

Volume 1, published in 1972, concentrated on the three largest Western European countries—Britain, France, and Germany (*Science*, 14 April 1972), and volume 2 (*Science*, 27 July 1973), on five small, industrially successful nations—Belgium, the Netherlands, Norway, Sweden, and Switzerland. As the authors note, the first volume focused on fundamental research. The second volume broadened its scope to give more attention to the research system as a whole, and the latest volume, which includes some general conclusions, devotes much attention to the changes which have affected research systems. These shifts have been caused primarily by the rapidly

developing demands on research systems to deal with new economic and social problems.

Headquartered in Paris, the OECD is an international organization devoted to fostering economic growth. *The Research System* is a product of the able staff of the OECD's directorate for science, technology, and industry (which, not insignificantly, used to be called the directorate for scientific affairs).

The difficulties of doing a comparative study over a period of several years under such conditions are obvious. Events have moved so rapidly that the data seem unusually dated (the cutoff point for most statistics in the latest volume is 1972). Changes in science policy—signaled by banishment of the science advisory apparatus from the White House and the advent of the energy crisis—are noted, but the effects of inflation and recession do not seem to be taken fully into account, particularly in the discussion of university research. And in this volume there seems to be somewhat less slash and dash in the authors' style, qualities that lent piquancy to the usually bland fare of international organization reports. The conclusions reached in volume 3 are modest and sensible, but American readers are likely to be most interested in the perspective offered

**The Research System*, vol. 3. Obtainable from OECD Publications Center, Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C. 20006. The price is \$9.50.