Gov. Hathaway: Interior Nominee's "Quality Growth" Is Going Sour

Cheyanne. In his 8 years as governor of Wyoming, Stanley K. Hathaway, President Ford's nominee for Secretary of the Interior, always talked of economic development in terms of "quality growth." But, faced with some compelling evidence of growth gone awry plus the imminent prospect of a frenzied development of the Northern Great Plains' strippable coal reserves, Hathaway's former constituents have been giving this matter second thoughts.

Most Wyoming people continue to admire Hathaway, who chose not to run for reelection last year, but many are losing faith in the idea that rapid development of coal and other energy resources need involve no intolerable trade offs. They are afraid that this development will bring problems such as air pollution, severe competition for water (with agriculture on the losing end), the disappearance of much farming and grazing land, and the loss of pleasant small town life in those communities forced to take in a surge of new workers and their families.

This changing perception of the likely consequences of massive resource development could temper the secretary-designate's commitment to precipitous exploitation of the coal reserves of the Northern Plains. If, on the other hand, Hathaway insists on all-out development of western coal, he will be clashing constantly with people back home in Wyoming as well as with those in the other Northern Plains states, namely Montana and the Dakotas.

Indeed, in much of this vast region agriculturalists and environmentalists have begun to fall into an alliance, sometimes explicit and formal, sometimes tacit and informal. The aim of this alliance is to stop the unrestrained recovery of Northern Plains coal and its conversion within the region to electricity and synthetic fuels.

Such an alliance is already firmly established in Montana, where it is led by the Northern Plains Resource Council (NPRC) in Billings. In Wyoming, even some prominent ranchers who have usually identified themselves with business and industry are now conceding, somewhat uneasily, they are being driven onto the side of the environmentalists. For their part, Wyoming environmental activists, who consist of a relatively small number of articulate young people in towns such as Laramie and Sheridan, are eagerly embracing the ranchers. Any past prejudices that ranchers are a lot of eagle-killing, overgrazing S.O.B.'s have now been abandoned.

Hathaway was to appear before the Senate Interior Committee on 21 April, as this issue of *Science* was nearing publication, for the opening of several days of hearings preliminary to Senate action on his confirmation. Some members of the Interior Committee were expected to question Hathaway aggressively about his commitment to massive coal development. A Secretary of the Interior, through his department's decisions on the leasing of federal coal and its regulation of the stripping of that coal, can either foster or discourage widespread mining in the Northern Plains. And although his actions are subject to White House policy, the secretary helps formulate that policy.

"We've Studied It to Death"

Hathaway's personal commitment to western coal development has been expressed repeatedly, as in these remarks made to the National Coal Association in June 1973:

> We've studied it [the then emerging energy crisis] to death. We have all the information we need, now is the time for some action, for some decision making. . . . Come look in Wyoming. We have a lot of coal out there. . . . We could be, 10 years from now, the energy state of this nation. I hope that we are, because the nation needs us.

His advocacy of full development of Wyoming's energy resources can be traced back beyond the onset of the energy crisis to his early years as governor. When Hathaway first took office in 1967, there was but one major political concern in Wyoming—to attract industry. The hope was to provide enough jobs to keep this huge state of nearly 98,000 square miles of mostly mountains, desert, and rolling rangelands from losing population. With only about 330,000 inhabitants, Wyoming had an average population density of not more than 3 persons per square mile, a situation not much changed even today despite the dramatic growth that has occurred in certain localities.

Accordingly, Hathaway took a number of industry-hunting tours around the nation. But what finally attracted numerous industries to Wyoming in the late 1960's and the 1970's was simply the state's rich resources, such as trona (the basic ingredient of soda ash), oil, and subbituminous coal.

Hathaway wanted state policy governing Wyoming's land and water resources to accommodate industrial growth, and some of the actions taken by his administration seem to have been clearly precipitous. For instance, whereas in the fall of 1966, just prior to his becoming governor, only about a third of the some 1,862,000 acres of state coal lands had been leased, all of this acreage had been leased by 1975 when he left office. Many of Hathaway's other actions, such as his abortive proposal to divert water from the scenic upper Green River for industrial purposes, also angered environmentalists.

But Hathaway was by no means a lackey of the industrial interests, as some have charged. Although no environmentalist, he took some effective and apparently sincere actions for environmental protection. For instance, in response to new federal air quality laws, Hathaway's first address to the Wyoming legislature called for the establishment of an air quality council, which turned out to be a relatively strong body. And although Hathaway tried unsuccessfully a few years later to weaken the air quality program for the sake of industrial development, he later would make some amends for this conspicuous lapse.

For in 1973 Hathaway supported legislation to create a new Department of Environmental Quality (DEQ), to strengthen Wyoming's strip mining reclamation law (now regarded as one of the better state laws in this field), and to create a land use study commission. He personally intervened to rescue the land use study measure when it was blocked in the state Senate. Moreover, he appointed some dedicated environmentalists to the Wyoming Environmental Quality Council, the top deci-

sion-making body for the DEQ. And he is said to have conscientiously avoided interfering in the council's actions.

Had Hathaway still been governor when the legislature met this year, however, he would have witnessed at first hand that Wyoming's efforts to cope with the problems of energy resource development are entering a new and possibly far-reaching phase. The legislators were now reacting sharply to the pell-mell, disorderly growth which industrial development had produced at Rock Springs, in southwestern Wyoming, and at Gillette, in the Powder River basin in the northeastern part of the state.

Gillette, with about 10,000 inhabitants, has more than tripled in population since the mid-1960's as the result of an oil boom. Two-fifths of the inhabitants live in an ugly sprawl of mobile home parks. As the legislators realized, Gillette and other towns in the Powder River basin would soon be feeling the impact of a much bigger boom as the mining and conversion of the basin's rich coal reserves accelerated. The Powder River Basin Resource Council (PRBRC), a group of young environmentalists and ranchers, was warning that disaster was about to overtake the basin and its traditional ranching and farming economy.

The Legislature Reacts

To meet this impending on-rush of energy development, the legislature enacted several important measures. It raised severance taxes and provided for special assistance to towns impacted by development; it required that coal strippers obtain the consent of the owners of the land overlying the coal; it mandated state and local land use planning; and, perhaps most important, it required anyone planning to build a major industrial facility to obtain a state permit, which could be denied if the proposed facility would have an unfavorable environmental, social, or economic impact. Enactment of such legislation was remarkable for a legislature that has been regarded by some as too accommodating to development interests, and especially to the energy companies.

These developments in Wyoming are not likely to be lost on Hathaway, for he knows that the coal development frenzy is now as much a worry of the ranchers and farmers who expect the best of him as it is of the environmentalists who expect the worst.

No one can safely predict what Stanley Hathaway will do if, as seems most likely, he is confirmed as secretary. If he listens closely to his friends back home, Hathaway could conceivably do more to protect the Northern Plains and its agricultural economy than any one else President Ford might conceivably choose to lead the Department of the Interior. Given Ford's preoccupation with the energy problem, the job this season isn't going to go to some one who has the look of an environmentalist.—LUTHER J. CARTER

RESEARCH NEWS

Crop Forecasting from Space: Toward a Global Food Watch

Every 9 days a satellite passes over a field of hard red winter wheat somewhere in Kansas, measuring the light reflected from the growing crop at four different wavelengths. The young plants are green, but later they flower and turn yellow, as each characteristic stage of growth is recorded by the scanning spectrometer aboard the spacecraft. The multispectral images, telemetered to ground stations, end up in Houston in a computer programmed to distinguish the wheat from other crops and to estimate the acreage planted to it. At the same time weather information from the target area, gathered from the national meteorological network, is used to predict the likelihood of higher or lower than normal yields from the crop. The information is combined to give an estimate of the amount of grain that will be harvested in the area later this summer.

Although still experimental and just getting under way, the operation is a prototype for what may become a global watch on the world's food supply. The hope is that it will make possible reliable estimates of production of major food crops in time to give warnings of damage from droughts, frosts, and other disasters and to prevent shortages from taking the world by surprise. At present only fragmentary data are available on upcoming world harvests, the United States being virtually the only country that publishes monthly forecasts of its production. A worldwide information system could thus make possible more rational management of food grains that are increasingly in short supply in much of the world.

The key question is how well such a system can be made to work, and that is the object of the current effort, known as the Large Area Crop Inventory Experiment (LACIE). It makes use of the Landsat satellites of the National Aeronautics and Space Administration (NASA) and of weather data collected by the National Oceanic and Atmospheric Administration (NOAA). Crop estimates will be compared with those produced by the U.S. Department of Agriculture (USDA), which is also providing agricultural information to aid in constructing and applying the computer algorithms. The initial scope of the joint experiment is the wheat crop in the Great Plains of the United States; extension to other areas is to follow. Eventually, perhaps, other crops such as rice will be included.

Techniques for remote sensing of crops are not new. Numerous experiments have been done with Landsat I (formerly called the Earth Resources Technology Satellite), which was launched in 1972 (*Science*, 13 April 1973, pp. 171–173). Indeed, according to LACIE project manager R. B. MacDonald of the Johnson Space Center, in Houston, Texas, the feasibility of recognizing crops from multispectral data was established as early as 1966 with data taken from aircraft. Work at Purdue, the University of Michigan, and other laboratories resulted in knowledge of the spectral signatures of crops and method for analyzing spectral data which are the basis for the present experiment. What is novel about the LACIE project is the scale of the effort, which encompasses hundreds of thousands of square kilometers, and the