Cutler says. His doctoral research was on Forest Service litigation. Before coming to Michigan State he worked with the Wildlife Conservation, the Virginia game commission, the National Wildlife Federation, and the Wilderness Society.

It seems that Cutler's name first came to the attention of the White House talent spotters through Conservationists for Carter, one of the first groups to back Carter's campaign. The conservationists submitted candidates for a number of government posts, one of them the USDA assistant secretaryship, in which they wanted someone who would be sympathetic to their point of view in dealing with the Forest Service.

According to Cutler, the forest products industry is also pleased to have a forester in the job. "I don't have any extreme position on clear cutting or use of pest control programs. I hope I can discover a middle ground on things like wilderness proposals which won't be anathema to everybody."

As to agricultural research, it seems to be Bergland rather than Cutler who is full of ideas for change (see box). Asked what particular initiatives were contemplated, Cutler named three research areas which Bergland plans to emphasize—reducing the oil dependence of agriculture, human nutrition, and appropriate technology for small farmers. "The World Bank spends billions of dollars to help small farmers in other countries, we should spend more in this country," Cutler says. In the past "we have benefited the large producer to the disadvantage of the small producer." He intends to make better use of the extension service so as to bring to small farmers the research results the more well-to-do and corporate farmers have been getting all along.—NICHOLAS WADE

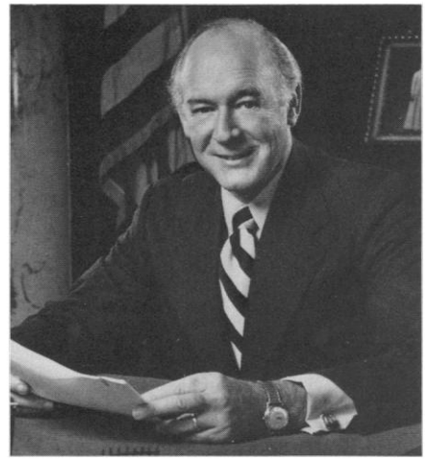
Interior Department: Andrus Promises "Sweeping Changes"

The Secretary of the Interior has always had the difficult job of establishing a balance of sorts between resource conservation and development, but how and where that balance is struck tends to vary from one administration to the next. To judge from his early actions and statements, Secretary Cecil D. Andrus will definitely put the greater emphasis on conservation and environmental protection. And, if the circumstances surrounding the bold strip-mining bill amendment that he has just submitted to Congress on behalf of the Carter Administration are a fair indication, he is receiving a surprising amount of encouragement and support from other Administration officials, including James R. Schlesinger and others responsible for energy policy.

Andrus, who has come to Interior after serving 6 years as governor of Idaho, seems to have issued his personal manifesto on matters of conservation and development several weeks ago in addressing the National Wildlife Federation. Speaking of the Bureau of Land Management's responsibility for the federal public domain lands, he observed, "The initials BLM no longer stand for 'Bureau of Livestock and Mining.' The days when economic interests exercised control over decisions on the public domain are past. The public's lands will be managed in the interest of all the people because they belong to all the people."

Then he added:

> Our President has a deep personal commitment to end the waste and misuse of America's natural resources. He is canceling the blank check which once went to those who would exploit resources and pollute the environment in the name of progress. . . . At Interior, we have begun to make sweeping institutional and policy changes to end what I see as the domination of the department by mining, oil, and other special interests. . . . We intend and have begun to break up the little fiefdoms which have divided Interior for years. For too long each of the interests—grazing, mining, timber, and so forth—has had its own domain. The place was like a centipede with each little pair of feet scuttling off in its own direction. That is going to change.
>
> Policy-making will be centralized and it will be responsive to my philosophy and the philosophy of President Carter.



Cecil D. Andrus

If the various agencies inside the Department of the Interior have had nothing resembling a common philosophy in the past, certainly it has been all the more true that Interior and some of the outside agencies with which it has had to deal have often lacked a common understanding of key conservation and development issues. For example, this was plainly evident in late 1974, when Rogers Morton, who was then Interior Secretary, wanted President Ford to sign the strip-mining control bill that had emerged from Congress after a tortuous House-Senate conference had finally produced a compromise. Nevertheless, Ford vetoed the bill, doing so at the urging of Frank Zarb, then head of the Federal Energy Administration (FEA). Along about this same time, Zarb also won out over Morton on another important issue by persuading the President to endorse a narrowly drawn energy-facility siting bill instead of a much broader land-use measure.

In sharp contrast to the situation that prevailed when Morton was being rebuffed, Secretary Andrus appears to be getting a green light from everybody inside the Carter Administration. Not only has he been authorized to express strong Administration support for the strip-mining legislation now pending in the House and Senate committees, but he has been able to propose an amendment—in which all other concerned agencies have concurred—calling for a 5-year moratorium on new strip-mining ventures on prime agricultural land.

The proposed moratorium has the coal industry up in arms. Much of the strippable coal in Illinois, Indiana, and western Kentucky is overlain by prime farmland, and the same is true of some of the strippable coal in the Great Plains region. Moreover, if Congress establishes the moratorium, it would call sharply in-

to question the coal industry's claims that land which has been stripped can be satisfactorily reclaimed.

The moratorium would give soil scientists and agronomists more time to find out whether, after stripping, the original soil profile and other conditions can be reestablished well enough to permit an early return to the high yields of corn, soybeans, or other crops known in the past. During the last 2 months a broad consensus has developed within the Administration that this question should be answered before the stripping of prime agricultural lands is allowed to proceed unchecked, particularly inasmuch as by far the larger part of the nation's coal reserves is "deep minable."

Even before President Carter was inaugurated on 20 January, the staff at the Council on Environmental Quality (CEQ) and some of the early Carter appointees, including Andrus and Schlesinger, are said to have already felt that there might be a need for the pending strip-mining bills to be strengthened to protect prime farmlands. Accordingly, once congressional hearings began on the bills, the CEQ staff initiated a moratorium proposal. Because nothing of the kind had been offered before, the Office of Management and Budget (OMB) decided that the proposal should be reviewed by an ad hoc interagency task force. OMB, CEQ, FEA, the Environmental Protection Agency, the Bureau of Mines (an Interior agency), the Soil Conservation Service, and the White House Domestic Council were all involved in this review.

Meanwhile, as this study was getting under way, Schlesinger, the President's top energy adviser, touched on the prime farmlands question in a letter to Representative Morris K. Udall (D–Ariz.), chairman of the House Committee on Interior and Insular Affairs. "Fortunately," he observed, "the great abundance of coal in this country allows us to declare certain areas off limits to strip-mining because of their greater value for competing purposes. Protection of alluvial valley floors in the west [where ranchers grow forage crops to tide their cattle over the winter] and prime agricultural land should be considered on the basis of the most valuable use of those lands to the nation. It is wise planning to utilize land that is more productive for agriculture for that purpose."

Briefing

Nazi Coal Conversion Methods Reviewed

An enthusiastic young history professor at Texas A & M University is undertaking a mammoth study of old German war documents in hopes of uncovering lost secrets about the conversion of coal into synthetic fuels.

Arnold Krammer is a 34-year-old professor of German history with a background in chemistry. About a year and a half ago, inspired by the energy crunch, he and a colleague, chemical engineering professor Richard Wainerdi, took a trip to the National Archives to look up documents captured by allied forces in a sweep through German petroleum plants in the closing days of World War II. Now, with the backing of the University's Center for Energy and Mineral Resources (CEMR) and money from a half dozen American companies, the search has blossomed into a 3-year project. The goal is to translate and abstract information from hundreds of thousands of documents, put it in a computer, and make it available to help America solve her energy problems. Most of the material relates to the conversion of lignite (brown coal) into petroleum and petroleum products.

Although there are those who doubt the worth of pawing through 30-year-old technical papers, Krammer is very high on the project and is convinced that there are gems that remain to be uncovered among the dusty accumulations which he estimates may amount to over one million pieces of paper.

As he points out, Germany in large measure ran its war machine on synthetic fuel from its abundant lignite deposits. The scope of their effort dwarfs anything undertaken by any other nation, and he believes chances of uncovering more efficient ways to convert coal to oil are good.

The project is still in a very preliminary phase, and Krammer says all the depositories have not yet been located. The documents investigated so far include unsecured patents, plant blueprints, experiments on catalysts, methods for sulfur removal, fuel blending, and fuel transportation and storage as well as information on other ingenious wartime accommodations such as the making of sugar from sawdust.

Krammer is particularly interested in what the Germans knew about catalysts—metal oxides that speed the chemical reactions that bind carbon monoxide and hydrogen together to produce oil molecules. Nothing of note has turned up so far, but Krammer is optimistic. After all, he says, Nazis apparently possessed advanced knowledge in another area, namely electricity storage. German trucks found in the North African desert decades after Rommel's crusade were found to have batteries that, amazingly, still worked.

Krammer says the CEMR poohpoohed the idea at first, but kicked in a few hundred dollars for the trip to the National Archives. Subsequently, American oil companies were contacted, and five companies—Dow Chemical, General Motors, Diamond Shamrock, Union Carbide, and Texas Utilities—have contributed $289,000 to the venture. Translators are now being hired to cull through the documents, reduce them to abstracts, code them, and put them in an Energy Resources and Development Administration computer at Oak Ridge National Laboratory. Although the computer time is being donated, Krammer says he doesn't seek government money because those on the project don't want to bother with the government meddling and paperwork that go with it.

Krammer says the university ultimately hopes to establish a "coal conversion library"—particularly fitting for Texas, which has an estimated 110 billion tons of lignite.

Another facet of the project is the establishment of an "oral history library." Krammer and colleagues have been digging up German scientists who were brought to the United States after the war through Operation Paperclip (the project that collected rocket scientist Wernher von Braun). So far 12 of these scientists have been located and interviewed, as have a number of the technical team that conducted the sweep through the German factories.

The head of that team was Wilburn Schroeder, now professor of chemical engineering at the University of Maryland. Schroeder was with a 150-man group that followed the conquering ar-

As it turned out, the task force report on the moratorium question was a loosely constructed and ambiguous document which one could cite either for or against a moratorium. It pointed out that soil scientists and agronomists at the University of Illinois and elsewhere are only now beginning the experiments needed to determine whether prime croplands can be returned to full productivity after stripping and reclamation. But, at the same time, it seemed to argue that, even if reclamation proved a failure, the effect on the nation's overall agricultural productivity would be inconsequential.

Not surprisingly, a copy of this report has found its way into the hands of the people at the National Coal Association, and they are making hay with it. Yet, once the report's findings were evaluated by representatives of all of the agencies involved in the review, it was unanimously agreed that a moratorium should be mandated.

So, whatever the fate of the proposed moratorium in Congress (the fierce industry opposition to it indicates that it will have tough going), Secretary Andrus and his department will not have to worry about flanking attacks from other federal agencies, at least not on this issue.

As for the promise Andrus has made to centralize all of the policy-making for his sprawling bureaucratic organization (Interior has more than 60,000 employees and contains more than a dozen distinct agencies), eventually he may find that he cannot deliver, but he seems determined now to make a brave try. For instance, he is attempting to weld his staff and that of his undersecretary, James A. Joseph (the first black ever to serve in this job), into a single, tightly integrated administrative unit. As the deputy undersecretary, Barbara Heller, 28, who has been an environmental activist specializing in outer continental shelf (OCS) oil and gas leasing and development, will be reporting directly to Andrus as well as to Joseph on OCS issues.

The several assistant secretaries responsible for Interior's operating agencies—the BLM, the Geological Survey, the Fish and Wildlife Service, the National Park Service, and so on—are being told to participate directly and forcefully in shaping and carrying out the policies of those agencies and not serve merely as an intermediate link in the

Briefing

mies through all the German synthetic fuel plants and some research laboratories. He is dubious about the value of the Texas venture because he says the cream of the material was translated and sent back and examined—reports known as the Technical Oil Mission reports. He says the German technique for coal hydrogenation was "uneconomic" and, he adds, "I sort of doubt if there is too much to be gained by extensive review of this older technology."

The Germans would probably agree. Kurt Irgolic, chief chemist at CEMR, says that Germans made no effort to resuscitate their synthetic fuels technology after the war when petroleum became plentiful. And even now, he says, South Africa is the only country involved in the large-scale processing of synthetic fuels.

Nonetheless, the people at Texas A & M think the economics of the present energy situation call for another look at the German effort. Krammer recollects Santayana to the effect that "those who do not study the past are doomed to repeat it."—C.H.

Mexican Heroin Flow Continues Unabated

A congressional committee has returned from an inspection tour of the Mexican-American border to report that the flow of narcotics into the United States is almost entirely out of control despite programs to eradicate opium crops and strenuous enforcement efforts by U.S. officialdom.

Said Representative Lester Wolff (D-N.Y.), chairman of the House Select Committee on Narcotics Abuse and Control: "The problem looks almost insurmountable—the future does look very bleak." He likened the 2000 mile Mexican-American border to a "Maginot Line that is being outflanked, outflown and infiltrated" by people toting in 5 to 6 tons of heroin a year. He said the "shooting" was just as bad as in a war, and that the casualties—an estimated 5000 deaths a year from heroin overdoses—"are unacceptable."

Eradication of opium grown illegally on Mexican government land has stamped out 80 percent of the crops, the committee members said; nonetheless, the remaining 20 percent is filling 80 percent of America's addiction needs. Only 10 percent of such traffic is being interdicted, and one in three of those smugglers who are convicted are let loose again on probation.

The committee members complained that there is no coordination among responsible U.S. agencies, and intelligence activities are the responsibility of "everybody and nobody." The burden is being carried by the Drug Enforcement Administration, the U.S. Customs Service, and the Immigration and Naturalization Service. However, the group said, their efforts are doomed so long as there continues to be no cooperation from the Federal Bureau of Investigation, the Central Intelligence Agency, and the Internal Revenue Service. (Customs commissioner Vernon D. Acree noted that the narcotics trade is "the greatest untaxed industry in the world.")

The committee members also made it clear that they felt the Mexican government was not putting itself out to help stem the problem. A joint commission of the two governments set up last year already seems to have evaporated, said Wolff. The congressmen noted that this country is fighting apathy not only in Mexico but worldwide, where, according to the United Nations Commission on Narcotics, it is supporting 80 percent of the drug control effort. (The Soviet Union, added one congressman, is supplying "not one red cent.")

The Mexican heroin problem has been with us for some years now, and has received less publicity than it might have because of the low priority that drug abuse has held in the last two Administrations.

More attention may be expected under President Carter who has vouchsafed his concern through the creation of two new high-level positions. Carter now has a White House adviser on mental health and drug abuse, Peter Bourne, a psychiatrist who is an expert on international drug trafficking. And there is new interest at top levels of the State Department as evidenced by the appointment of Mathea Falco, a lawyer formerly with the Drug Abuse Council, who is now Secretary of State Cyrus Vance's senior adviser on international narcotics matters.—C.H.

"chain of command." To start with, the assistant secretaries, together with Andrus and the undersecretary, are to consider carefully whether or not the officials who now head these agencies are in "synch" with the new ways of thinking and doing things at Interior. Gilbert G. Stamm, who headed the Bureau of Reclamation during the past 4 years, got early notice that his resignation was expected; he has since been replaced by Keith Higginson, who has been director of the State of Idaho's Department of Water Resources—and who, incidentally, served on the panel that investigated the collapse of the Bureau of Reclamation's Teton Dam.

Three of the assistant secretaries have themselves been drawn from state government—Robert L. Herbst, in charge of fish, wildlife, and parks, was commissioner of Natural Resources in Minnesota; Robert Mendelsohn, not yet formally nominated as assistant secretary for program development and budget but already on the job, was a member of the San Francisco board of supervisors and a member of the California Coastal Commission; and Guy R. Martin, assistant secretary for land and water resources, was Alaska's commissioner of natural resources.

The assistant secretary for energy and minerals, Joan M. Davenport, the first woman ever nominated to be an assistant secretary of the Interior, is a 34-year-old economist who has been director of FEA's office of environmental assessment. All of these appointees are generally well regarded by environmentalists, although Herbst has been criticized by some wildlife groups for his part in allowing the hunting of wolves in Minnesota. Joe Browder, former director of the Environmental Policy Center (a Washington-based lobbying group) and the energy and natural resources policy planner for Jimmy Carter who lost out in the postelection scramble for leadership positions on the transition team (*Science*, 10 Dec. 1976), is now a special assistant to Guy Martin.

The only top Interior appointees thus far drawn from business or industry have been Under Secretary Joseph, who was a vice president of Cummins Engine Company and president of that company's foundation, and the department's solicitor, Leo M. Krulitz, a Harvard Law School graduate who was manager of a real estate investment and management firm in Columbus, Indiana. None of the top people seems to have been imposed on Andrus by the White House for political reasons, and in most cases the choices have primarily been his. Krulitz, for instance, is an old friend who served as a codirector of Andrus' first campaign for governor of Idaho in 1966.

In sum, Andrus seems to have put together a highly compatible management team at Interior, and, if one can judge from the experience with the proposed amendment to the strip-mining legislation, his philosophy finds a remarkable degree of acceptance in other key agencies as well. This does not mean there will be no conflicts between Andrus and officials such as Schlesinger and John O'Leary (Administrator of the FEA) in the future, as the Carter Administration confronts what may be some increasingly hard choices on energy development and other matters. But it does suggest that the potential for conflict is not so great as one might reasonably have expected.—LUTHER J. CARTER

FDA to Limit Drugs in Animal Feeds

For well more than a decade, the Food and Drug Administration (FDA) has been thinking about banning the use of antibiotics in animal feeds. The agency's new commissioner has decided that it is an idea whose time has finally come. On 15 April, barely a week after taking office, Donald Kennedy proposed regulations on the use of antibiotic-laced animal feeds; these regulations are sufficiently stringent that if implemented they would amount to the next thing to an outright ban. Although it will not provoke the public outcry that followed the proposal to ban saccharin, the plan to restrict antibiotics in animal feeds will be every bit as controversial. Kennedy's action will meet with approval from scientists who are concerned about the spread of antibiotic resistance among both human and animal populations, but it is sure to be resisted by farmers and other food producers who rely on antibiotics in feed to make animals grow faster and, therefore cost less.

Kennedy revealed his decision at his first meeting with the FDA's national advisory committee. Specifically, the proposed regulations eliminate the use of penicillin and significantly reduce the use of tetracyclines as feed additives for growth promotion, while also limiting their use for disease prevention. Furthermore, if the FDA has its way, antibiotic-containing feeds will become in effect prescription drugs, available only on the written order of a licensed veterinarian. The point is to eliminate all nonessential, nonmedical uses of these two very common types of antibiotics for which resistance is already a human problem.

Bacteria and other microorganisms have a remarkable ability to develop resistance to antibiotics and to genetically pass that resistance on through plasmids, little circular pieces of DNA similar to those investigators use in recombinant DNA experimentation. There is no question that normal intestinal bacteria in animals fed antibiotic-containing feed rapidly develop resistance and, although there is no direct evidence that these antibiotic-resistant bacteria are transmitted to people who eat meat or eggs from these animals, there is concern that such transmission might take place. Certainly there is plenty of evidence that people who handle antibiotic-laced feed or raw meat, for that matter, have large numbers of resistant bacteria in their guts. "Although we can point to no specific instance in which human disease is more difficult to treat because drug resistance has arisen from an animal source, it is likely that such problems could have gone unnoticed," Kennedy told the advisory committee. "The evidence indicates that enteric microorganisms in food animals and man, their R [for resistance] plasmids, and human pathogens form a linked ecosystem of their own in which action at any one point can affect every other," he continued. One way to affect that system for human benefit is to reduce exposure to antibiotics in every way one can. "The benefit of using these drugs routinely as over-the-counter products to help animals grow faster or in prophylactic programs does not outweigh the potential risk posed to people," he concluded.

In taking steps to limit the use of antibiotic-containing feed, which now dominates the market in this country, the United States is finally doing what other developed nations did years ago.—B.J.C.

Erratum: The cover photo of the 25 March 1977 issue was oriented upside down, due to human error of the cover editor.