

"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the Bureau of Reclamation during the past 4 years, got early notice that his resignation was expected; he has since been replaced by Keith Higginson, who has been director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

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

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, non-medical 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.