

power plants, transportation engineering, and petroleum processing are just a few examples. The injection of ecology into education will be extremely important to the profession. The apparently insurmountable task of injecting the precepts of ecology into management on a broad scale with relatively few thoroughly trained ecologists can be met only in this manner.

Proposals for a National Institute of Ecology and National Environmental Laboratories are being developed. A number of functions may be imagined for such institutions. Most important will be the assembly and maintenance of a base of knowledge. Ecological information today is often anecdotal or extrapolated. In their zeal to arouse a public that is ill-equipped to couple obscure causes and effects, the ecological alarmists shrug off scientific discipline

and create environmental dramas. For the time being this may be justified.

Soon the fundamental conflicts between use and preservation of natural resources will become widely recognized, and society will settle down to the hard choices. Then the facts must be available. What is not known must be admitted. Verifiable, reproducible, reliable statements will be demanded. The eventual environmental management decisions will be balances of costs and benefits in the broadest sense. Doctrinaire, polarized positions will not be helpful. A common centralized data-gathering and information dissemination center to serve all parties in debate will be a primary responsibility of the profession.

Ecologists have an enormous opportunity to serve society. In the current questioning of the relevance of science

and research they have a clear-cut case for support. Only a stubborn retreat to the woods and the lakes will prevent ecology from making a massive and determining contribution to the problems of modern civilization. The political community now recognizes the need for ecological information and advice. A growing number of professional ecologists accept participation in public affairs. Therefore, the new role of ecology in achieving natural goals seems assured.

References

1. *New York Times*, 3 December 1969.
2. Legislative Reference Service, *A Congressional White Paper on National Policy for the Environment, Prepared under the Auspices of the Committee on Interior and Insular Affairs of the U.S. Senate and the Committee on Science and Astronautics of the U.S. House of Representatives, 90th Congress, Session 2, USGPO No. 20-218* (U.S. Government Printing Office, Washington, D.C., 1968).
3. G. Hardin, *Science* 162, 1243 (1968).

NEWS AND COMMENT

Environmental Law: Courts Demand DDT Action, Block Pipeline Road

In recent weeks federal courts have handed down major decisions in the developing field of environmental law.

● On 28 May, the U.S. Court of Appeals for the District of Columbia, by its decisions in two separate DDT cases, brought jubilation to organizations seeking a total ban on use of this pesticide. The court demanded, in effect, that the two federal agencies with regulatory authority over DDT either impose such a ban promptly or explain why they have not done so.

● In April, the U.S. District Court for the District of Columbia issued a ruling in the trans-Alaska pipeline case which indicated that environmentalists may have a potent legal tool in the new National Environmental Policy Act (NEPA). The government was ordered not to issue a construction permit for a haul road that is essential to the \$1-billion pipeline project pending the court's decision on whether the pipeline itself should be built. The court had found, among other things, that the government had not yet met all of NEPA's requirements for studies of the

environmental impact of the pipeline project.

The Environmental Defense Fund (EDF), a pioneering organization in the field of environmental law, was a plaintiff in the pipeline case and in both DDT suits. Last week, after the DDT rulings, Charles F. Wurster, a biologist at the State University of New York at Stony Brook and chairman of EDF's scientists advisory committee, told *Science*: "We have really won the ball game. These decisions have implications for [efforts to eliminate from the environment] lead and dieldrin and chemical contaminants of every kind."

The fight by EDF and other groups against DDT has not yet actually been won, but the decisions in the DDT cases show that the courts can be used to make government administrators account for their actions—and their inaction. "From a plaintiff's point of view these are the best opinions ever written in an environmental law case," comments Joseph Sax, a University of Michigan law professor and a leading authority on conservation law. In one

ruling the court ordered the Secretary of Agriculture to decide, within 30 days, whether or not to suspend (and ultimately cancel) the registration of DDT as an "economic poison" approved for shipment in interstate commerce. EDF and several other groups, including the Sierra Club and the National Audubon Society, had petitioned for such a suspension 7 months ago. "If he [the secretary] persists," the court said, "in denying suspension in the face of the impressive evidence presented by petitioners, then the basis for that decision should appear clearly on the record, not in conclusory terms but in sufficient detail to permit prompt and effective review." The court interpreted its role to be one of ensuring that the secretary exercises his discretion within a reasonable time and seeing that his decision is "supported by the record."

Zero Tolerance

In the other DDT case, the court ordered the Secretary of Health, Education, and Welfare to initiate an administrative proceeding to decide the merits of the plaintiffs' petition of last October to have a "zero tolerance" established for DDT residues in or on raw agricultural commodities. The Food, Drug and Cosmetic Act (FDCA) authorizes HEW to establish tolerances for pesticide residues in farm products "to the extent necessary to protect public health." (The so-called "Delaney Amendment" of 1958 to the FDCA requires an immediate ban of any "food

NEWS IN BRIEF

additive" found to cause cancer in experimental animals. Although DDT has been found to induce cancer in test animals, the court said that, in the meaning of the statute, the term "food additives" does not embrace chemical pesticides.)

HEW had rejected the EDF petition on the grounds that there was no "practicable method" of removing residues of DDT—a long persistent chemical now found throughout the world environment—from farm commodities. The court held, however, that several practical alternatives for enforcing a zero tolerance would be available—for instance, exemptions might be allowed for residues attributable to DDT applications made before the zero tolerance was established, or the zero tolerance limit might be set as a goal to be achieved progressively over time. According to the court, if DDT is shown to be a carcinogen, yet the secretary reaffirms existing tolerances, he will "be required to explain the basis on which he determined such tolerances to be 'safe.'"

HEW will not seek a review of the ruling and is moving to comply with it. If the Department of Agriculture also elects not to seek a review, two questions will remain: Will the agencies, on their appraisal of the hazards of continued use of DDT, order the total embargo sought by the petitioners on use of this chemical? And, if not, will the court, acting on its own appraisal of the evidence, order such an embargo?

The tenor of the court's decisions suggests that, if the use of DDT is not forbidden altogether, the court will look hard at the agencies' reasons for not placing this pesticide under a total ban. Usually, however, courts uphold administrative decisions unless those decisions are plainly arbitrary or capricious. Moreover, the Federal Insecticide, Fungicide and Rodenticide Act and the Food, Drug and Cosmetic Act both say that departmental findings with respect to the registration of pesticides and the setting of tolerances shall be sustained by the courts if supported by "substantial evidence." In law, evidence can be "substantial" without being preponderant or conclusive, and substantial evidence supporting each of two or more opposing viewpoints sometimes may be drawn from one set of facts.

Whatever the DDT cases' ultimate outcome, the Court of Appeals, in clear and emphatic language, has held that EDF and its fellow petitioners may in-

tervene in pesticide registration cases and that their petitions must be acted on expeditiously. The Department of Agriculture had argued that only "registrants"—that is, pesticide manufacturers—had the right to challenge its decisions. Moreover, it contended that the issues in dispute were still under administrative review and were not ripe for judicial review. The court not only rejected those arguments but held that, even though the statute says the secretary "may" suspend the registration of a pesticide, this merely permissive language does not put his decision beyond judicial scrutiny.

(The Olin Corporation announced Monday that it is closing its DDT plant near Huntsville, Alabama. Although EDF and others had brought suit to stop Olin from discharging DDT-laden wastes into waters leading to Wheeler National Wildlife Refuge, Olin had decided earlier to close the plant.)

On 23 April, the U.S. District Court for the District of Columbia acted in the Alaska pipeline case in response to a motion by EDF, the Friends of the Earth, and the Wilderness Society. The court enjoined Secretary of the Interior Walter J. Hickel from granting a permit for construction of a haul road across the public domain from the Yukon River to the Prudhoe Bay oil fields along the proposed pipeline right-of-way. The injunction is meant to forestall all construction activities by "TAPS" (Trans Alaska Pipeline System) until the court rules on the plaintiff's suit to block construction of the pipeline itself.

Major Test for NEPA

The pipeline project has posed a major test of the National Environmental Policy Act. NEPA was passed by Congress late last year, partly with a view to seeing that projects to be built under federal permit or auspices are not approved and carried out before all potential environmental problems have been investigated. Secretary Hickel, former governor of Alaska and an advocate of opening up Alaska's north country to economic development, has said that the pipeline right-of-way will be granted once design stipulations for the pipeline have been worked out. But, while the project involves difficult engineering problems, the ecological questions it raises are even more complex. For instance, if the pipeline is mounted above ground for much of its length to avoid having it founder in the permafrost, what will the effect be on Alaska's

● **CBW POLICIES:** A subcommittee of the House Foreign Affairs Committee has recommended that the Senate ratify the Geneva Protocol of 1925 prohibiting chemical-biological warfare but leave open the question of using tear gas and herbicides in warfare. The report of the Subcommittee on National Security Policy and Scientific Developments, based on hearings held last winter, also recommends that biological warfare facilities be turned to peaceful pursuits, and that the United States continue to seek a treaty totally banning biological weapons.

● **NILE DELTA EROSION:** Since the Aswan High Dam is expected to increase the already severe coastal erosion of the Nile Delta area, the United Arab Republic has asked the United Nations Educational, Scientific and Cultural Organization (Unesco) for help in remedying the situation. As a first step, Unesco will study the causes of erosion and prepare plans for coastal protection works.

● **ABORTION LAW VETOED:** Maryland Governor Marvin Mandel has vetoed a bill that would have removed all state restrictions on abortions in Maryland. In defense of his actions the Governor, who is a candidate for the governorship in the November elections, stated that he had based his decision on legal grounds alone. Governor Mandel cited the following reasons for vetoing the bill: (i) the bill contained no residency requirement; (ii) the bill made no provision for notifying the husband of the woman (or the parents of the minor girl) of the proposed abortion; (iii) the bill would not have prohibited an abortion in the eighth or ninth month of pregnancy.

● **NSF SPONSORS ALASKAN PIPELINE STUDY:** The National Science Foundation has announced that it will sponsor an urgent study of the ecological effects of the trans-Alaskan pipeline and of accelerated development of Alaska's North Slope. A team of scientists from seven institutions will investigate the permafrost, plants and animals, and snow cover of the area; the team will also install a test section of a heated pipeline, similar to the real pipeline. The study will last 1 year, and will cost \$300,000.

vast migratory herds of caribou? The studies needed to answer questions of this kind have not been made in depth, although NEPA would seem to require such investigations.

The court held that the haul road should not be considered separately from the rest of the pipeline project—an important point, for, if project applications are dealt with piecemeal, major environmental problems could arise before the question of whether (or how) the pipeline should be built

is ever decided. The ruling was based partly on the court's finding that TAPS' requests for rights-of-way totaling 289 feet in width appear in conflict with the Mineral Leasing Act of 1920, which limits rights-of-way to 54 feet. But the fact that the court also cited NEPA's requirements for environmental impact studies could prove to be a highly significant precedent, especially in view of the high financial stakes involved in the North Slope oil development.

Governor Keith Miller of Alaska be-

lieves that, under an 1866 statute, the state itself is entitled to claim the right-of-way for the haul road and that it can have TAPS build the road as its contractor. The Alaska legislature already has voted to appropriate \$120 million (which the oil companies would eventually repay) to this end, but even TAPS views this proposal dubiously and there is a real question whether the courts would not find it to be an illegal circumvention of the April injunction.

—LUTHER J. CARTER

Colorado Environmentalists: Scientists Battle AEC and Army

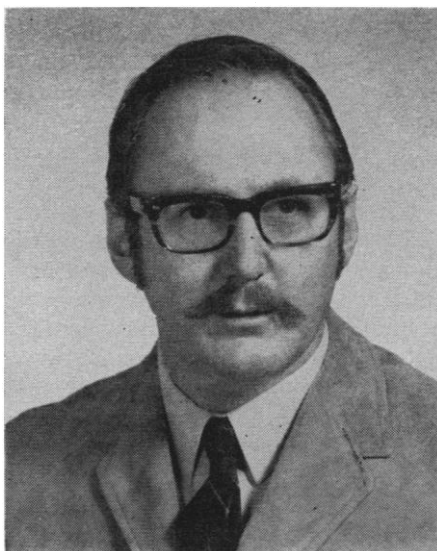
Boulder, Colorado. In the weeks that have followed Earth Day, many scientists and other citizens have asked: "How can we have a permanent influence in curtailing environmental pollution?"

One answer worthy of attention is found in the 2-year history of the Colorado Committee for Environmental Information (CCEI) which has had a major effect in this state in alerting the public, the politicians, and the press to environmental problems. CCEI is a small group; it has only 24 members, 20 of whom are physicists. It has no staff; its members are employed by the University of Colorado, by private research laboratories, or by federal laboratories here, such as the Bureau of Standards, the National Center for Atmospheric Research and the Environmental Science Services Administration. The best-known scientist in the group is Edward U. Condon, formerly head of the National Bureau of Standards.

The bulk of the committee's work, which consists mainly of the writing, critical review, and public distribution of scientific reports on specific environmental problems, is done by less than a half-dozen members. The group operates on a minuscule budget—less than \$1000 annually.

The Democratic Lieutenant Governor, Mark Hogan, is just one of many people who say that CCEI has had "a very definite public impact in Colorado" by exposing actual and potential

pollution from activities of the Atomic Energy Commission (AEC) and from the Army's storage of nerve gas at the nearby Rocky Mountain Arsenal. In calling attention to environmental questions, Hogan said in an interview that CCEI is "the one who has hit the mule across the head with the two-by-four to get his attention." CCEI has also been very skillful in attracting the attention of other politicians as well as that of the press. Anthony Ripley, the Colorado correspondent for the *New York Times*, is one of a group of reporters who have given the issues raised by CCEI national publicity.



Peter Metzger

Environmental issues in Colorado, which have to a great degree been shaped by the CCEI, have influenced the state's political campaigns. In his current race for the state governorship, Hogan is using some of the complaints developed by CCEI as campaign weapons against incumbent Republican Governor John A. Love. Love himself has been moved to display a greater attention to environmental contamination, including the controversial question of radioactive pollution.

CCEI's success illustrates the growing activity of the scientists' information movement. With its headquarters in New York City, the Scientists' Institute for Public Information (SIPI) now has particularly active chapters in Minnesota; in Missoula, Montana; in Rochester, New York; and in St. Louis, Missouri. (An account of the St. Louis group, which publishes the monthly magazine *Environment*, appeared in *Science* on 25 August 1967.)

Along with anthropologist Margaret Mead, a principal national leader of SIPI is Barry Commoner, a Washington University plant physiologist. Commoner's St. Louis organization is something of a model for SIPI, and Commoner has helped to persuade the Colorado scientists to adopt the SIPI philosophy. Walter Bogan, SIPI's executive director, also visited the Colorado scientists in 1968 to explain SIPI. Commoner and most of the other scientists in the information movement strongly believe that SIPI groups should avoid making political choices, but instead should concern themselves with discovering and publicizing the relevant scientific data on problems so that citizens can make their own political decisions. SIPI groups have, however, tended to be conservative about the introduction of new elements into the environment, and the Colorado group has participated actively in litigation.