

is essentially a carefully engineered drain.

In view of the fact that the average natural low flow of the Ruhr is less than the volume of effluent discharged into the river, the *Genossenschaften* have done much in the cause of waste disposal and water supply in a very difficult situation. The associations have not, however, worked miracles. Water in some parts is not fit for drinking. Authorities have the power to shut down factories if their waste discharges rise above a certain level, but observers say that officials are hesitant to act when jobs and profits are at stake. During low-water periods it is necessary to pump water out of the Rhine into the Ruhr system. And while the inflow from the Rhine tributaries in the Ruhr does not, on balance, appreciably add to the already formidable pollution of the Rhine, the Emscher still poses such a serious problem that a biological treatment plant for the stream is planned.

There is little question, however, that the *Genossenschaften* prevent a bad situation from getting worse, and also that their operations are pertinent for Americans facing similar problems in maintaining supplies of usable water. Two aspects of the *Genossenschaften* activities seem particularly worthy of study. One is the coordination with land-use planning authorities and the other is the experience gained by the associations in allocating costs.

Methods differ among associations, but the general principle on effluent charges, as Kneese says, is that the discharging unit will be assessed on the basis of the quantity and quality of the effluent discharged into the system. One association determines the degree of pollution by the damage to a particular species of fish.

Virtually from the beginning, the associations have assessed costs for drainage operations necessitated by land subsidence caused by underground coal mining. The costs are divided between the beneficiaries of the drainage operations and the mines causing the subsidence.

In some respects the cost-assessment procedures are not highly refined or, in the case of pollution measurement, very sensitive to varying conditions in the rivers. But a good deal of experience has been gained in assigning monetary costs to damage to the environment, and fairly wide acceptance has been gained for the principle that the

polluter should pay. Americans could learn from this German experience.

At the federal level in West Germany and the United States, officials are convinced that new and more effective measures are needed to correct abuses of the environment, abuses which may cause irreversible damage. In the United States, the Water Quality Act, the Clean Air Act, and the Solid Waste Disposal Act are evidence of governmental concern and, incidentally, of the broader aspirations of the Great Society program. But under the federal system in both countries the central governments are limited largely to a role of setting standards, giving advice and information, training personnel, and providing financial assistance for closely defined purposes. It is at the state and local level that essential laws must be enacted and administered, that costs must be paid, and that the political crunch ultimately comes. So a high-level agreement affecting federal governments, such as the one between West Germany and the United States, is, in a sense, another instrument of information and persuasion.—JOHN WALSH

## APPOINTMENTS



**J. Frederick Eagle**, assistant dean of the College of Physicians and Surgeons, Columbia University, to dean and executive vice president of New York Medical Col-

lege. . . . **Fred C. Davison**, vice chancellor of the university system of Georgia, to president of the University of Georgia, Athens. . . . **John R. Coleman**, program officer in charge of social development, Ford Foundation, to president of Haverford College, Pennsylvania. . . . **Samuel E. Braden**, vice president of the undergraduate college, University of Indiana, to president of Illinois State University. . . . **Theodore Cooper**, on leave as professor of surgery, University of New Mexico School of Medicine, to associate director of the National Heart Institute and chief of the Artificial Heart-Myocardial Infarction Program. . . . **Samuel B. Weiss**, professor of biochemistry at the University of Chicago and the Argonne

Cancer Research Hospital, to associate director of the hospital. . . . **Shannon McCune**, former president of the University of Vermont, to director of the American Geographical Society. . . . **Frederic M. Phillips**, special assistant to the secretary, Department of Commerce, to director of the Office of Public Affairs, Smithsonian Institution. He succeeds **Richard Berg**, who has become vice president of Lindenwood College, St. Charles, Missouri. . . . **James J. Gallagher**, associate director of the Institute for Research on Exceptional Children, University of Illinois, to associate commissioner for the education of the handicapped and head of the Bureau of Education for the Handicapped, U.S. Office of Education. . . . **Gordon P. Hagberg**, director of the Institute of International Education's office in Nairobi, Kenya, to director of the Washington office. . . . **John H. Rust**, professor of pharmacology, University of Chicago, to director of the university's A. J. Carlson Animal Research Facility. . . . **David B. Truman**, dean of Columbia College, to vice president and provost of Columbia University; **Herbert A. Dean**, vice dean of Graduate Faculties, to acting dean of Graduate Faculties at the university; **Henry S. Coleman**, director of Columbia College Admissions, to acting dean of Columbia College; **John Wellington**, associate director of Columbia College Admissions, to director of Columbia College Admissions. . . . **Warren G. Bennis**, professor of organizational psychology and management and chairman of the organizational studies group at Massachusetts Institute of Technology, to provost of the Social Sciences and Administration, State University of New York at Buffalo. . . . **John N. Hobstetter**, professor of metallurgical engineering and director of the University of Pennsylvania's Laboratory for Research on the Structure of Matter, to the newly established post of vice-provost for research at the university. . . . **Aksel A. Bothner-By**, staff fellow, Mellon Institute, to head of the department of chemistry, Carnegie-Mellon University. . . . **Walter Lowen**, on leave from chairman of the department of mechanical engineering, Union College, to director of the newly established School of Advanced Technology, State University of New York at Binghamton. . . . **Earl W. Sutherland, Jr.**, professor of physiology, Vanderbilt University School of Medicine, to career investigator, American Heart Association.