search should continue; its chairman, Dana Farnsworth, so reported to the full faculty.

The medical school's human studies committee, which must certify that research supported by the Department of Health, Education, and Welfare (HEW) meets HEW guidelines for human experimentation, reviewed Walzer's work. (It is supported by the crime and delinquency division of the National Institute of Mental Health.) Herbert Benson is chairman of the human studies committee. In response to questions, Benson said that the committee had agreed that the study complied with requirements that (i) informed consent be properly obtained, (ii) the patients' rights be protected, and (iii) the benefits of participating in the study outweigh the risks.

And then there was the overwhelming vote of the full faculty.

But things did not end there. Beckwith, it is said, did not try to continue to press his opposition through formal channels. But other advocacy groups began to get in touch with Walzer. And rumors began to circulate around Harvard to the effect that the Farnsworth committee had not endorsed Walzer's study at all and that Farnsworth had misled the faculty.

Beckwith, who feels that his point of view was not properly represented in the earlier *Science* article on the controversy, declined to comment on the present situation, except to say that the Farnsworth committee had voted by a majority of one against the proposition that the benefits of screening outweigh the risks.

Farnsworth emphatically denies the allegation that the committee came to that conclusion, although he acknowledged that the issue was debated during the deliberations. "At one point there were people who felt the question of risk hadn't been resolved, but, as we went on, the sentiment of the committee was distinctly in favor of Walzer continuing," he declares. Benson is equally firm in denying any allegations that his human studies committee came out publicly in favor of the study but was privately against it.

King, however, continues to believe there was more private opposition to the study than ever came out, and says people are keeping still for fear of risking the disapproval of faculty powers. And he correctly points out that Beckwith has not exactly made himself popular with the faculty for causing so much trouble. Being across the river at MIT, King has not been criticized as has Beckwith, who incurred his colleagues' particular wrath for taking the whole issue to the press.

King, however, has himself been the subject of one rumor—namely, that he tried to make direct contact with the parents of Walzer's patients in order to persuade them to drop out of the study. King is resolute in denying this. "It is simply not true that we tried to get in touch with the families," he stated. King said that friends of two of Walzer's families approached him and some of his colleagues about the situation, but that they never attempted to follow up.

Walzer reports that none of his families has dropped out of the study and that only one is considering doing so. He intends to continue watching the children's development.

The XYY issue is not an easy one. No one can deny the real, or at least potential, risk of stigmatizing a child. And it seems clear that no one knows with certainty what the behavioral risks, or physical risks, for that matter, of XYY really are. Walzer and Gerald maintain scientists should continue to try to find out.

Beckwith and King are among those who believe it is too risky to try. Their opinion seems to be that the pursuit of studies of the genetic basis of behavior is ill-advised, certainly at this time. At the conclusion of a critique of the XYY study they wrote last fall they said, "... we feel that the major effort in approaching the issue of behavioral problems should be one of changing the social and psychological (inseparable) conditions which generate them. We consider the attempts to determine a genetic basis for anti-social behavior, a diversion with harmful effects."

—BARBARA J. CULLITON

Energy and the Coastal Zone: Pulling and Hauling Among the Feds

In 1972 Congress passed the Coastal Zone Management Act to encourage the states to face up to and reconcile conflicts over land and resource use along the coastal margins. But in signing the act, President Nixon said, in effect, that the federal government was not going to second-guess the states on how much or how little coastal development to allow, and that it would limit itself to evaluating the adequacy of state coastal management *processes*. Now, in hindsight, it is clear that this distinction between substance and process can be illusory. This is amply illustrated by the federal energy agencies' insistence that state coastal zone programs include an affirmative effort to accommodate future energy needs, even though the extent of those needs may not yet be clearly perceived.

The Federal Energy Administration (FEA), together with the Energy Research and Development Administration and the Federal Power Commission, are currently taking exception to the first two state coastal zone programs submitted for interagency review, namely those from Maine and Washington. The positions asserted by the three energy agencies are not identical but they have a common thrust—that the states have an obligation to include in their coastal management plans more or less specific provisions for energy development.

For instance, in its comment on the Washington program, the FEA said that the state should identify coastal areas especially suitable for energy development. Also, the FEA said that these places should be designated under the act as "areas of particular concern" which the state might eventually acquire by condemnation as sites for energy facilities.

These FEA views are challenged by the Office of Coastal Zone Management (OCZM), which was created within the National Oceanic and Atmospheric Administration and the Department of Commerce to administer the coastal zone act. The OCZM recognizes that state coastal management programs must be prepared in consultation with state and federal energy agencies. It also acknowledges that to exclude provisions for energy facility siting from such a program arbitrarily is contrary to the letter and spirit of the 1972 act. But, in its view, the states are not obligated to designate specific areas or sites for energy facilities. If the OCZM and the energy agencies cannot reach a compromise, this question of how far the states must go to anticipate energy needs may ultimately have to be decided at the White House.

The coastal zone program, a truly pioneering venture in federal-state relations,

represents perhaps the most significant federal effort yet to encourage the states to undertake land use regulation. For a time, it appeared that the Coastal Zone Management Act would merely complement a national land use act, with both providing grants-in-aid to states willing to establish programs for regulating critical land areas and critical uses.

But the land use legislation became hotly controversial last year when groups such as the U.S. Chamber of Commerce raised the specter of federal bureaucrats flouting state and local prerogatives and ignoring private property rights. As a consequence, the legislation was narrowly rejected by the House of Representatives, and its prospects for passage during this Congress are at best uncertain. The coastal zone program itself could easily become controversial should it be widely perceived as a federal attempt to preempt state and local authority in the control of land use.

The stated intent of the Coastal Zone Management Act is simply to have each of the 34 coastal and Great Lakes states and territories establish enforceable management plans and priorities for coastal waters and for adjacent shorelands having a "direct and significant impact" on those waters. Coastal areas of "particular concern" are to be identified, together with the uses to be permitted within them.

Further, the act specifically requires that state programs provide for "adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature." It is in their interpretation of this latter requirement that the OCZM and the energy agencies are in such strong disagreement.

In administering the coastal zone program, the OCZM has a carrot but no stick. States can participate in the program or not, as they choose. Participating states can receive three annual program development grants covering up to two-thirds of their costs. Last year funds became available for the first time, and grants ranging in size from $78,000 (for New Hampshire)

Federal Task Force Supplies Fuel for Fluorocarbon Debate

It is becoming increasingly likely that, barring unexpected new findings, fluorocarbons—the compounds used most commonly as aerosol propellants and refrigerants—will find themselves the subject of government regulation in the not-too-distant future.

The probability has been enhanced by the latest survey of available evidence, "Fluorocarbons and the Environment," performed by the task force on inadvertent modification of the atmosphere (IMOS) of the Council on Environmental Quality (CEQ) and the Federal Council on Science and Technology (FCST).

Fluorocarbons have been implicated in the destruction of stratospheric ozone, which protects the earth from the sun's ultraviolet radiation. "Thus far," says the report, "the validity of the theory [of ozone reduction] and the predicted amounts of ozone reduction have not been seriously challenged. More research is required . . . but there seems to be legitimate cause for serious concern."

The potential hazards to the stratosphere created by fluorocarbons were first noted a year ago in a paper published in *Nature* by F. S. Rowland and Mario J. Molina of the University of California at Irvine. Fluorocarbons are inert and therefore pose no threat at substratospheric levels. However, ultraviolet light eventually separates them into fluorine, chlorine, and carbon. Chlorine breaks down the unstable ozone molecules.

According to the most recent report, the findings of various groups doing research on fluorocarbons are basically in agreement. The conclusions are that past releases of fluorocarbons into the atmosphere have reduced the average levels of stratospheric ozone by perhaps 1 percent and that if no more were released the delayed effect of past releases might raise the figure to 3 percent. Each percentage of ozone reduction is calculated to increase the number of cases of nonmelanoma skin cancer in the United States by 2 percent. The yearly average is now 300,000 cases.

At a press conference on the report, FCST head Guyford Stever and CEQ head Russell Peterson emphasized that the world is in no immediate peril in view of the fact that natural daily, seasonal, and long-term ozone levels are subject to fluctuations of up to 25 percent. However, a small reduction in the long-term average could influence not only skin cancer rates, but livestock cancer, eye damage, crop damage, vitamin D synthesis, climate, terrestrial and aquatic ecosystems, environmental chemicals, and insect behavior.

The report therefore recommends that fluorocarbons be banned in aerosols if its findings are confirmed by a study on man-made impacts on the stratosphere recently inaugurated by the National Academy of Sciences, the results of which are expected next year. That panel's main charge, according to its chairman, Herbert Gutowsky of the University of Illinois, is to assist in further refinement of predictions by determing the accuracy of the various assessment and measurement procedures now in use.

Pending evaluation of the rapid accumulation of new data, the IMOS task force recommended that products containing fluorocarbons be labeled so consumers could decide whether they want to contribute to possible ozone depletion. The report strongly urges swift congressional passage of the Toxic Substances Control Act, which would fill in the gaps in the government's regulatory powers. (Versions of this act have been passed twice by both houses of Congress, but have never made it out of House-Senate conference committees.) While several agencies have the authority to restrict private use of products containing the compounds, none is in a position to regulate industrial and commercial use of fluorocarbons or their use in automobile air conditioning.

The report also calls for international cooperation in assessing the hazards of fluorocarbons, to be initiated by the State Department, inasmuch as the United States is responsible for "only" half the world's production of the substance.

The task force believes that the techniques that have been used to measure chlorine and ozone depletion, while in need of refinement, are basically valid. So they believe that only two circumstances would radically alter the picture. One would be the discovery of natural "sinks" in the stratosphere to dispose of chlorine; the other would be the discovery of huge natural deposits of chlorine that would render insignificant the contributions from humankind.

While the projections that are now generally accepted are less alarming than those originally developed by Rowland and Molina, they are unfortunate enough, as Peterson observed, to ensure continued and substantial debate on the question.

—C. H.

to $720,000 (for California) have been made to all eligible states except Indiana, which has come into the coastal management program only recently.

Once its management program is approved by OCZM, a state becomes entitled to regular annual administrative grants. Also, it then has the assurance (albeit somewhat qualified) that all new federal projects or permits affecting its coastal zone are to be consistent with the management program. This guarantee of "federal consistency" may actually turn out to be more important to some states than the grants-in-aid, especially given both the impending rush to develop outer continental shelf oil resources and the importance of coastal regions for the siting of electric power plants. By the same token, the energy agencies are aware that, because of the federal-consistency guarantee, it is all the more important that energy needs not be overlooked in the preparation of state coastal zone programs.

In May, the Washington program received the OCZM's preliminary approval, and thus became the first to achieve such advanced status. But the Maine program would probably have been fully approved except for the fact that Governor James Longley has withheld his endorsement and questioned whether the program vests too much authority in state agencies and too little in local government.

Central to the Washington program is the Washington Shoreline Management Act of 1971, under which local governments are responsible for inventorying coastal resources and preparing master plans, subject to state review and approval. The coastal zone is to be divided up into several classifications, namely "natural," "conservancy," "rural," and "urban," with the latter being the best and perhaps the only bet for energy facilities. The granting of development permits also is done by local governments, but variances from the master plan require state concurrence. All power plant siting is subject to the review of the state's Thermal Power Plant Evaluation Council.

For all its strengths, the Washington program is regarded by the OCZM as still a bit patchy. For instance, in most places, development activities occurring more than 200 feet inland from the high water mark are beyond the purview of the Shoreline Management Act and are subject only to indirect and possibly inadequate controls, such as might be exercised under the air and water quality laws.

These considerations, together with the fact that by no means all of the coastal counties have completed their master plans, go far to explain why the Washington program has not yet been given final approval. Also, the OCZM, even though convinced that the energy agencies have asked for more than the law requires, wants to see more evidence that energy needs have been fully considered.

Coastal zone management in Maine, as in Washington, was well along even before the federal law was enacted. Measures such as the Site Location of Development Act of 1970, the Mandatory Shoreland Zoning Act of 1971, and the Wetland Control and Protection Act of 1972 have given the Maine program a strong statutory base. For instance, under the site location act, all high-intensity land uses along the coast are subject to a special state permit.

In its comments on the management program for Maine's mid-coastal region, the FEA observed that, despite industry interest in establishing oil terminals and refineries in this state, no such projects had been approved (this comment preceded the recent state action approving an oil terminal and refinery at Eastport). The agency indicated that, in view of the possibility of oil and gas production on Georges Bank and of the large demand for oil in New England, the need for oil ports and other energy facilities in Maine may be especially great. And, whereas Maine coastal zone planning thus far has envisioned the development of oil ports and refineries in only a few places (such as the Portland area), the FEA would prefer that the range of choice be much wider.

In sum, with Maine, Washington, and other states now beginning to submit their coastal management programs to the OCZM for review, this fledgling agency is in something of a dilemma. On the one hand, it does not want to overstep its statutory mandate by second-guessing states on matters such as energy planning. On the other hand, it is being pushed by the FEA and other energy agencies to reject state plans that do not specifically provide for energy facility siting. In instances where the omission is clearly arbitrary, the OCZM will be on safe legal ground in complying with the agencies' demand. Absent such arbitrariness, the OCZM either will have to stretch the letter of the law (as it understands the law) and require program revisions, or it will have to reject the energy agencies' demands.

The latter course may not be easy in an Administration that seems to give an overriding importance to energy development. In February, the White House submitted to Congress an energy facility siting bill (*Science*, 28 February) that would allow the FEA administrator to reject state energy plans and rewrite them if necessary. Many in Congress regard this legislation as far too heavy-handed to be enacted. Possibly having a better chance of enactment is a bill by Senator Ernest F. Hollings (D–S.C.), who sponsored the Coastal Zone Management Act. His bill would amend the coastal zone act to create a "coastal impact fund" from which $200 million would be available annually for 5 years for state planning and management programs to cope with energy facility development and its impacts. But, because it does not call for federal review and approval of state energy plans, this measure is no substitute for the Administration's facilities siting bill.

If this latter bill is indeed stymied, the Administration may come increasingly to see the coastal zone program as a useful means of pushing the states to establish energy facility siting programs that can pass muster with the FEA.

—LUTHER J. CARTER

RECENT DEATHS

Ely Chinoy, 53; professor of sociology and anthropology, Smith College; 21 April.

Eugene A. Cogan, 46; director for research design and reporting, Human Resources Research Organization; 28 April.

Burns B. Crookston, 52; professor of education, University of Connecticut; 28 April.

John F. Dashiell, 87; professor emeritus of psychology, University of North Carolina, Chapel Hill; 3 May.

William G. Edwards, 87; professor emeritus of lumbering, Pennsylvania State University; 17 May.

Rubin H. Flocks, 69; former head, urology department, University of Iowa; 17 May.

George J. Gabuzda, 55; professor of medicine, Case Western Reserve School of Medicine; 16 May.

Harold V. Gaskill, 70; former dean of science, Iowa State University; 19 April.

Grace A. Goldsmith, 71; former dean, Tulane University School of Public Health and Tropical Medicine; 28 April.

Eugene Greuling, 60; professor of physics, Duke University; 16 April.

Mary E. Patno, 59; professor of biostatistics, University of Michigan; 11 February.

Walter S. Phillips, 69; former chairman, botany department, University of Arizona; 1 April.

Milton J. Polissar, 74; former professor of chemistry, City College of San Francisco; 25 March.

George H. Reed, 69; former chairman, chemistry department, Union College; 23 March.