

will face the formidable task of directing an antipollution effort which is still a long way from success. His own past record has its bright spots, but no one holds that it has been crowned with glory. Before being named commissioner, Quigley was an assistant secretary of HEW, responsible for the department's international affairs and civil rights activities as well as for its air and water pollution programs. An ex-congressman from Pennsylvania, Quigley was named assistant secretary in 1961 and served in that capacity under HEW secretaries Ribicoff, Celebrezze, and Gardner. All but about 15 of the 37 abatement conferences called in the history of the federal water pollution program were initiated while Quigley, under the secretary, was responsible for the program. The pace set during

his tenure was by no means furious, however, nor did it tax the capacity of Stein's enforcement office to its limit.

Some strategically placed observers feel that Stein's office was never really given a green light to initiate abatement actions. On the other hand, the failure to press harder is attributed perhaps not so much to Quigley as to other factors. The secretaries of HEW, beset with multiple duties, have been able to devote comparatively little time to the pollution control program. Quigley's own time has been divided between pollution control and other matters. Also, having the pollution control vested in the Public Health Service is considered by many, in Congress and elsewhere, to have retarded effective enforcement. Traditionally, PHS has relied heavily upon close and harmoni-

ous relationships with state health officials, who not infrequently have been accused of tolerating polluters. Moreover, the pollution control program is said to have been often under heavy political pressure from members of Congress, governors, and others interested in seeing it go slow.

Altogether, the circumstances under which the antipollution program can now proceed seem a good deal more favorable than those which existed in the past; this assumes, of course, that FWPCA will organize itself quickly and not become ensnared in bureaucratic feuding. The political pressures now seem increasingly on the side of the antipollution—a fact which should be reflected in an increasingly vigorous program of abatement.

—LUTHER J. CARTER

Fish Flour: FDA Approval Likely on Improved Product

Fish flour, the fish protein concentrate which caught the administration's attention in 1962 as a promising answer to protein deficiencies in underdeveloped nations, is appearing on Capitol Hill legislative menus again this spring.

Since January 1962, when a domestic manufacturer's whole fish product received the label "filthy" from the Food and Drug Administration (FDA), the Bureau of Commercial Fisheries, in the Interior Department, has been actively conducting research on the product. Now it believes it has results that can successfully challenge FDA's original disapproval. An application was filed with FDA on 2 March, which officially gives the agency 180 days to hand down a decision on the product.

While awaiting the FDA decision, congressmen are introducing bills to provide for further research on fish protein concentrate. The procession of current bills on fish flour began last fall when senators E. L. Bartlett (D-Alaska) and Warren G. Magnuson (D-Wash.) introduced S. 2720 to authorize \$5

million for construction of up to five experimental plants for producing fish protein concentrate; the bill was referred then to the Committee on Commerce. The provisions of the bill would authorize the Secretary of Interior to undertake feasibility studies of large-scale commercial production of the concentrate and to construct and maintain the experimental plants. Perhaps encouraged by reports that an FDA ruling favorable to the Interior Department would clear the way for commercial development of the product, the Commerce committee scheduled two hearings on the bill. The first was held 25 April in Aberdeen, Washington; the other is set for 16 and 17 May in Washington, D.C.

The odorless, colorless fish protein concentrate, made from whole fish and designed to be a protein-packed food additive, has long been enmeshed in legal and administrative difficulties. After FDA's 1962 ruling on a fish protein concentrate made of whole fish—guts, gills, and all—produced by the Vio-

Bin Corporation of Monticello, Illinois, a National Academy of Sciences study was begun at the request of the Interior Department, whose Bureau of Commercial Fisheries also saw fish flour as a new and sizable source of income for the troubled American fishing industry. The study concluded that fish flour did not deserve the FDA "filthy" label but noted that more research on fish flour was needed, to control the quality and the solvent residues from the production process.

Given that pale-green go sign, the Bureau undertook an extensive research program at its laboratories at College Park, Maryland. Under the direction of E. R. Pariser, the research and testing was done at the laboratories until preliminary results indicated that a high-protein concentrate could be made from whole fish and still be pure. One of the low scoring points of the early fish flour made from whole fish was that such a product certainly couldn't be pure if all of the fish innards were used. However, the process of cleaning the fish would be too costly a matter to be feasible. Now the Bureau is producing a fish protein concentrate that has been tested as pure.

Secretary of Interior Stewart Udall instructed Donald L. McKernan, director of the Bureau of Commercial Fisheries, to accelerate the work at a pilot processing plant built in nearby Beltsville, Maryland. The plant is designed, Pariser says, "to make reasonable quan-

ties in the safest, best and easiest way." The finished product probably will cost about 25 cents a pound to produce in a commercial plant. The Bureau product is made from Atlantic hake shipped from Rhode Island and is approximately 80 percent protein; the remaining 20 percent consists largely of minerals which are considered beneficial. Marine biologists estimate that the unharvested fish in U.S. coastal waters alone, if converted into fish flour, would supply enough animal protein to supplement the deficient diets of about 1 billion people for 300 days at a cost of less than half a cent per person per day.

A sustaining Academy committee acts to advise the Bureau on its work. The 11-member committee includes representatives from the various disciplines and is chaired by Bernard Schweigert, chairman of the department of Food Science at Michigan State University. According to Pariser, the committee advises the Bureau researchers on nutritional questions as well as biochemical and technical ones.

Secretary Udall, in his petition to FDA, noted that the results of the research during the past 3 years have been reviewed by the Marine Protein Resource Development Committee of NAS. The Academy's report to Udall on 1 December 1965 said, "in the Committee's judgment, fish protein concentrate, from whole hake, as prepared by the Bureau's process, is safe, nutritious, wholesome, and fit for human consumption."

When the President and other officials in the administration single out for public notice a particular project from among the multitude of government programs, the likelihood of action being taken is strong. President Johnson, in his speech of 10 February on the Food-for-Peace program, expressed concern about the problem of food for the world's growing population. The problem is not simply that of starvation but that of malnutrition, he said, and continued, "A promising start has already been made in isolating protein sources from fish, which are in plentiful supply throughout the world." Secretary of State Dean Rusk similarly referred to the protein problem soon afterward in testifying on the Food for Freedom Act.

Perhaps one of the most helpful developments for the proponents of fish flour is the congressional support that the program is receiving. Recognizing the political advantages of pushing the

project, congressmen are rallying to be among those whose districts will reap gains from the production of fish flour. When Senator Bartlett introduced his (and Senator Magnuson's) bill, he said, "In the last 2 years, the United States has taken the lead in developing on a small scale an acceptable fish protein concentrate. The next step is to prove its economic feasibility." Magnuson sent a letter to Health, Education, and Welfare Secretary John W. Gardner urging him to "expedite FDA approval."

Bills identical or similar to that of Bartlett and Magnuson have been introduced on the floor of the House of Representatives. They have been referred to the Committee on Merchant Marine and Fisheries, which probably will wait for any Senate action before conducting its own hearings. Congressman Don H. Clauson (R-Calif.) gave a hint of some of the pork to be found in the sea when he recommended that at least one of the proposed plants be located in his part of the state, which, he said, contains "more than half of all of California's commercial fishing vessels." Congressman Harris B. McDowell, Jr., (D-Del.) introduced a bill in the House on 30 March which is even more specific than the others. The bill is a slightly revised version of the Senate measure; in it he specifies that one of the experimental plants (his legislation calls for three) "shall be located in Lewes, Delaware."

In the rush to obtain FDA approval for the Interior Department's marine protein concentrate, the question remains: What happens to the VioBin Corporation, which developed a fish protein product well over 15 years ago? In a Senate speech on 14 March Senator Paul Douglas (D-Ill.) lamented that, in applying for approval of Interior's product, one of his constituents, VioBin president Ezra Levin, is being forgotten. Said Douglas, "It may well be that Mr. Levin's product is, in fact, superior to the Bureau of Fisheries' high protein concentrate because Mr. Levin's process is less expensive and uses a wider variety of fish. This is not a field which should be made a Government monopoly, although it may well be that Government production should continue for some time until the product is well established. But there is no reason why Mr. Levin's plant and process should be barred from the field. There is room for both."

Among persons involved with the

fish flour affair, there is a belief that FDA will approve the Interior Department's product before very long. FDA has asked the Bureau of Commercial Fisheries for more data on the process, which fact is taken to mean that the matter has a high priority at FDA.

—JANE AYRES

William H. Pierce Named To Head States' "Compact for Education"

William H. Pierce, superintendent of schools in Cincinnati, Ohio, will be the first executive director of the Education Commission of the States, the working body of the recently established Compact for Education (*Science*, 3 December 1965). Pierce was selected by a subcommittee of the commission's Interim Steering Committee. Chairman of the subcommittee was Governor Robert E. McNair of South Carolina; other members were Rhode Island Governor John Chafee; Fred Harrington, president of the University of Wisconsin; James E. Allen, Jr., Commissioner of Education for the State of New York; and Richard P. Gousha, State Superintendent of Public Instruction for Delaware.

The interstate Compact has evolved from an idea expressed by James B. Conant, former president of Harvard, in his book *Shaping Educational Policy*. Conant urged states to work together and exchange ideas in order to negate the charge that states neglect their responsibilities in education. Former North Carolina Governor Terry Sanford, with grants from the Ford Foundation and the Carnegie Corporation, conducted a study at Duke University on ways to strengthen the role of the states. Final preparations to establish the Compact organization were undertaken by the steering committee in meetings last December. The Compact for Education became a legal entity after ten states had ratified the plan. The Compact now has 22 member states, and more states are expected to join by 13 June, when the commission holds its first official meeting.

Temporary quarters of the commission will be moved on 1 July from Duke to Cincinnati, where Pierce will continue his job as superintendent until his replacement can be named. Pierce, 53, has been with the Cincinnati school system since 1939 and has been superintendent since 1959.