A new state law authorizes the Department to limit the number of commercial fishing licenses issued; fix catch quotas; prescribe when, where, and how catches may be made; and recover up to 5 percent of the value of the catch. Moreover, several years ago the Department stood tradition on its head by deciding that development of the sports fishery, rather than the commercial fishery, was to be its primary task. This new emphasis is reflected in a variety of ways. For example, to protect the young coho, severe restrictions have been placed on the setting of gill nets. And, for the moment, commercial fishing for coho is not allowed.

Clearly, the Department is operating on a level of sophistication beyond that of the fish and game agencies in most states. MacMullan, its director since 1964, is a trained biologist who has given greatly increased emphasis to research and development. The Department's fishery research stations and laboratories, which have a reputation for scientific competence, are playing an important part in the new coho program.

The stocking of coho was preceded by a thorough review of available information about the characteristics of this salmon and its adaptability to freshwater environments. The program is nevertheless in many respects a venture in the dark, involving as it does the introduction of an alien species into a huge inland sea of which the physical dynamics and biology are but dimly understood.

This venture is taking place, however, when Great Lakes research is in vogue. For example, scientists from Big Ten universities and elsewhere have been exploring, with the support of the Department of the Interior's Office of Water Resources Research, the possibility of developing water-quantity and water-quality models of Lake Michigan and the other Great Lakes.

But while such investigations may not produce significant results for years, the pressing nature of Lake Michigan's fishery problems are evident, spectacularly so when a massive and revolting die-off of alewives occurs. Hence, the Department of Conservation must try to cope by manipulating nature in the raw, and in the large.

—LUTHER J. CARTER

Protein Supplements: AID Focuses on Background Problems

In many parts of the world, diet deficiency, rather than shortage of food, is a severe cause of malnutrition. When the United States responded to this situation by supporting extensive research in food fortification, it found itself involved in a whole array of problems, beyond simply developing a supplement.

Universities such as M.I.T., Harvard, Cornell, and Purdue have been working for some time, under government contract, on development of high-protein food. But allied problems, such as difficulties of marketing and distribution, rejection by intended consumers, and resistance from competing food companies have been pushed into the background.

Now, with the growing realization that development of low-cost, high-protein foods is of little use if people don't eat them, a more thorough evaluation of a whole complex of problems is being attempted.

An unusual program developed by the Agency for International Development (AID) does just that, and involves private industry as well. In collaboration with the Agriculture Department, AID encourages private companies to investigate the possibilities of developing new foods and marketing them where protein deficiency exists. The plan incorporates the use of sophisticated marketing-research techniques for determining the food preferences in underdeveloped economies.

The experimental 3-year AID plan provides $60,000 each to private companies to study foreign markets and distribution systems, to develop food prototypes, and to make investments abroad. Nine federal grants have been awarded thus far, to Monsanto, Swift, and General Foods, among others, to develop and market such products as soybean beverages and cottonseed concentrates.*

After a year, the AID program continues to look promising on paper, but the individual projects face a number of major problems. A typical case is that of the Pillsbury Company, which was awarded a grant to develop a new protein beverage for El Salvador; Pillsbury was the first company to receive an AID grant, and its project is the most advanced. Planning began some 15 months ago, when Pillsbury signed the government contract for a test marketing development.

Besides the $60,000 provided by the government, Pillsbury has invested about $300,000 of its own money in product development, and a powdered beverage called "Frescavida" is ready for marketing. The company expects that its initial investment will allow it to develop other products as well. Pillsbury selected wheat germ as the protein concentrate for the beverage because it was readily available.

El Salvador is an agricultural nation with a dense population and severe problems of malnutrition. Because consumption of soft drinks is quite high there, preliminary research indicated a marketing potential for Frescavida. Howard E. Bauman, Pillsbury's corporate research director, told *Science* that the company anticipates a profitable future for the product, but Pillsbury faces some problems.

It will be necessary to create an effective distribution system, with emphasis placed on reaching a large number of people at relatively low cost. Initially, Frescavida will be marketed

* For the calendar year 1967, the Agency for International Development signed contracts with the following firms: Pillsbury, a protein beverage called "Frescavida" for El Salvador; Monsanto, a soy beverage called "Puma" for Brazil and Guyana; Swift, a soy-milk beverage for Brazil; Krauss Milling, a fortified corn product for Brazil; International Milling, a fortified wheat product for Tunisia. In 1968, the following contracts were signed: Dorr-Oliver, a cottonseed protein product for India; Swift, a protein beverage for India; General Mills, a soy and cottonseed product for Pakistan; and California Packing, a protein beverage for East Africa. There are a number of projects still pending.

in El Salvador's urban areas, but a strong effort also will be made to distribute the product in the rural areas, where the incidence of malnutrition is high. Plans have been made to manufacture the product in El Salvador. Pillsbury also will attempt to avoid being accused of commercial imperialism and already has a partnership with a local firm for a flour mill; this relationship may be extended.

As effective food fortification programs are established, the headaches of contracting companies are no greater than those suffered by government, because it is assumed that added costs resulting from fortification could limit sales. If neither consumer nor company is willing to supply the added cost, then a mass market is not likely to be achieved. Martin Forman, AID Director of Nutrition and Child Feeding Services, recommended that perhaps the costs for mass distribution could best be absorbed by the receiving foreign government.

With government interest in food fortification programs increasing, it has been suggested that all such programs be centrally coordinated. Almost 2 years ago, Secretary of Agriculture Orville Freeman took a step in that direction when he appointed biochemist Aaron Altschul, of the Agriculture Department's Seed Pioneering Research Laboratory in New Orleans, as his special assistant and adviser on food science and new protein food programs. Altschul has an office in the Department of Agriculture and answers to Secretary Freeman, but he receives his salary from AID. To an outsider, despite Altschul's liaison position, the relation between AID and the Agriculture Department is still not well defined. As one AID official put it, there are too many agencies involved in the problems of malnutrition, too much overlapping, and too little real effective action. As an example, he referred to the Food for Freedom program, which is coordinated by AID and the Agriculture Department. AID's primary goal in the program is to ship food abroad for consumption by the needy, whereas the Agriculture Department's primary goal seems to be domestic: namely, to manage farm commodities for the benefit of the American farmer. The goals of the two agencies often conflict.

New fortified food products are being created through basic research. Nevertheless, how to get these products to the people who need them may prove at least as difficult a task.

—MARTI MUELLER

Sakharov: Soviet Physicist Appeals for Bold Initiatives

In a 10,000-word essay, circulated and discussed in Soviet scientific-intellectual circles, a nuclear physicist who helped develop the Soviet H-bomb has urged "peaceful coexistence and intellectual freedom" while the two main world powers use the "scientific method . . . deep analysis of facts . . . unfearing open discussion and conclusions" to deal with the "great possibilities and dangers linked with the scientific-technical revolution."

In his belief that the method of science can avert thermonuclear war, famine in the poor countries, and environmental pollution in the advanced ones, Academician Andrei Dmitrievich Sakharov joins many other eminent scientists in both the United States and the U.S.S.R. who have been seeking this objective outside official channels. But Sakharov goes farther than any other influential spokesman in either country in advancing an explicit and detailed proposal for rapprochement and cooperation between the two countries and in taking a bold look at the "mass myths that put entire peoples and continents under the power of cruel and treacherous demagogues." The statement is without precedent from a man of his rank in Soviet life.

The gist of Sakharov's essay was first reported by the New York *Time's* Moscow correspondent, Raymond Anderson, on 12 July. Anderson later was able to send a complete copy to the *Times,* which translated and printed the essay in full, using three pages in the 22 July edition.

While reflecting a deep commitment to Marxism and socialism in the classic sense, Sakharov says that "both capitalism and socialism are capable of long-term development, borrowing positive elements from each other and actually coming closer to each other in a number of essential aspects." To accelerate what he calls an "inevitable convergence," Sakharov urges the two world powers to disarm and join together to avert world catastrophe by applying one-fifth of their national incomes to development of the poorer half of the world. To this end, both nations must abandon "extremist ideologies that reject all possibility of rapprochement, discussion and compromise." Both must make "significant changes in their foreign and domestic policies."

The United States, Sakharov says, must accept a "serious decline in the United States rate of economic growth" in order to support "worldwide efforts to change the level of living of billions of people," and must be "willing to do this . . . for the sake of preserving civilization and mankind on our planet." White citizens of the United States must accept "minimum sacrifices to eliminate the unequal economic and cultural position of the country's black citizens."

Sakharov concentrates much of his discussion on changes in Soviet society that he believes necessary to consolidate the achievements of socialism. The chief of these is development toward "intellectual freedom . . . essential for human society" and the "key to a progressive restructuring of the system of government in the interests of mankind."

At a time of grave official Soviet concern over liberalizing trends in Czechoslovakia, Sakharov's eloquent plea for intellectual freedom may reflect a rising attitude among Soviet professionals. Sakharov says that the Czechoslovaks understand the essential nature of intellectual freedom. "We should support their bold initiative, which is so valuable for the future of socialism and all mankind. That sup-