

Fish protein concentrate has been discussed at length in the scientific journals for a long time, but it is only in the last year or two that the economies of producing fish protein concentrate on a commercial basis have begun to firm up. I should like to indicate what these economic prospects are by repeating a calculation which I think is significant. Ten grams of this concentrate—that is a very small quantity, two-thirds of a cent's worth—will supply one person's daily requirement for protein. An individual's requirement for a day can be supplemented with fish protein for less than one cent. By comparison it would take 14 cents worth of pork chops, 11 cents worth of steak, $6\frac{1}{2}$ cents worth of whole milk, 6 cents worth of eggs or $3\frac{1}{2}$ cents worth of dry skim milk to supply the same amount of protein to the average human being.

It looks as if fish protein concentrate will be a relatively cheap source of protein. As I said before, it is a high concentrate product which is storable for long periods of time at any temperature and may be transported very cheaply. This substance looks like a white powder. It can be mixed with foods in very small quantities. It can be mixed into a variety of foods. It is normally tasteless. The food which people consume can obviously be enhanced considerably in respect of its protein content as a result of a very small addition of this valuable product. So the construction of a big plant in Canada at Canso, Nova Scotia, will mean that shortly production will begin on 20 million pounds of this concentrate per year. This is certainly something which Canadians should welcome.

This will not be the only large scale plant in the world. I gather that two others are already under construction in the United States and there is considerable interest in other parts of the world. In other words, it looks as if we will not be alone in trying to market this new product in its early years. Others have also seen the economies involved here and are trying to convince the breakfast food people, the soft drink people and other large purveyors of food and foodstuffs on this continent that fish protein concentrate is a very useful and a very economical product. I welcome the support of those great industries in getting F.P.C. launched.

Perhaps I could draw an analogy here. Over 100 years ago it was found that it was possible to produce paper from wood by grinding it up, by pulping it and using the wood fibres to make paper and other pulp and paper products. At one time a tree was

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used only to make large planks. The rest of the tree was rejected, thrown away. Then more was used not only for planks but for sawn lumber and pulp. A much greater proportion of the tree became useable because the tops, branches, edgings, and so on could be used for pulp. As a result we have the most economic wood product plants in the world including, side by side, large sawmills and large pulp and paper mills. The straight sections of the tree are now used to make the prime products such as sawn lumber, for example, and most of the rest of it is used to make pulp and other useful products.

The situation in respect of the whole fish is akin to that of the tree. We can take the choice part of the fish, cut off the most desirable portions, sell them, for instance, as fillets, and the rest of the fish can be ground up and converted into fish protein concentrate. This is why our new F.P.C. plant in Nova Scotia is located right beside a large fish filleting operation. Such a plant can be located beside any type of fish plant such as a herring reduction mill. It can use a very wide variety of fish species. It does not discriminate in the same way as plants do which concentrate on the fish fillets that are so attractive to the palates of the people of North America. As a result of this process, equivalent to the pulping process, we will be able to draw on a much wider range of species and use up more of the fish in the oceans. We will be able to supplement the income of our fish filleting plants.

This will be very good in the long run. I do not suggest that it will tide the industry over its short term difficulties. We will see more of these plants as the marketing of fish protein concentrates gets under way. Here is a long range probability. It is a real probability in respect of the over-all improvement in the fishing industries of both our coasts. It can be a very helpful development indeed.

Now I should like to say a few words about the longer term developments in the industry and the longer term prospects. I shall turn specifically to the problem with regard to the groundfish industry on the Atlantic coast. It seems to me when we look at the expenditures of the federal Department of Fisheries, for example, which currently are in the order of \$50 million a year, we must look not only at the commercial side of the industry, commercial in the sense of fish caught for consumption and marketing through normal commercial channels, but also at the sports fishery as well, the recreational side. I believe that more of the higher value fish will be