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"A FUTURE FOR NEW ZEALAND FISHERIES"

by

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The fishing industry in this country offers the most outstanding challenge to the Animal Production Scientists of New Zealand, today. Cut off from overseas, New Zealand has new demands to make of its fisheries. An under-developed industry, lacking organisation for its new tasks, suffering from poor public and internal relationships, has a real part to play in the economic structure of this country. The solution of new problems and old has become imperative and calls for extensive technical assistance inquiring far beyond the old fundamental problems of capture and conservation.

The present fisheries has been developed gradually. We may see the origins of its problems in the littoral topography of the country, the immaturity of the industry, the long-standing habits of the people, and so on; but apology makes no solution for the future. An attack must be made on the full-range of the problems of the industry. The technical difficulties of capture, distribution, consumption, are to be recognised as basic to the atmosphere which adversely colors the background. The difficulties must be tackled individually, and settled in the light of the needs of the community and the future of the industry.

There is no room for argument on the nutritional basis, or the need for the inclusion of fish in the national dietary. A healthy industry can supply proteins, fats, essential salts, trace elements, vitamins in quantity at low cost. Paralleling the service to the community in this direction, other national requirements can be satisfied. Non-edible and coarse fish, fish-wastes, are assets in the soundly organised industry and find absorption in the supply of fish-meal and fish-oils for stock and poultry feed and of fertilisers. Fish-oils, in particular, have developed into a valuable commodity utilised in many industries such as the manufacture of insecticides, printing inks, paints, water-proofing, linoleum, and even the treating of leather and the quenching of steel. The lists of the industrial uses of fish-oils is steadily and rapidly growing, and the supply of fish-oils has become a valuable subsidiary to the industry.

This is the broad aspect of the role of fisheries in the national economic structure. This is the role we expect the New Zealand Fisheries Industry to fill.

War has accentuated the value of intensive animal production in war-time. Penning and controlled diet improve condition and maintain growth under this system. Fish-meal and fish-oils have been abundantly demonstrated as cheap, beneficial adjuncts to animal diets. Included in amounts up to 50% in poultry diets, these alleviate patent deficiency conditions, accelerate growth, lower mortality, increase egg-production and the hatchability of eggs. The Canadian poultry industry alone absorbs 280,000 gallons of fish-oils each year. More is utilised for the acceleration of growth in calves and hogs, the improvement of pelts in fur-bearing animals, and so on. Blending of oils, off-sets seasonal variation in the vitamin-content of the oil from a single species; and recently the oils have found use as a vehicle for synthetic vitamins. These oils, and the 200,000,000 lbs. of oils used annually in the United States, come mainly from wastes - offal and trimmings.

It is improbable that the demand for these by-products can support a separate fishery. If inexpensive products are to be developed, they must come as by-products of the major fishery. The problem of the production of fish-meal, fish-

oils, fertilizers, is linked intimately with the problem of table-supply. Statistically, New Zealanders are not heavy fish eaters, but actually the demand for fish is high. Consumption is, however, limited. The consumer demand is controlled by distinct preferences and only by the satisfaction of the consumer's requirements can the present consumer antagonism to the native product be abolished, and the fishery advance.

The preferential nature of the consumer demand is clearly indicated in the heavy import of canned fish (4,626,482 lbs.) in the pre-war normal trade period. Preference is an expression of palate. The ancestral New Zealand palate preferred rich, high-flavoured fish. The "fish and chip" habit maintains this palate in New Zealand today. The character of good fish and poor is cloaked with a wrapper of batter soaked with fats flavoured with an accumulation of fish-oils. This method of preparation hinders the development of a palate for the native fish. At the same time, it expresses the national preference in regard to fish as a food.

Fat-content is recognised by the palate as the concomitant of flavour, and food-value. The value of a fish is measured by the palate. The demand for a species grows or falls, as the palate dictates. If there is no opportunity for an expression of preference, as occurs when supply is short, customer antagonism develops and demand declines. The limitation imposed on the market in this way persists.

The work of Dorothy Johnson, Malcolm Carter, Marion Cunningham (Trans. R.S.N.Z. 52-59) has shown that there is marked seasonal variation in the fat-content and nutritive value of New Zealand fish. Terekahi range in the former respect from 3.05% to 10.3% annually; blue cod, 0.9% to 6.13%; kingfish, 1.0% to 8.0%; groper, 1.9% to 6.16%. No regard is given to this seasonability in the marketing of fish. The take and the price continue at as uniform a level as possible throughout the year. Species may be preserved during the spawning season, which coincides with period of lowest fat-content; but this preservation is for purposes of conservation and not related to palatability. The early catch coming to the market is of lean, spent fish - often with a fat-content of only 1%. The flavour, dead; the nutritive value, halved; but the price, the same. There is no cause to wonder why there exists not merely indifference but strong antagonism to many species of native fish.

This lack of attention to seasonal variation in palatability and nutritive value is a marked defect in New Zealand fishing and marketing policy. Elsewhere, there is generally a natural control imposed by the habits of species or the inclemency of certain seasons for fishing. Such factors do not operate here, and a selective fishery has further been hindered in development by persisting limited supply artificially maintained by restrictions which have operated to hinder expansion.

The present times have opened the way to vast changes in the fishing industry. The country has the opportunity to create a fish-processing industry to satisfy an already established demand. Developed without distortion and with full regard to national, not sectional, requirements, the outcome will be the formation of a genuine national asset.

Decentralization has been a well-recognised deterrent to the past development of subsidiary fishery industries. Landings of small quantities of fish at innumerable scattered points has blocked completely the utilisation of fish-wastes.

Processing, in any form, necessitates an efficient fishery capable of taking the sea in nearly all weathers. Capture and initial handling costs are lowered. Landings are concentrated to main centres enabling the development of

fishery subsidiaries. Offal and trimmings become assets. Concentration of landings to a few main centres permits the development of oil-extraction plants of a capacity to fill the requirements of this country.

The success of the major industry depends on its ability to get and keep its market. The New Zealand market is now wide open to native canned fish. The consumer attitude, is favourable. The preference has been clearly expressed. The success of the recently established fish-canneries depends on their ability to fill the present market requirements. Economic protection today will not protect the industry for the future, if the pack is poor or variable. The packing of fish 'in season' becomes a major necessity. The capture and pack of lean fish can destroy confidence in the products of these factories, arouse consumer antagonism, diminish the market and defeat the promise of the future.

Processing, properly developed, lays by great quantities of fish in season. It provides high nutritive value food for out of season consumption and enlarges the market for native fishes to include the interior of the country. Heavy landings of fish in season means greatly augmented quantities of high oil content waste. A twelve-month supply of fish is taken at the time of heaviest oil-content. This fact has not been taken into account in the estimation of the quantities of fish-oils available from our own resources. The production of by-products from a well-organised fishery can be quite adequate for this country's needs.

The question of lay-over in off-seasons is always raised when the development of concentrated fishing is recommended. This need not embarrass a New Zealand fleet; there is ample opening for out-of-season efficient fishing for the supply of the growing large centres with selected fish. These markets are by general admission under-developed, and capable of absorbing at least 20% more than the present landings.

The present fishery industry is in a serious position. War conditions serve only to emphasise the many defects which must be overcome before the industry can extend to fill its proper role in the national economy. The opportunity to develop a large processing industry amounts to practical revolution in the present state of affairs and opens the way for extensive developments of valuable fishery by-products. The production of these is a national necessity.

Success in total achievement will be measured in the extent to which the industry caters to the requirements of the market, and standardises its products in terms of the market's requirements. The consumer seeks a standard product in fresh and in processed fish. In its lack of standards, the fishing industry is practically unique today, and this defect threatens the industry as insistently as do the more patent problems of capture, handling, distribution, marketing and cooking. Right along the line from bait to belly, there is a sequence of problems each calling for intensive research; but no matter how healthy the production of fish, the industry cannot carry on better than a casual existence unless it satisfies the customer with a standard product.

Until the housewife knows that the fish she buys is not just money's worth in terms of bulk, but is value in all other respects, that each fish, oyster, mussel, lobster and so on is as good as the next at the time of year it is marketed, that each can of fish is as good as the best that can be produced, until the industry approaches the customer in this way, it will suffer under-development and its subsidiaries will be restricted.

1. M. C. ARMSTRONG: Has any comprehensive survey of fish supply in the sea ever been made?

Not for New Zealand waters. The knowledge of our marine fisheries is very incomplete and the need for undertaking such work is greatly emphasised by present conditions. Elsewhere, in England, Canada, the United States, Russia, and so on, very extensive studies have been made, such that the fisheries industries are an active participant in the war economy of those countries. Australia is rapidly developing its fishery industry; but South Africa and New Zealand lag far behind in this respect, a fact to be correlated with the lack of support for investigations in the past.

2. M. E. MARPLES: Could we replace codliver oil by New Zealand fish oils for supplying the vitamin need of stock?

REPLY BY MR. R.E.R. GRIMMETT: Kingfish livers have been exported frozen to Australia recently for extraction of vitamin containing oil. Analysis by Dr. Shorland gave 8% oil with 7.5% vitamin content, equalling 200 times the content of codliver oil. This bears testimony to the lack of organisation of industry when there is a shortage of medicinal vitamin oil in New Zealand.

3. W. H. PATON: Is there much spread during the seasons of palatability optima for various species of fish?

My personal experience is that the palatability optima of New Zealand fish is of relatively short duration. The terakihi optimum is less than three months in the year, but it is a palatable fish for most of the winter months. A rough generalisation is that inshore species - the backbone of this industry - are suitable for the table during the winter months; open water fish, fall and winter; deep-sea fish, winter, spring and summer. Such a generalisation is by no means absolute for all species and this is a matter basic to the development of a canning industry and urgently requiring full investigation.

4. PROF. K. A. WODZICKI: What is the eel-oil production as compared with sea-fish production?

Eel-oil production is generally low overseas, where the market for flesh is good. Small quantities have been extracted for medicinal purposes but most of the eel-oil has been used for dressing leather. In New Zealand where demand for the flesh is low, there are excellent opportunities for the development of eel-oil and eel-skins as commercial products.
