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Fish Inspection in Canada

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ABOUT FIFTY YEARS AGO the Government of Canada set sail into the uncharted sea of fish inspection. During periods of temporary doldrums, succeeding gen-

erations of fishery administrators frequently have wondered if the ship should have left port. Such periods, however, are fleeting, since most people in fish inspection work are dedicated optimists. They must be in order to survive.

Initially, fish inspection in Canada was restricted to pickled fish, such as herring and mackerel, on the Atlantic coast. There was no uniformity in the cure or packing of this valuable export item with the result that Canadian shippers had difficulty in competing successfully in traditional markets with those countries where standardization of the product was in effect. Experts in the manufacture of pickled fish were brought to Canada from Britain, who, after a period of study, recommended standards for the product and for the barrels in which it was packed. These standards were promulgated by law. Of interest is the fact that the administrators of that time quickly found that education and demonstration at the primary producer level were required to make the grading program successful. It was as true fifty years ago as it is today that fish inspection cannot be made to work by the simple passage of laws and their enforcement by a staff of officers.

As the years passed other fisheries products were added to the inspection legislation. In most instances it appears that the grades and standards which were established for each new commodity were designed to assist in orderly export marketing. Canada, as you may know, exports over two-thirds of her fisheries products.

The first canned fish to be placed under compulsory inspection was Pacific salmon, about twenty-five years ago. Over the years, with some minor modifications and improved techniques, canned salmon inspection has proved most successful, both in the view of the consumer and of the industry.

More recently, fresh and frozen lobster meat were added to the list of fishery products under systematic inspection controls. Lobster forms one of the most valuable fisheries of the Atlantic coast. Cooked lobster meat is particularly subject at the processing level to contamination by bacteria of public health significance. Strict bacteriological standards are maintained in the processing plants and daily samples of the product are taken to ensure that it is of good quality and that suitable levels of sanitation exist.

Fish inspection in Canada was given considerable impetus during World War II and the years immediately following, because of the certification required by the British Ministry of Food for all purchases of fish products, including pickled and salted fish, frozen fish, and canned fish. Similar certification was required for fish purchased by UNRRA. During the years 1945 to 1949 there was a great increase in the numbers of fisheries officers whose primary task was that of inspection. In addition, union of Newfoundland with Canada in 1949 further augmented the inspection service with a substantial number of highly experienced, well-trained inspectors from that historic old island.

A successful field inspector of fish products must be highly skilled in the art of subjective judgment. The limitations of time and distance do not permit the maximum utilization of facilities which may be available for the objective assessment of the quality of the product. However, an inspection service must be supported by adequate numbers of competent chemists, bacteriologists and technicians with suitable laboratory facilities for standards development, sanitary surveys, staff training and other routine functions. The laboratory service may also act as a referee in the event of appeals by industry against the decision of an inspector and in certain marketing disputes.

In the early stages of growing inspection demands during and immediately following the last war, standards development and the establishment of objective criteria was a temporary function of the Fisheries Research Board of Canada or of scientists seconded from that service, for certain specific tasks. Gradually, however, the Canadian Department of Fisheries developed its own laboratory staffs and facilities. Today, it may fairly be said that the tremendously valuable work being done by the Fisheries Research Board in the field of pure research on fish spoilage and allied problems provides much of the lifeblood necessary to the Inspection Service laboratories in the field of application.

Before proceeding to a review of recent developments in fish inspection, I should like to end this short summary of the history of the Inspection Service by saying that, during the current fiscal year of 1958-59, the Inspection Service of the Department of Fisheries is made up of 210 inspectors and administrators at some 125 inspection offices and headquarters across Canada, together with 62 chemists, bacteriologists and technicians operating out of eight permanent laboratories, three land based mobile laboratories and one seventy-foot inspection vessel with complete laboratory facilities. The total current budget for this Service is \$1,450,000.

I should like now to deal with one aspect of our work which, for the past three or four years, has engaged our closest attention and most concentrated effort. I refer to the development of systematic inspection procedures for whole and processed fresh and frozen fish and processing plants. The rapid developments during the past fifteen years in the technology of food production and processing and quality control procedures have not been shared by some branches of the fishing industry. This is particularly true insofar as it relates to the quality of the raw material landed by the fisherman and to the subsequent processing of that raw material into a form suitable for merchandising to the consumer. The phenomenal growth during the past decade in Canada and the United States of mass merchandising methods through supermarkets has created a significant new pattern of consumer demands and preferences. The modern housewife has been trained to expect to find attractively packaged, easily prepared foods of consistently good quality displayed for her selection. It is, I think, this last requirement of "consistently good quality" which often places fresh and frozen packaged fish in disfavor, a fact which is partially reflected in the low per capita fish consumption of both Canada and the United States. It has been said that North Americans are basically meat eaters, but I do not hold completely with this view. I prefer to believe that the statement is incomplete and that it might be closer to the truth if a few words were added and one was to say: "North Americans are primarily meat eaters because they are not able always to purchase fish and shellfish of consistently good quality."

Recognizing the changing pattern of consumer buying habits and the decline in the national consumption of fish, the fishing industry of Canada asked the Department of Fisheries several years ago to investigate the possibility of developing a systematic inspection program for fresh and frozen fish.

In order to assess the extent of the problem, the Department, with the cooperation of the Fisheries Research Board, conducted a physical survey in late 1953 and early 1954 of all fish processing plants in Canada including cold storage facilities. Over six hundred plants were surveyed from coast to coast by teams of scientists and inspectors over a three month period. No attempt was made at that time to assess the quality of the product itself. At the conclusion

of the survey the teams, totalling over thirty men, were brought to Ottawa to make an overall assessment of the survey data. Sub-committees were then formed and charged with the task of developing minimum standards for processing plants under the headings of construction, equipment, sanitation and operation. A fifth sub-committee was given the complex task of defining minimum quality standards for fresh and frozen fish and for the care and handling of the product.

The first draft standards had, perhaps, an idealistic tinge, but subsequent discussions of the proposed standards with industry very quickly evolved practical requirements which did not sacrifice high standards of quality and sanitation.

Once the standards were formulated the next and by far the most difficult task was the training of field inspectors. Training in plant assessment and inspection, while complex, was relatively straight-forward. The development of uniform levels of subjectivity in assessing the quality of fresh fish as landed from the vessels was, however, an entirely different matter. Unfortunately, there was an almost complete absence of objective measurements of quality which could be applied equally to all species of fish. On the other hand, work done by Castell and his associates at the Fisheries Research Board Station in Halifax had indicated that trimethylamine might serve as a useful indicator in measuring spoilage in the muscle of cod, haddock and other Atlantic species.

The training of the inspection staff in Newfoundland and the Maritime Provinces in fresh fish inspection began about three years ago and is still in progress. Not more than fifteen officers must comprise the group under instruction if each man is to be given the individual attention required for the satisfactory development of his subjective judgment. Each course is of about three weeks duration, with lectures during the morning on the chemistry and bacteriology of fish spoilage, plant sanitation, inspection techniques and allied subjects, while the afternoons are devoted entirely to the physical grading of fish of varying degrees of spoilage. Each officer individually grades hundreds of fish during the course. At the same time, the Laboratory conducts objective measurements of spoilage on the fish so graded and correlates these with the subjective judgment of the inspector. A most satisfactory level of uniform accuracy on the part of the inspectors is usually found by the end of the course.

At the end of the training period the officer returns to his field headquarters where he works for a time with and under the supervision of an experienced officer. He assists in the grading of fish as it is being discharged from trawlers and other vessels and weekly samples of the fish graded by him are forwarded to one of the laboratories for objective examination. It has been found that, after five or six months in the field, an officer's judgment may begin to slip and a refresher course is necessary. Such refresher courses are found not to require the same length of time as that for the original training groups.

Similar training courses are being conducted in the freshwater fishing provinces and in British Columbia. These courses are proceeding rather more slowly in view of the fact that no satisfactory objective measurement of spoilage has yet been established for lake fish or for the major commercial species from the Pacific which enter into the fresh and frozen fish trade. With the important exception of having an objective check on the subjective judgment of the inspectors, the courses follow the same pattern as in the Atlantic Provinces.

As a result of the experience gained by the Inspection Service over the past several years in the voluntary grading of fresh fish as landed at the wharf, the

Department, with the concurrence of the Canadian fishing industry, has recently announced its intention to provide national inspection of fresh and frozen fish and processing plants. Before Department inspection will be given any fresh or frozen fish products, the processing plant itself must meet specific requirements as they pertain to construction, sanitation, operation and equipment. Once the plant has been approved by the Department, under established standards, the following fish products will be eligible for inspection: round and dressed fish, fillets, steaks, fish sticks and similar portions. If a frozen fish product complies with clearly defined quality, processing and labelling specifications, the packer may identify his product with the designation "Canada Inspected" within a line drawing of a mapleleaf marked on the wrappers, labels, containers or, where practicable, on the whole fish. Inspected fish which is to be marketed in the fresh state as whole fish, fillets or steaks, may be identified by having the words "Processed Under Government Supervision" within a line drawing of a mapleleaf marked on their wrappers, labels or containers.

This program does not contemplate inspection beyond the processing plant level. For this reason it was felt to be the course of wisdom to use a less comprehensive quality designation on fresh fish products.

The standards for fresh and frozen fish products and the processing plants were developed in close consultation with industry and, I think, represent a satisfactory compromise between what is ideal and what is practical, keeping in mind the present day demands of the consumer. Both the Department and the fishing industry are confident of a favorable consumer response to this progressive step of making available in the retail stores both fresh and frozen fish products prepared under most rigid sanitary requirements, which possess all of the factors of high quality demanded by the discriminating buyer of today.

In order for an inspection program to be successful it must apply to the product from the raw material stage through the chain of processing and distribution to the retail level. Before too many years have passed the Department of Fisheries hopes to be in a position to offer the retailers and the consumers an inspection system to deal directly with fish quality at the time of display at the retail level. This is a tremendous and complex undertaking which will begin with inspection and grading at the wharf followed by rigid control of processing, cool and frozen storage, maximum storage periods, transport, and, finally, a reasonably systematic check of the product at the retail level. We all realize that much of the careful effort expended by the primary processing industry in quality control is often nullified by careless merchandising and storage at the retail outlets. Accordingly, much education work must be done through retail trade organizations and with as many individual stores and supermarkets as can be covered with the staff available. It is a project which will make heavy demands on the time and energy of the staff and give rise to many frustrations before satisfactory results are achieved. However, we are confident of success.

The Territorial Waters Dispute and the Shrimp Industry

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HAVING BEEN so close to the Tortugas shrimp fishery since its inception, and being a resident of Key West, it is heartening to hear of the advances made in