



International

FOOD AND AGRICULTURE ORGANIZATION

REPORT ON MEETING ON COSTS AND EARNINGS OF FISHING ENTERPRISES:

The first international meeting on Costs and Earnings of Fishing Enterprises, called by the Food and Agriculture Organization of the United Nations (FAO), was held in London, September 8-13, 1958. Experts from 20 countries attended and discussed technical papers dealing with the various problems, questions, and investigations concerned with costs and earnings in the fishing industries of their countries.

The meeting focused attention on many questions of crucial interest to all sections of the world's fishing industries. It is of special interest to governments which are deeply involved financially in the maintenance and development of fishing industries. Subsidies, credit schemes, tax and duty concessions, port and shore facilities, insurance, price support and marketing schemes, are some examples of Government participation in the fishing industry.

The interest of the fishing industry itself has led to much investigation of costs and earnings, especially in the countries possessing important and highly developed fishing industries. But there has been little collaboration or exchange of ideas and information between the investigators, so they have not benefitted from each other's work. The meeting enabled the experts to exchange views and experience and discuss the methods used to study the subject in various countries.

The problems and difficulties encountered in the investigation of costs and earnings in the fishing industries are in themselves a hindrance to the rational development of fisheries. The meeting should do much to point the way in many countries towards finding the facts about costs and earnings and should help to make possible the planning of realistic programs for the development of fisheries on a sound economic basis.

Represented at the meeting were Belgium, Canada, Denmark, El Salvador, Finland, France, German Federal Republic, Ghana, Guatemala, Iceland, Ireland, Italy, Malaya, Netherlands, Norway, Poland, Portugal, Sweden, Turkey, Uganda, United Kingdom, United States, and FAO.

The first item of the agenda was concerned with the interest of government authorities and of those in the fishing industry in studies of costs and earnings. Most of the representatives present had participated in the discussion and it was clear that

costs and earnings studies were necessary for a great variety of purposes. Many were related to government intervention in the industry, both with the object of enhancing the welfare of fishermen and others working in the industry and with the regulatory functions of government. In some cases there were statutory requirements to be met; in others the results of costs and earnings studies were required to develop government policy and to judge success in its implementation. Use of costs and earnings studies in connection with managerial decisions within fishing enterprises and other relations within the industry such as, for instance, price share and wage agreements, was not yet as well developed as the governmental use of these studies. There was



general agreement that such studies need to be designed with a specific purpose firmly in mind. With regard to methods used in studying costs and earnings, there were considerable differences between fisheries conducted mainly by small boats skippered by their owners and those using large vessels, normally owned by corporations, particularly in highly-developed long-distance fisheries.

Discussion of concepts, definitions, and conventions used in inquiries into the costs and earnings of fishery enterprises occupied the meeting for a considerable time and brought to light a number of problems encountered in various countries. Among them was that of defining a fishing enterprise, the allocation of earnings between fishing and other activities in mixed enterprises, and the treatment of such cost items as depreciation, interest, and insurance. There was general agreement that a more standardized approach to these concepts would be highly desirable, and the suggestion was made that FAO should, in conjunction with experts from the various countries concerned, work out proposals in this regard for eventual discussion by a similar meeting of experts.

The meeting next dealt with the respective merits of different methods of investigation used in studies of costs and earnings of fishing enterprises. Participants related their experience with both continuing and periodic studies, and discussed the advantages and disadvantages of entrusting the conduct of such studies to government agencies, industry organizations and universities, and research organizations.

The methods to be used in the analysis of the results of studies of costs and earnings were the subject matter for the sessions this morning. The last business session of the Conference discussed a paper on the effect of fishery regulations on costs and earnings of fishing enterprises. It was con-

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cluded that, in the past, fishery regulations had been framed mainly with a view to their biological efficiency and ease of administration; and that development of costs and earnings studies and joint analysis of their results by biologists, administrators, economists, and fishing operators might make it possible to take more account of the effect of these regulations on the operating results of fishing enterprises.

The following 22 papers were submitted by the various delegates attending the meeting:

1. Purposes of Costs and Earnings Studies in Fisheries: The Government's Point of View (W. C. MacKenzie, Canada).

2. The Need and Value of Costs and Earnings Studies in the Fishing Industry as Basis of Government Action in the United States (R. A. Kahn, United States).

3. Costs and Earnings in the West German Deep Sea Fishery (G. Meseck, Germany).

4. Research on Commercial Fishing Industry Costs and Earnings in the United States (W. H. Stolting and A. T. Murray, United States).

5. Costs and Earnings Studies in Fisheries in the Netherlands (A. G. U. Hildebrandt, Netherlands).

6. Fundamental Activities of the State in Polish Fisheries (S. Laszczynski, Poland).

7. The Point of View of Governments and Other Public Authorities (Ministry of Agriculture, Fisheries and Food, and Scottish Home Department, United Kingdom).

8. Analysis of Costs and Earnings in Polish Fisheries (B. Noetzel, Poland).

9. The Collection of Data Related to the Costs and Earnings of British Herring Catches (Herring Industry Board, United Kingdom).

10. Concepts, Definitions and Conventions in Present Inquiries (Ministry of Agriculture, Fisheries and Food, and Scottish Home Department, United Kingdom).

11. Concepts, Definitions and Conventions in Costs and Earnings Studies of the Fisheries Industry (C. C. Osterbind, United States).

12. Costs and Earnings of Fishing Enterprises in Canada: Concepts, Definitions and Conventions (J. Proskie, Canada).

13. Statistical Information Required by Commercial Fishermen of British Columbia on Costs and Earnings of Fishermen and Fishing Enterprises (United Fishermen and Allied Workers' Union of British Columbia, Canada).

14. Concepts, Definitions and Conventions (E. S. Holliman and A. E. Ovenden, United Kingdom).

15. Method and Enforcement of Costs and Earnings of Fisheries Industry in Japan (Matsuya Onda, Japan).

16. Merits of Different Kinds of Investigational Methods (E. S. Holliman and A. E. Ovenden, United Kingdom).

17. Methods of Analysis of Collected Accounts (E. S. Holliman and A. E. Ovenden, United Kingdom).

18. Interpretation of Detailed Statistics (K. O. H. Michielsen, Belgium).

19. Statistical Analysis of Costs and Earnings in the Fishing Industry (A. G. U. Hildebrandt, Netherlands).

20. Statistical Techniques for the Analysis of Costs and Earnings (A. Zellner, United States).

21. Types of Fishery Regulation and Some Economic Implications (R. J. H. Beverton, United Kingdom).

22. Costs and Earnings Studies in Fisheries in Denmark: Concepts, Definitions and General Conclusions (S. N. Sorensen, Denmark).

Note: Also see Commercial Fisheries Review, July 1958, p. 52.

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WORLD MEETING ON SARDINE
BIOLOGY SCHEDULED FOR 1959:

A World Scientific Meeting on the Biology of Sardines will be held at Food and Agriculture Organization (FAO) Headquarters in Rome, Italy, from September 21 to 28, 1959.

The holding of this meeting next year was proposed by scientists of several countries concerned with sardine research, who considered that the time had arrived to have an international gathering for the discussion of common problems concerned with the biology of sardines and their environment.

A Prospectus, issued by FAO, gives an agenda, program, some details of these problems, a full explanation of why such a meeting is regarded as necessary, and the results expected of it.

The meeting should bring together not only Government participants, but scientists and other persons from private institutions engaged in the study of the biology of sardines and their environments, their commercial fisheries, and the effect of those fisheries on the sardine stocks. Special attention will be given to the problem of fluctuations of sardine populations and catches. It is expected that the meeting will make recommendations for future international cooperation in forecasting fluctuations and how such cooperation could be made possible. Participants are expected to present written contributions for discussion and these, subject to decisions of the meeting, may eventually be printed.

The proposed program of the meeting includes these subjects for discussion: (1) Past and present techniques of studying fluctuations in the size of sardine populations. (2) Review of fluctuations in catches of sardines and their possible causes. (3) Possible future approaches to the study of fluctuations in catches of sardines. (4) Recommendations for future international cooperation in forecasting and means whereby such cooperation could be made possible.

Further details may be obtained from H. Rosa, Jr., Secretary, World Scientific Meeting on the Biology of Sardines, Fisheries Division, FAO, Rome, Italy.

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GENERAL AGREEMENT ON TARIFFS AND TRADE

ANNUAL SESSION REVIEWS IMPORT RESTRICTIONS:

The 13th Session of the General Agreement on Tariffs and Trade (GATT) opened in Geneva on October 16, 1958. The session was expected to continue for four to six weeks. The GATT is recognized as a basic instrument governing commercial relations between the United States and the principal trading nations of the free world.

Harry Shoeshan, International Activities Assistant, Technical Review Staff, represented the U. S. Department of the Interior on the United States delegation as an adviser for fishery and other matters of Departmental interest.

Of particular concern to American trade circles are this year's consultations with countries that are still imposing import restrictions to safeguard their balance of payments. These consultations, proposed by the United States, are intended to explore the need for and the methods used in applying quantitative restrictions. The views of United States exporters were invited in August 1958, so that the delegation would be fully informed of their trade problems. By discussion of this subject at the GATT, the United States seeks to reduce discrimination against American exports and to promote greater freedom of trade.

At a GATT meeting that ended May 2, 1958, the six signatories to the Rome Treaty that established the European Economic Community (Common Market) agreed to consult with countries that were concerned over the possible effects of that Treaty on international trade. Discussions on this subject were also expected to be undertaken during the current GATT session.

Other matters, such as customs administration, disposal of agricultural surpluses, and primary commodity situations, were reviewed by the Contracting Parties during the current session.

Note: Also see Commercial Fisheries Review, July 1958, p. 52.

INTERNATIONAL FISH MEAL MANUFACTURERS CONVENTION

Representatives of the fish meal industries of Great Britain, Norway, Belgium, France, Denmark, Holland, Spain, and Iceland gathered in Cape Town, South Africa, in November for the International Fish Meal Manufacturers Convention. About 25 delegates were expected to attend the convention, which met from November 16-18, 1958.

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

ELECTRIC BARRIER AT ADAMS RIVER MOUTH TO DIVERT POOR-QUALITY SOCKEYE SALMON SPAWNERS:

An electric sockeye or red salmon diverter was ordered installed at the mouth of the Adams River, subject to approval of the Canadian Government, by the International Pacific Salmon Fisheries Commission in an emergency session on October 29, 1958.

A proper escapement of about 1,750,000 top-quality spawners had been obtained and late migrating fish of poor-quality were starting to arrive. "This unprecedented action appears essential if we are to forestall a serious decline in the returning run in 1962," the chairman of the Commission said. Field reports indicated that a major share of the late-run sockeye salmon would never reach the spawning grounds but would die either en route or in the side tributaries where they were stopping because they had run out of body energy. Thousands of Adams River sockeye were sighted in Spuzzum Creek, 10 miles below Hell's Gate Gorge, and others were seen in streams as far down the Fraser River as Maria Slough, near Agassiz, British Columbia.

The Commission heard staff reports that, despite the large natural mortality of late sockeye en route to the Adams River, a serious danger existed from those that tardily arrived to spawn in the already adequately seeded areas of the Lower Adams River. It was estimated that the fence would be in operation this weekend and that the latecomers would be diverted to the gravel beaches of Shuswap Lake where they could do no harm.

LAW OF THE SEA

IRELAND SIGNS CONVENTIONS:

Ireland on October 2 signed the four international conventions which were adopted by the United Nations Conference on the Law of the Sea in Geneva last April. The Irish Minister for External Affairs signed the documents in the office of the United Nations Legal Counsel.

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Ireland became the 24th nation to sign the Convention on the Territorial Sea and the Contiguous Zone. This Convention was previously signed by Argentina, Canada, China, Colombia, Costa Rica, Cuba, Denmark, Dominican Republic, Ghana, Guatemala, Haiti, Holy See, Iceland, Iran, Israel, Liberia, Nepal, Panama, Thailand, United Kingdom, United States, Uruguay, and Yugoslavia.

Ireland is the 27th signatory of the Convention on the High Seas. This Convention was previously signed by Argentina, Canada, China, Colombia, Costa Rica, Cuba, Denmark, Dominican Republic, Ghana, Guatemala, Haiti, Holy See, Iceland, Indonesia, Iran, Israel, Lebanon, Liberia, Nepal, Panama, Switzerland, Thailand, United Kingdom, United States, Uruguay, and Yugoslavia.

Ireland is the 24th nation to sign the Convention on Fishing and Conservation of the Living Resources of the High Seas. This Convention was previously signed by Argentina, Canada, China, Colombia, Costa Rica, Cuba, Denmark, Dominican Republic, Ghana, Haiti, Iceland, Indonesia, Iran, Israel, Lebanon, Liberia, Nepal, Panama, Thailand, United Kingdom, United States, Uruguay, and Yugoslavia.

Ireland is the 25th signatory of the Convention on the Continental Shelf. This Convention was previously signed by Argentina, Canada, China, Colombia, Costa Rica, Cuba, Denmark, Dominican Republic, Ghana, Guatemala, Haiti, Iceland, Indonesia, Iran, Israel, Lebanon, Liberia, Nepal, Panama, Thailand, United Kingdom, United States, Uruguay, and Yugoslavia.

MARINE OILS

WORLD EXPORTS EXPECTED TO BE LOWER IN 1958:

Exports of marine oils in 1958 by the major producing countries will fall short of the 1957 year's volume chiefly because of Norway's poor 1958 herring catch. The expected trade in whale oil, which continues fairly constant from year to year, reflects largely the restrictions on the Antarctic pelagic catch imposed by the International Whaling Agreement. An increase in the exports of sperm oil is likely because of the increased sperm whaling in the Antarctic prior to the regular 1957/58 whaling season (Foreign Crops and Markets, September 25, 1958).

NORTHWEST ATLANTIC FISHERIES COMMISSION

EIGHTH ANNUAL MEETING REPORT:

Research into the vast fishery resources of the Northwest Atlantic--with particular emphasis on gathering "on-the-spot" data--will be accelerated by scientists of the 12 nations which make up the International Commission for the Northwest Atlantic Fisheries. The vessels of those nations

fish in the nearly one million square miles of water comprising the Atlantic fishing area in which the Commission has supervisory responsibility. That was one of the main decisions by delegates of member countries attending the Eighth Annual Meeting of the Commission in Halifax in June 1958.



This year marked the official welcoming of West Germany and Russia as full partners to the 12-nation Convention. West Germany signed the Convention in 1957, while Russia became a signatory this year. The Commission now embraces Canada, Denmark, France, Iceland, Italy, Norway, Portugal, Spain, Union of Soviet Socialist Republics, United Kingdom, the United States, and the German Federal Republic.

The Canadian Minister of Fisheries pointed out that the fish resources of the Northwest Atlantic were a most valuable and important source of protein food and there was a serious responsibility, on all nations that fish in this area, to make certain that the resources were maintained and even expanded for future generations.

The Commission area encompasses the marine expanse, except territorial waters, from Rhode Island in the south to the west coast of Greenland in the north, and east to the 42nd meridian. This area is divided into five subareas, each having a panel consisting of the member nations which fish in it. One of the main aspects of the meeting was the discussion of the panel groups.

Panel I discussions were held under the chairmanship of Portugal. Other countries participating were Denmark, France, West Germany, Iceland, Italy, Norway, Spain, United Kingdom, and the U. S. S. R.

The Norwegian Commissioner told members that his country was also ready to step up its research work in the panel area, which includes West Greenland waters. Norway's new research vessel would be of great assistance in increasing the research effort, he said. France reported it planned to send observers aboard fishing vessels operating in the area. Denmark urged the collection of fullest information on tagging recaptures in time for inclusion in yearly research reports.

Acting Chairman of Panel 2--waters off the east coast of Labrador--was the Canadian Commissioner. Besides Canada, other countries represented on the panel were France, Italy, Portugal, Spain, and the U. S. S. R.

The panel's report noted that cod was the only species fished substantially in that area. While it was felt that progress had been made in sampling cod fisheries in the offshore waters, there had been no recent sampling of stocks from inshore waters. In 1938 the inshore cod fishery produced 78,000 metric tons of cod as opposed to only 12,000 tons in 1957. The catch for the whole area in 1957 was 32,000 tons.

The report stated: "This creates a situation where, because of the presumed increase in nu-

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merical substance of cod through lack of a fishery, there may be a decrease in the growth rate. Studies to determine this would be extremely valuable."

The panel report noted that Canada is doing work on ocean perch distribution in the Hamilton Inlet Bank area and that this work would be expanded when the new research vessel gets into operation. It was generally felt that knowledge of the area would certainly increase with the addition of the new Canadian research vessel, and of the research vessels now in the planning stage for France, Portugal, and Spain.

Fishing grounds south and east of Newfoundland (including the Grank Bank) comprise the Panel 3 area. Canada, France, Italy, Portugal, Spain, U. S. S. R., United Kingdom, and United States are members.

The report of the panel's scientific advisers stated that while considerable progress had been made in collection of data on the sizes and ages of haddock and cod "landed," there was need for more sampling of sizes and ages of those species "caught" to supplement the landing information from the area.

On the subject of increased research the panel was told Canada would enlarge its program of commercial sampling when more staff became available. France will have one or two observers on her fishing vessels next year, while Spain will continue to take samples from her commercial craft.

Discussing the study of selectivity of gear other than otter trawl, the panel believed more information was necessary and that direct experiments should be carried out, where possible, for comparing relative sizes of fish caught by different types of fishing gear fishing the same grounds at the same time.

Mesh sizes formed an important topic in discussions in Panels 3 and 4. The latter panel has to do with fishing grounds adjacent to the Maritime Provinces. On this subject a report elaborated on the effect of larger-size meshes on both cod and haddock.

The Canadian investigators reported that long-term observations of landings and fishing effort on the Georges Bank area provided an excellent background for the assessments of the effect of the 4½-inch mesh on the fishery. It was already clear, the report stated, that the numbers of haddock discarded at sea had been reduced to negligible proportions of the total catch. It had also been demonstrated that more large haddock were caught with the same amount of fishing effort, because of the efficiency of large-mesh nets. However, the report added, investigations of changes in the quantities and sizes of fish caught and landed must be continued for several years before it could be established definitely whether or not stocks of fish of commercial size have been increased as a direct result of mesh regulations. Since the minimum mesh size only became effective on Canadian ves-

sels last year in the Gulf of St. Lawrence area, the effects of mesh regulations are just beginning to appear.

Since the end of World War II, it was reported, otter trawling has become the dominant method of fishing for groundfish along the southwestern Atlantic coast. As a result of this conversion from line fishing to otter trawling, a more continuous supply of fish is now caught with less work by fishermen. Otter trawls outfish baited hooks, mainly because they catch small-mouth as well as large-mouth groundfish. The greater catches include not only added species, such as small-mouth ocean perch and flounders but also smaller sizes of larger-mouth species, such as cod and haddock. While otter trawling is efficient, it can be wasteful. Large quantities of fish have had to be discarded at sea because they were unmarketable. The latter was particularly true for small sizes of haddock and cod. Commonly, half the catch by numbers has been discarded as dead or dying fish from the decks of otter trawlers.

The practice of catching and discarding small fish was wasteful in two ways, the report continued. Firstly, fishing operations were less efficient than they should be, and, secondly, the destruction of small fish led to reduced landings of marketable sizes in later years.

Canada and the United States--the only countries holding Panel 5 (waters off New England) membership--focused attention on the Georges Bank scallop fishery. The bank is the biggest offshore scallop resource on the Atlantic coast. United States fishermen in 1957 landed about 20 million pounds from operations in the area, while Canada landed about 1.8 million pounds, nearly half its 1956 total. The panel described the fishery as of "great and growing economic importance to the United States and Canada and on this basis alone deserves the serious consideration of the Commission."

Two main recommendations, both endorsed by the Commission, resulted from discussions on scallops:

1. That routine samples for abundance should be taken year after year with the same vessel or vessels and gear so that experimental measures of catch per unit of effort will not be affected by variations in fishing power.
2. That serious consideration be given the need for use of a research vessel of fishing power similar to those now engaged in the commercial fishery. The committee felt that the data required to support and follow up the effect of a regulation are sufficiently important to justify such a step.

A main point in the scallop discussion was whether it was advisable at this time to regulate sea scallop fishing. While the scientists agreed that the time wasn't ripe to implement large ring sizes in scallop gear, they unanimously agreed that more study be given the subject.

Montreal has been selected as the site for the 1959 meeting of the International Commission for the Northwest Atlantic Fisheries.

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The Soviet Union's scientific spokesman described research carried out by his country in the Convention area and indicated that this was to be increased this year. Three trawlers, Odessa, Kreml, and Novorossiysk will carry out research work in the regions of the Grand Banks, Flemish Cap, Labrador, and along the western coast of Greenland. Soviet fish landings from the two banks off Newfoundland in 1957 totaled 70,000 metric tons. Two 1,800-ton trawlers were employed. The catch was divided between 19,200 tons taken on the Grand Banks and 50,121 tons on Flemish Cap.

The report of the Research and Statistics Committee incorporated recommendations of the various subcommittees under specific headings. Some of the main recommendations were:

Statistics Collection and Analysis: The Committee recommended that the biologist-statistician commence his work next year of analyzing the statistics now provided by the Commission to assess more precisely their value for current research needs, especially in population studies.

Sampling: The Committee recommended that all countries should engage sea observers to accompany commercial vessels fishing in the Convention area to provide data on fish for each of the statistical areas fished. Such data would include information on length and age of the entire catches, including the fish discarded as well as those retained.

Ocean Perch: The Committee recommended that the symposium on Ocean Perch Systematics and Biology, approved at the Commission meeting in 1957, should be held in Copenhagen in September 1959. Solutions of the problems of fundamental systems and biology were described as of major importance for accurate assessments of population dynamics of ocean perch stocks.

Gear Selection: Calling attention to gaps in knowledge of gear selection in the Convention areas, the committee recommended that gear selection research should be placed on the agenda of the next meeting of the Committee to devise means for filling these gaps.

Marking Techniques: Considering that the stage has been reached for a collective assessment of the marking methods used in the Convention area and of the experiences of workers elsewhere, the committee recommended that a symposium on marking should be held when the Commission meets next year.

Assessment of Current and Possible Future Mesh Regulations: Noting that experiences since the introduction of mesh regulations in the subarea 5 haddock fishery have shown that the regulation has achieved its short-term objectives and that most of the predictions of benefit made prior have been realized, the Committee recommended that United States scientists should continue to pursue this measurement using hitherto untried methods; that the licensing of small-mesh study boats be held in abeyance, and that the United States should consider increasing the size of mesh used in the

Georges Bank haddock fishery to allow the release of haddock to the age of three years.

Research on Sea Scallops: The Committee recommended that investigations of the population dynamics of the exploited scallop stocks, now in progress in the United States and Canada, be continued and expanded. It recommended in particular that: (1) catch and improved effort statistics for the Canadian and United States vessels fishing in the area be collected for as small time and area subdivisions as are practicable; (2) consideration be given to measuring catch and effort of a selected portion of the commercial fleet and to the use of a special research vessel to improve understanding of factors influencing the catch per unit of effort; (3) tagging experiments be undertaken for estimating mortality; (4) experimental fishing including underwater photography and television be conducted to measure catching efficiency of the gear and to estimate fishing mortality; (5) research on the biology of the scallop and on the environment to determine elements influencing occurrence, behavior, and survival be instituted.

Environmental Studies: The identification and measurement of the effects of fluctuations in plankton and hydrographic factors on the distribution and abundance of exploited fish stocks are fundamental facets of applied fishery biology investigations. Hitherto, the extent of plankton and hydrographic studies in the Convention area has been limited and generally inadequate for achieving these aims.

The Committee considered that there should be a serious stocktaking of current progress and future requirements in these studies. It recommended that: (1) A survey should be made of present information on plankton in the Convention area; (2) that participating countries bring plankton specialists to the next annual meeting to plan a coordinated Convention area plankton program; (3) that present programs of environmental studies should be continued, and if possible intensified, in anticipation of the development of a fully coordinated Commission program.

TERRITORIAL WATERS

FAROES REJECT BRITISH PLAN TO RESOLVE CONFLICT OVER 12-MILE FISHING LIMITS:

The Faroe Islands have rejected Britain's "six plus" fishing proposal, according to a September 24, 1958, report from Thorshavn and Copenhagen. Britain proposed a six-mile fishing limit and a further six-mile belt in which fishing could go on by special arrangement. The five political parties in the Faroes reiterate their claim to a 12-mile limit, the report stated. They do not, however, oppose new negotiations between Denmark and Britain for a new agreement superseding the 1955 Anglo-Danish agreement.

The Faroes local government will consider appointing representatives to help

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the Danish delegation in new negotiations with Britain. Denmark manages Faroes' foreign affairs.



Argentina

DEVELOPMENT OF TUNA
CANNING INDUSTRY IN PROSPECT:

The recent discovery of schools of tuna in South Atlantic waters near Argentina has caused speculation that the Argentine fishing industry is on the verge of taking a great step forward, points out the Buenos Aires *La Nacion* of June 12, 1958.

The Mar del Plata area is the principal fishery center of Argentina because it has the largest number of vessels, the greatest amount of fishery landings, the greatest number of canneries, and the facilities for processing fishery products. Despite all this, the financial situation of the fishing industry of Mar del Plata is not good. The increases in the costs of containers, raw materials, salaries, and other operating expenditures have seriously hurt the canneries financially.

Tuna were found by the fishing vessel *Foca* during a cruise on February 27, 1958. Soon after that, reports were made to the Director of Fishery Investigations of the Argentine Ministry of Agriculture, and a second trip was made by the *Foca* with good results. The catch of the *Foca* was processed locally with good results.

From French technical studies, it was ascertained that "white" tuna in the South Atlantic spawned in the area east of Pernambuco (Brazil), then after remaining for a time in the area of their birth, the young tuna migrated in a perimeter of approximately 1,000 miles before starting their migration towards the east and eventually as far as South Africa.

Speaking of the promising aspects of a tuna industry, the President of the Mar del Plata Chamber of Fishery Industrialists stated that tuna occupied one of the most important places in the exports of various nations. He further stated that the local production of good-quality olive oil places Argentina in a very advantageous position in regard to canning tuna, since other nations of the Americas lack this important ingredient. For this reason, he added, it is a certainty that the tuna industry will develop into an important source of much-needed wealth for Argentina. If it is possible, he continued, to catch tuna during June-September, the canneries of Mar del Plata--which are usually idle during this season due to a scarcity of fish for canning--could remain active during the winter.

A member of Argentina's Honorary Fishery Commission, manifesting optimism of the effects of a tuna industry upon the economy, recalled that Peru, in little more than two years, has developed its fishing industry considerably. He further stated that it should not be forgotten that in recent years Argentina dropped from first place among the fishing nations of South America to its present position of fourth place, behind Chile, Peru, and Brazil.

In conclusion, he stated that the recent tuna finds permit the contemplation that once the local fishing fleet becomes adequate, tuna will become a sure and permanent source of wealth, due to the apparent proximity of the fishing grounds and the processing capacity of the Mar del Plata canneries.

The United States is considered to be one of the potential markets for Argentine tuna. The tuna industry provides a hope not only for the improvement of local industry, but also for aiding Argentina's economy.

According to local producers, the Government must facilitate exports of canned fish. This would eventually bring about improvements in fishing methods and the fishing vessels of the Mar del Plata area.



Belgium

IMPORTS OF JAPANESE CANNED
SALMON, JANUARY-JULY 1958:

Imports of Japanese canned salmon into Belgium January-July 1958 amounted to about 2,811,000 pounds, valued at US\$891,638, as compared with 4,545,000 pounds, valued at US\$1,394,000, for the first six months of 1957.

Although total imports for the first six months of 1958 remain considerably below those for the same period in 1957, the months of May, June, and July, witnessed an over-all increase in the quantity and value of importations over 1957. This was, however, not sufficient to overcome the low level of imports during the first three months of 1958. The import figures for canned salmon are not broken down into pink or red salmon, but it is believed that the drop in imports occurred for all types.



Canada

DISEASE-RESISTANT OYSTERS
TRANSPLANTED TO RESTORE DEPLETED BEDS:

The restoration of depleted oyster beds in New Brunswick and Nova Scotia is a current project of the Canadian Department of Fisheries and the Fisheries Research Board of Canada. Now in its second year it involves, over a three-year period, the transfer of 10,000 barrels of healthy, disease-resistant oysters from Prince Edward Island to areas of the two other Maritime Provinces where the species native to those districts has been almost wiped out by natural mortalities.

The second phase of the operation was carried out in May and June 1958 when 4,500 barrels of the Prince Edward Island oysters were transferred to the affected areas. Last year 1,500 barrels were transplanted, and 1959 will see the transfer of 4,000 barrels.

The plan of restoration is based on substantial evidence which shows that the circumstances causing the depletion in the two mainland provinces are similar to those which destroyed oyster stocks in the waters of Prince Edward Island between the years 1915 and 1920. Experience has shown that oyster stocks in devastated areas eventually recover if left to themselves over a period of from 10 to 15 years. However, the recovery period can be greatly reduced, in some cases cut in half, by introducing relatively small numbers of disease-resistant oysters. These serve as a breeding stock and their progeny inherit the immune characteristics of the parents. This device was used to rehabilitate the Prince Edward Island oyster fisheries and now all oysters in the waters of that Province are of the disease-resistant strain.

Fisheries scientists emphasize that the disease which caused the depletions of oyster stocks is not injurious to humans.

This year's operation involved the transplanting of oysters to the Shippegan, Miramichi Bay, Richibucto, Buctouche, and Cocagne areas in New Brunswick and the Merigomish-Pictou district of Nova Scotia.

The Department of Fisheries patrol vessel *Cygnus* carried oysters from the shipping point at Summerside, Prince

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Edward Island, to the affected areas in Northumberland Strait. There the boxes of oysters—two boxes make up a barrel—were transferred to smaller boats of the Department's patrol fleet. The crews of these then scattered the oysters over specified areas.

The effect of the epidemic oyster disease has been disastrous, with mortalities in some of the affected areas running as high as 97.5 percent. Since the disease first became evident there has been a 70-percent drop in oyster production in New Brunswick and Nova Scotia. Last year the catch was only 2,500 barrels, and this year's production is expected to be less than half that amount.

Last year the Department began its first mass transfer of Prince Edward Island oysters—1,000 barrels to the Shippegan area and 500 barrels to the Wallace-Malagaash district in Nova Scotia. Mortality to the end of 1957 was two percent in Shippegan and six percent in Wallace-Malagaash. A Fisheries Research Board biologist considered these losses to be very low, saying: "We cannot be sure that these animals are disease-resistant but results of the 1956 resistance experiment give us good reason to think they are."

The Prince Edward Island oysters transferred to Malagaash in 1957 spawned and a few spat were caught. These are being studied for disease resistance. The Shippegan lot did not spawn, but spawning failures are common in that area in cold summers and the summer of 1957 was cold throughout the Maritimes.

Encouraged by the results of last year's operation, the Department this year increased its planned transfers from the initially-proposed 3,500 barrels to 4,500.

The Board's biologist is of the opinion that by the end of 1959 most epidemics should have nearly run their course and all important diseased areas will have been planted with disease-resistant Prince Edward Island brood stock, in plantings dense enough to encourage vigorous spawning. If spat-fall in all areas begins as soon after planting as it did in Malagaash, it can be expected that there will be a great reduction in the recovery period, as compared with that in Malagaash following the earlier Prince Edward Island outbreak, in which no rehabilitation effort was possible. The biologist says: "Early restoration of the commercial oyster fisheries is promising if the oysters encounter favorable years for reproduction. We estimate that with luck most fisheries should be producing again in 1965." (Canadian Department of Fisheries Trade News, August 1958.)

EFFICIENCY OF ALUMINUM LOBSTER TRAPS STUDIED:

Further study of the efficiency of aluminum lobster traps is being continued following the opening of the lobster fishing season in Northumberland Strait on August 10. Thirty-four traps built of aluminum were set in the fishing grounds off Richibucto Cape, Kent County, New Brunswick.

Two fishermen are each fishing 17 traps. Records of catches will be kept and will be compared with the catches made by an equal number of the conventional wooden traps.

On the New Brunswick side of the strait the fishing area extends from Eel River in Kent County to Bergman's Point in Cumberland County, N. S., while on the Prince Edward Island side the fishing grounds extend from a point off the northern tip of the island to Victoria Harbour, Queens County.

The metal trap study off Richibucto was a prelude to a large-scale operation in the cold waters of the Bay of Fundy in the Yarmouth district this winter. There, 300 aluminum traps will be fished by three fishermen in a full-scale test of this type of gear. The traps are being provided by the Industrial Development Service of the Department of Fisheries, which instituted research into metal traps four years ago.

Technicians of the Fisheries Research Board of Canada at the Board's Technological Station at Halifax are now constructing a model of an improved aluminum trap to be used in the Yarmouth project. A total of 300 traps will be constructed after the model is tested for the large-scale study.

The ability of metal lobster traps to withstand punishment by sea and winds that would demolish wooden traps has

been definitely established. That factor has been the main spur to the Department's program of investigating this new type of fishing gear. The metal traps to be used in the experiment are of the same design as the conventional wooden traps.

If the efficiency of the metal lobster traps in catching lobsters can be established definitely this winter, it would provide part of the answer to the heavy trap losses suffered by Canadian lobster fishermen. (Canadian Department of Fisheries Trade News, August 1958.)

EXPORT BAN ON FRESH AND FROZEN SOCKEYE SALMON LIFTED UNTIL DECEMBER 31, 1958:

The export embargo on fresh and frozen sockeye salmon was lifted on October 2, 1958, for the remainder of the current season (until December 31, 1958) by the Canadian Department of Fisheries.

Since there was a large number of sockeye salmon at the entrance of the Fraser River, it may be found that the number is in excess of the optimum required for spawning purposes if all are allowed to go upstream, the Department pointed out. Should the International Pacific Salmon Fisheries Commission decide to reopen fishing, the temporary lifting of the export ban will provide the opportunity to export the anticipated surplus.

The action taken is in line with the procedure adopted under similar circumstances with the large run of Adams River sockeye in 1954.

FRESH AND FROZEN FISHERY PRODUCTS INSPECTION PROGRAM EXPANSION ANNOUNCED:

An expansion of Canada's program of inspection of fresh and frozen fish products and of fish processing plants was announced by that country's Fisheries Minister on September 22, 1958. After January 1, 1959, the Canadian industry may offer the consuming public fish products which have been processed and packaged under rigid standards.

This announcement was made in the course of a speech during which the Fisheries Minister officially opened "National Fish Week" at a luncheon in Ottawa given by the Fisheries Council of Canada. He prefaced the statement of his Department's new plans by saying that encouraging progress had been made during the past three years in a voluntary program of inspection introduced in fish-processing plants in many parts of Canada. Before Department inspection will be given any fresh or frozen fish product under the new standards, processing plants must meet specific requirements pertaining to construction, sanitation, operation, and equipment. Once a plant has been approved any of its products, including round and dressed fish, filets, steaks, fish sticks, and similar items will be eligible for inspection.

If a frozen fish product complies with clearly-defined quality, processing, and packaging specifications, the

Canada (Contd.):

packer may identify it with the designation "Canada Inspected" within a line drawing of a maple leaf 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 maple leaf marked on the wrappers, labels, or containers. There is no size limit on either of these designations.

Retail stores selling fish products bearing either of these two quality designations may publicize them by display advertising or other promotional aids. Necessary steps will be taken by the Department to ensure that the consumer will be protected against the purchase of improperly-labelled fish products.

The Department expressed its gratitude for the excellent cooperation and assistance which had been forthcoming from the fish-processing industry in all parts of Canada in drafting the standards and specifications for quality control. The standards were near completion, he added, and the Department's Area Directors across Canada would soon be able to give advice to those interested. Later, changes might be made from time to time in the light of experience gained in putting the improved inspection procedures into practice. Copies of specifications will be available from the secretary of the Canadian Government Specifications Board in Ottawa.

In concluding his reference to the proposed expanded inspection program, the Minister said "I feel certain that with this further step towards obtaining uniformity in the quality of our fishery products across Canada, coupled with the implications that it will have in promoting quality, the fishing industry will have stronger arguments than ever before in persuading the consumer that fish is for anyone--any time." He also expressed confidence in a favorable consumer response to what he described as a progressive step of making available in the retail stores both fresh and frozen fish products prepared under the most rigid sanitary requirements and which possess all the factors of high quality demanded by today's discriminating buyer.

FRESH AND FROZEN FISHERY PRODUCTS INSPECTION PROGRAM EFFECTIVE APRIL 1, 1959:

Definite dates for plant approval and for product inspection on the new Canadian inspection service for fresh and frozen products have been announced. Detailed surveys of plants will commence on January 1, 1959, and the effective date of approval of plants which meet the plant requirements will be April 1, 1959. Consequently, no fresh or frozen fish products can be processed or packaged for sale, with the new quality designations, until April 1, 1959.

The specifications for plants and products are now being finalized and will be ready about November 1, 1958. These specifications, known as "32-GP-141a, Fish; Fresh, Frozen and Prepared," will be available from the Canadian Government Specifications Board, National Re-

search Council, Montreal Road, Ottawa, at a nominal charge.

PROSPECTS FOR 1958/59 BRITISH COLUMBIA HERRING FISHING SEASON:

The Fisheries Research Board of Canada Biological Station at Nanaimo, B. C., in July 1958 issued a prediction on the prospects for the 1958/59 British Columbia herring fishing season. A summary forecast of fishing success in the British Columbia herring fishing follows:

Subdistrict	Forecast	Size of Fish
Upper Queen Charlotte Islands (Area 2AE)	Catch expected to be small	No estimate
Lower Queen Charlotte Islands (Area 2BE)	Some increase in catch expected	Larger than in 1957/58.
Northern	No appreciable change in catch anticipated	Smaller than in 1957/58.
Central	Abundance at low level. No increase in catch expected and quota may not be taken. Fishing may be better in Area 6 than in 1957/58.	Relatively small, about the same as in 1957/58.
Upper East Coast	Little increase in abundance expected	Relatively small
Middle East Coast	The quota should be taken but not greatly exceeded	Smaller than in 1957/58.
Lower East Coast	More effort may be required to take quota. Abundance relatively low.	About the same as in 1957/58.
Lower West Coast	No improvement in abundance can be foreseen.	Smaller than in 1957/58.
Upper West Coast	Area 25 - abundance has decreased, no more than moderate fishing can be expected. Area 26-27 - expected to remain poor.	No estimate

REGULATIONS CHANGED ON DRAINED AND NET WEIGHT OF FROZEN LOBSTER MEAT:

The drained-weight and net-weight requirements of frozen lobster meat in any container have been changed. The Canadian Government on the recommendation of the Minister of Fisheries ordered the change on August 18, 1958. Order in Council P. C. 1958-1145 revokes subsection (3) of section 68 of the Canned Fish and Shellfish and Cannery Inspection Regulations of the Meat and Canned Foods Act made by Order in Council P. C. 1954-1974 of December 16, 1954, as amended. The new section now reads:

Canada (Contd.):

"(3) The drained weight and net weight of frozen lobster meat in any container shall be:

"(a) $2\frac{1}{4}$ ounces net weight to be $1\frac{4}{5}$ ounces drained weight; (b) 6 ounces net weight to be $4\frac{3}{4}$ ounces drained weight; (c) 8 ounces net weight to be $6\frac{5}{8}$ ounces drained weight; (d) 14 ounces net weight to be $11\frac{3}{8}$ ounces drained weight; (e) 16 ounces net weight to be $13\frac{1}{4}$ ounces drained weight; (f) 70 ounces net weight to be $56\frac{7}{8}$ ounces drained weight; (g) 112 ounces net weight to be 89 ounces drained weight; and (h) 144 ounces net weight to be 133 ounces drained weight."

* * * * *

SALMON INDUSTRY TRENDS FOR 1958:

The record sockeye salmon run with 50 percent of the fish coming through nonconvention waters off the north end of Vancouver Island dominated the Canadian west coast (British Columbia) fishing picture. The unexpected lifting of import restrictions by the United Kingdom made it possible for canners to market the bulk of the Canadian salmon pack in the United Kingdom.

Record Sockeye Catch: By far the most significant aspect of the current fishing season is the record-breaking sockeye salmon catch. This species of salmon returns every fourth year to spawn in the Fraser River and its tributaries. On the basis of current information it appears that the sockeye catch this year may exceed the previous record set in 1905. Over one million cases (48 1-lb. cans) were packed through mid-September which is double the pack of the last cyclical year of 1954. As a result the capacities of the canneries were taxed to the utmost and the fishing industry faced a problem of financing the record-breaking catch. On the basis of \$35 a case, the canneries were required to finance \$35,000,000 to process the sockeye catch.

The route the sockeye took in reaching the Fraser River created new and unexpected problems. In past years the sockeye have customarily passed through the Straits of Juan de Fuca en route to the Fraser River. This year, the sockeye salmon out-guessed the fish biologists and 50 percent passed through the north end of Vancouver Island and through the Johnstone Straits to their spawning grounds. This meant that one-half of the salmon migrated over a route which placed them outside of the convention waters set up by the International Pacific Salmon Fisheries Commission, permitting Canadian fishermen to catch this bonanza harvest without the necessity of dividing this additional catch with the United States fishermen according to the provisions of the Convention.

On September 12 an emergency meeting of the International Pacific Salmon Fisheries Commission was held at Bellingham, Wash., to explain the unusual fishing season. The Director of Investigations for the Commission pointed out that the change in the migratory pattern had imposed difficult problems in dividing the catch between United States fishermen and Canadian fishermen.

The Commission pointed out that equal catch division was brought about only by the imposition of rigid closure regulations on the Canadian fishermen while the Americans were permitted to fish seven days a week for a long period of time.

It was suggested that Canadian fishing efficiency was better than American fishing efficiency. For example, Canadian fishermen caught 2,868,477 fish in the Straits of Juan de Fuca as of that date as compared with half that number in 1954. The use of deep nylon nets was generally attributed as the reason for the Canadians' better harvest.

In order to properly provide for the 1962 sockeye catch, escapement at the right time of the proper number of fish must be permitted. Escapement of between 1.5 and 3.0 mil-

lion sockeye is necessary to assure the success of the next cyclical season. Escapement of less than 1.5 million will not be sufficient to permit the reproduction of the harvest. Escapement of an amount in excess of 3.0 million will result in excess pressure in the spawning area with the deposit of poor salmon eggs over good ones to the detriment of the next cyclical catch. The Canadian fishing industry announced late in September that it would not buy any more sockeye since the late fish were of inferior quality and there is no market for them. This may cause serious complications in the management of the Fraser fishery.

Salmon Pack: Preliminary statistics released September 19 disclosed the British Columbia salmon pack as 1,762,705 cases of all species. Sockeye salmon account for a majority of the catch and represent 1,064,578 cases. Pinks accounted for 453,172 cases, chums 130,882 cases, and coho 92,746 cases.

Several weeks previous canners were seriously worried about the marketing of the bonanza harvest. Their exports to the United Kingdom, which usually take about 40 percent and 50 percent of the pack, was limited by quota restrictions. Australia, a traditional importer of Canadian salmon, was facing dollar shortages. Accordingly, the fishing industry was facing a serious marketing problem with the prospect of a 2- to 3- year carryover. Plans were being laid for an intensive domestic sales promotion campaign. Carryover from last year's pack was negligible, and the industry had to import Japanese salmon for the domestic market while continuing to export Canadian salmon in order to preserve their foreign markets.

Lifting of British currency restrictions, at the Commonwealth Trade Conference at Montreal, changed the picture for British Columbia salmon exporters overnight. Previously the British quota for the import of "dollar" salmon was pegged at \$4.5 million. Within 24 hours the British Columbia fishing industry announced that 700,000 cases of sockeye had been bought up by British importers for a total of \$26 million. Prices ranged from \$37 to \$40 a case and it was reported that one large British firm tried to buy the entire pack. Approximately 300,000 cases are being retained for the Canadian market. Previously British Columbia sockeye, a British favorite, had been a rarity in English stores. Orders were also placed for pink and coho salmon.

It is expected that the main competitor for British Columbia salmon in the British market will now be Japan. The British restriction remains on Russian salmon. American salmon will also benefit from the British action; however, American salmon will not have the advantage of the British Preferential Tariff.

It has been estimated that the landed value of the Canadian sockeye catch will approximate C\$21 million with an additional \$10 million in other species. Canadian canners are expected to realize C\$38 million for the sockeye pack, another \$12 million for other canned salmon species, and \$11 million from fresh, smoked, and frozen salmon.

Agreement on Ex-vessel Prices: As a result of a union-industry agreement signed August 18 and retroactive to the first day of fishing, the following guaranteed minimum prices were agreed on for number one quality fish net-caught (round): sockeye 28¢ a lb., coho and steelhead 16¢ a lb., pinks 9-1/4¢ a lb., chums (up to Aug. 31) 7-1/2¢ a lb., jack springs 20¢ a fish.



Colombia

REGULATIONS AFFECTING SHRIMP INDUSTRY ANNOUNCED:

The Colombian Government by Resolution No. 0930, dated August 22, 1958, announced that all shrimp for export must be packed in 452-gram (5-lb.) paraffin-dipped boxes manufactured in Colombia. The same resolution also extended the time limit for the construction of shore-based fish-processing plants by Colombian fishing companies,

Colombia (Contd.):

according to a September 19, dispatch from the United States Embassy in Bogota.



Cuba

CLOSED SEASON FOR TURTLES, TORTOISES, SHRIMP, AND OYSTERS ENDED:

The Instituto Nacional de la Pesca (National Fisheries Institute), by Resolutions published in the Official Gazette of September 15, 16, and October 3, 1958, terminated the closed season originally imposed on June 15, 1958, on the capture of turtles and tortoises, effective September 10, 1958.

As of September 15, 1958, the Institute ended the closed season originally imposed on June 15, 1958, on the capture of shrimp and oysters.

On October 10, 1958, the Institute ended the closed season originally imposed on July 15, 1958, on the capture of moro crab, Cuban snapper (Cubera), and gray snapper (Caballerote).



Ecuador

IMPORT REGULATIONS AFFECTING FISH CANNING INDUSTRY RELAXED:

One of the major problems facing producers of fish products in Ecuador is the difficulty presented by Ecuadoran Government regulations covering the importation of essential raw materials. In particular, these regulations had proven burdensome to the operations of Ecuador's only tuna-canning company engaged in the export of canned tuna. This company, a United States owned enterprise, is located at the west central seaport of Manta. Company officials have complained bitterly in the past regarding difficulties they had experienced in obtaining official permission for the importation of such needed materials as tin plate, soybean oil, and spare parts and equipment for both fishing and pack-

ing. The necessity of complying with complicated regulations, in the company's opinion, severely restricted efforts to promote the development of both exports of canned tuna from Ecuador and an increase in domestic market sales.

Apparently as a result of repeated company approaches to secure an improvement in these conditions, the Ecuadoran Government in mid-September 1958 approved an official decree providing for substantial relaxation in regulations affecting imports by fish canning companies. According to Guayaquil news reports, article one of the new decree, which reportedly became effective on September 18, provides that fishing companies which have been duly authorized by the Government to operate in Ecuador, and which are engaged in the export of fish products which have been prepared and canned in Ecuador, shall no longer be required to obtain the advance permission of the Exchange Department of the Central Bank of Ecuador in order to import, with their own foreign exchange, equipment spare parts, accessories, and other materials needed for the development of their activities, and which were previously classified in the import lists annexed to existing foreign exchange regulations. News reports regarding this decree also stated that this relaxation in regulations had been approved by the Government in order to promote greater development of the national fishing industry.

Company officials are hopeful that with approval of this decree they will have no further difficulty in maintaining adequate stocks of both canning materials, spare parts, and accessories for plant operations, states an October 22, 1958, dispatch from the United States consulate at Guayaquil.



France

FORCED COLD-AIR DRAUGHT IN FISH HOLDS CUTS ICE COSTS:

Savings in the cost of ice used on a trawler of as much as 60 percent can be attained by the introduction of a forced draught of refrigerated air into the holds. In addition, the quality of the fish is much improved, according to claims made by a French company specializing in the installation of refrigerated holds in fishing vessels. They are based on the results actually obtained in trawlers fitted out by the company.

France (Contd.):

Methods in use, of course, keep the hold cool by the use of a "cold bank" situated generally at the top of the hold. But while this cools the air in its vicinity and to some extent the shelves nearby, the lower ones are relatively unaffected.

In the process used by the French company, cold air is forced through to every part of the hold, thereby keeping the fish at a constant temperature throughout its mass.

In fact tests taken by plunging a thermometer into the body of fish and recorded daily throughout the return trip from the fishing grounds show a curve descending gradually to 28° F. and rising slowly to 30° F. during the ten-day voyage.

It is not generally known that a temperature slightly sub-freezing is the ideal for fish preservation, particularly in the case of fish caught in northern waters; for the fact is that the colder the waters in which fish live, the more resistant to refrigeration are the bacteria found on it. Sub-freezing temperatures are impossible by the use of ice alone.

When a hold is refrigerated by the French company's process care is taken at the outset that the insulation is as perfect as possible. A thickness of cork of 8-10 inches or its equivalent in other material is the minimum that should be permitted. The hold is then divided into compartments both laterally and horizontally, but with openings at the top of each so that the cooled air can pass readily from one to the other.

In effect, a current of refrigerated air is introduced through trunking to the space between the outside of the hold and the walls of the compartments, being forced through by a powerful fan. This finds its way, indeed is forced through by the constant pressure behind it, by way of the vents situated at the top of each compartment and eventually to the opposite side of the hold whence it is led back to the refrigeration plant so that the cycle is continuous.

The evaporators which produce the cold air are situated in the space immediately behind the hold. They consist of a bank of gilled pipes made of brass and set into cubic form. This way the heat-exchange coefficient is high and a rapid reduction in the temperature of the air passing over them is possible. The fan motors can be supplied either 24 volt d.c. or 110 volt a.c., single or 3-phase. It is essential because of the humid atmosphere in which they work that they are fully enclosed.

The whole of the plant, including the trunking and the double walls to the hold which form the passageways for the air current, are made and mounted in such fashion that they can be taken down with ease to permit the necessary cleaning between voyages.

The flow of refrigerated air does not dispense with the use of ice in the hold; but by keeping the air circulating round it at subfreezing temperature it reduces its melting point to an extent that an ice saving of 60 percent is possible. It is important, too, to note that the temperature recorded in the interior of the fish was always below freezing. When ice alone is used a difference of several degrees is often recorded.

The French company's process is protected by a British patent and arrangements are now being made for its exploitation in the United Kingdom. (*The Fishing News*, September 12, 1958.)



Greece

SPONGE FISHERY TRENDS:

Prices for this season's sponge catch are expected to be about 4-7 drachmas (about 13-23 U. S. cents) higher due to the better quality of the sponges from waters off Egypt and Cyrenaica.

The United States market for sponges is overstocked and few sales of this season's crop are expected in that market, according to the Greek fishery periodical *Alieia*. The western European sponge buyers are expected to delay purchasing in the hope of lower prices. However, the demand for second- and third-quality sponges by the eastern European market is better.



German Democratic Republic

EAST GERMAN FISHING FLEET CANNOT SUPPLY COUNTRY'S FISH NEEDS:

In spite of its large fishing fleet, the East German fishing industry can supply only about 25 percent of the country's fish needs, according to an article which appeared in the West German fishery periodical *Allgemeine Fischwirtschaftszeitung*. Technical deficiencies of the fleet and the long trips which East German fishing vessels must make to reach their catching grounds are primarily the reasons for the fleet's inability to supply the needed fish. East German fishing vessels, as a result, can utilize only 50 percent of their present productive capacity.

The Russians have not given any heed to requests made by the East German Government for permission to use Murmansk as a base of operations for their fishing activities. The author of the article says plans have been made in East Germany to build factory trawlers capable of staying out at sea for two months, but it may take until 1965 before such vessels will be placed into service.

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FISHERY TRENDS:

During the past five years, two State-owned fishery combines have been established in Sassnitz and Rostock in the Soviet Zone of Germany. The fishing fleet operated by these combines is relatively large: 200 deep-sea cutters, 35 luggers, and 24 trawlers. Besides the two combines, there exist numerous fishery cooperatives on the Baltic coast, op-

German Democratic Republic (Contd.):

erating about 200 small wooden cutters. However, these wooden cutters are suited only for coastal fishing operations. Under present catching conditions, the fishing fleet of the Soviet Zone has a total catching capacity of about 130,000 metric tons of fish per year. In 1957, actual landings, however, amounted to only about 65,000 tons of fish, which means that only 50 percent of the total catching capacity of the fleet was utilized. The reason for this was that about one-third of the fleet was laid up on account of technical breakdowns.

If the catching capacity of the East German fishing fleet could be utilized up to 100 percent, only half of the actual fish demand would be met in the Soviet Zone. The demand for sea fish in the Soviet Zone is estimated to amount to 260,000 tons. At present, the fishing fleet can only meet one-fourth of the demand. There is another reason why the fish landings of the relatively large fishing fleet are so small. East German fishing vessels have to make exceptionally long trips to reach their catching grounds, i. e., the North Sea, the waters off Iceland, the "Rosengarten" southeast of Iceland, the banks off the Norwegian coast, the waters off Bear Island, and the Barents Sea. The small vessels of the Soviet Zone fishing fleet can stay at sea for an average of three weeks only--14 days must be deducted from these three weeks for the round trip to the fishing grounds. This leaves only 8 days to catch fish. If the sea is rough, the small boats are often unable to catch fish. Therefore, they often return with small catches.

In order to improve the results of the catching trips, the crews of the fishing vessels have demanded larger vessels which are able to stay at sea for about two months. Already the First Five-Years' Plan, which expired in 1955, provided for the construction of such vessels. However, they have not been built yet. Under the Second Five-Years' Plan, such vessels are to be put into service until 1960, in order to improve the productivity of deep-sea fishing. It is planned to build the factory fishing vessels

in Soviet Zone shipyards. The modern factory trawlers being built by shipyards in the German Federal Republic will serve as samples. The Second Five-Years' Plan provides for the construction of five such factory trawlers to be built until 1960. Since the time required for the construction of each of the vessels will be about two years, the new factory trawlers will not be completed before 1965.

The small vessels of the East German deep-sea fishing fleet might be able to nearly fill the fish demand of the population of the Soviet Zone, if the Soviets would permit East German vessels to use the port of Murmansk as a base for their fishing operations in the Barents Sea. At present, Soviet Zone luggers require 18-20 days for a round-trip from the Barents Sea to the ports of the State-owned fishery combines in Sassnitz and Rostock. A round trip from the same catching grounds to Murmansk requires only 3 to 4 days. Operating out of Murmansk, quite a number of other fishing grounds could also be reached in considerably less time than required now. The fish could be shipped in refrigerated trains from Murmansk to the Soviet Zone. Such transports would be 4 to 5 times faster than by vessel. In addition, each Soviet Zone lugger and trawler would be able to make twice or three times as many fishing trips, and increase its production by as much as 400 to 600 percent, if it were permitted to land fish in Murmansk during the Barents Sea fishing season.

For years East German authorities have been trying to improve the uncooperative working methods in the fishing trade of the "socialist camp" in favor of the Soviet Zone fishing fleet. All efforts to come to an agreement with the Soviet Union regarding the use of Murmansk have been without avail.



Haiti

JAPANESE FISHING CONTRACT APPROVED BY ASSEMBLY:

The Haitian Assembly on July 17, 1958, voted approval of a contract signed on April 30, 1958, between the Government

Haiti (Contd.):

and one of the largest Japanese fishing companies. The Japanese company will be permitted to operate deep-sea fishing fleets from Haitian ports and to have the exclusive rights to export from Haiti fish caught on the high seas by vessels based in Haiti, the United States Embassy in Port-au-Prince reported in a September 26 dispatch.

Information received prior to this dispatch indicated that the Japanese firm would start building a freezer in Port-au-Prince within four months after the contract had been signed and that the contract was for a term of 25 years. In addition, the firm plans to concentrate on the long-line fishery for tuna.



Israel

TUNA FISHING COMPANY WITH JAPANESE-SWISS PARTICIPATION ESTABLISHED:

Following negotiations which were initiated by Israel's Minister of Commerce and Industry during his visit in Japan several months ago, a joint Israeli-Japanese-Swiss fishing company has been officially founded which will engage mainly in tuna fishing in the South Atlantic and Indian oceans.

The new enterprise is reported to own the M/V Shimu Maru, which left Japan several weeks ago and is now engaged in deep-sea fishing off the coast of South-West Africa. The vessel is one of a series that will be purchased in Japan by the company together with a larger ship equipped with refrigeration facilities. The firm's initial capital is understood to amount to US\$100,000, while a further sum of US\$200,000 is to be invested at a later date. The foreign partners in the new venture are a Swiss firm and a Japanese firm, reportedly affiliated with one of the largest Japanese shipping companies.

A recent statement by a Japanese representative of the new firm now visiting Israel in the company of the Israeli

manager indicated that the joint fishing enterprise will also be active shortly in the Red Sea where good prospects are said to exist for deep-sea fishing.

One of the fishing boats of the company will also serve as a floating plant for the production of fish meal from fish that are not used for human consumption. There are also plans to cultivate pearls in the waters of Eilat Bay, since its steady warm temperature throughout the year is believed to be very favorable for pearl culture. Japanese experts are at present in Eilat for the purpose of giving the necessary instructions to Israeli fishermen.

At the end of October, the Shimu Maru is due to arrive in Haifa and will take aboard a complement of Israeli fishermen who will be trained in deep-sea fishing methods. The first catch is expected to be marketed in Israel, the United States Embassy in Tel Aviv reported in a dispatch dated September 22, 1958.



Italy

REVIEW OF THE FISHERIES, 1957:

Italy's landings of fish and shellfish from the Mediterranean Sea amounted to 175,047 metric tons in 1957 as compared with 188,975 tons in 1956--a decrease of 7.4 percent.

Year	Fish	Molluscs	Crustaceans	Fresh-Water Fish
	(Metric Tons)			
1957	136,997	30,388	7,662	3,393
1954	150,835	27,491	6,670	3,618
1953	148,388	24,954	6,016	2,995
1952	165,465	22,783	5,443	2,997
1951	145,794	16,367	4,848	2,402

^{1/}Mediterranean production only, and excluding sponge production.

Imports of fishery products for 1957 amounted to 127,567 tons. Dried salted cod from Norway and Canada were the main imported fishery products, about 36 percent of the total imports. Exports of fishery products average only about 1,240 tons annually.

Italian sponge production has decreased considerably since 1951. Coral produc-

Italy (Contd.):

tion has increased as compared with 1951, but decreased as compared with the production in the period 1952-1955.

Italy's per capita consumption of fish in 1921 was 16.3 pounds, dropped to 14.6 pounds in 1941, and rose to 15.7 pounds in 1955.

Year	Sponge	Coral
	(Metric Tons)	
1957	10.4	1/
1956	9.2	4.0
1955	12.5	6.7
1954	28.0	7.2
1953	24.2	9.1
1952	26.2	8.2
1951	95.3	1.7
1/ Data not available.		

The Italian fishing fleet in 1957 consisted of 43,948 fishing craft, of which 11,136 were fitted with motors. In 1955 about 145,457 persons were engaged in the fishing industry. (Information Bulletin, No. 14, August 1958, General Fisheries Council for the Mediterranean.)



Japan

EXPORT OF TUNA LOINS AND DISCS TO THE U. S. APPROVED:

Since mid-August 1958 the Japanese fisheries trade press has been following closely the cautious steps that have been taken by the Japanese tuna industry and Government agencies toward a reopening of exports to the United States of cooked tuna loins and discs. These semiprocessed products can be canned with less than half the labor required for processing whole fish, and it is easy for all types of United States packers and others to engage in tuna canning. These products were placed under an export embargo in October 1957 because of the protests of United States tuna canners.

Following a meeting on September 4 of representatives of the Japanese Ministry of Agriculture and Forestry, the Ministry of International Trade and Industry, and the Ministry of Foreign Affairs, at which the reopening of loin and disc exports was finally approved, the Export Tuna Freezers' Association held a special meeting on September 5 and adopted certain changes to its regulations to cover the loin and disc trade. As these new

regulations were to take effect 20 days after promulgation, it was considered almost certain that export of loins and discs would begin not later than October 1, 1958.

The new rules provide: (1) Total loin and disc exports to the United States to March 31, 1959, will be 2,970 metric tons, of which 2,850 tons will be allocated on the basis of past production records, 90 tons will be allocated freely, and 30 tons will be held in reserve; (2) in calculating equivalence of loins and discs to round fish, the ratio will be 2 to 1; (3) minimum prices for sales to exporters will be set by the directors of the Association; (4) members of the Association must not produce loins and discs in any plant not approved by the Association.

In a press conference on September 8, the Director of the Japanese Fishery Agency stated that the loin-and-disc export quota of approximately 3,000 tons in the next 6 months did not necessarily mean that exports of 6,000 tons a year were envisaged. The situation, he said, would be re-examined next April, the United States Embassy in Tokyo reported on September 18.

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FISHING INDUSTRY FORESEES INTENSIFIED COMPETITION FROM RUSSIANS:

The Japanese fishing industry is concerned that the Soviet Union's sixth Five-Year Plan calls for an annual catch of 4.2 million metric tons (9.3 billion pounds) by 1960. In the Far East much of this production will have to come from fishing grounds now exploited by Japan. Soviet fishery men who have visited Japan recently have expressed a strong and inquisitive interest in Japanese fishing techniques, particularly for saury and tuna. Soviet "Fisheries Minister" A. A. Ishkov is reported to have expressed the intention of ordering between 15 and 20 tuna vessels of the 800- to 1,000-ton class, and of seeking the services of Japanese experts to train the Russians in tuna fishing. These vessels, according to Ishkov, would operate mainly in the Atlantic, but he mentioned the possibility that one or two of them might fish experimentally in the Pacific.

Late in September 1958 a Japanese fishing vessel reported sighting an 80-ton Soviet steel vessel fishing for saury 20 miles off Ochishi in eastern Hokkaido. The point of this report that has excited the most interest is that the Soviet fishing vessel was not using a stick-held dipnet, as Japanese saury fishermen do, but was apparently pumping the saury aboard with a fish pump. Several similar boats have been seen fishing off Shikotan Island in the Kuriles, which is believed to be their base.

Japanese press comment on this development has taken two tacks. One is that a large-scale Soviet advance into the saury fishery will necessitate reconsideration of Japan's regulations, particularly with regard to the time of opening of the season, in view of the possibility that the Russians might decimate the schools before Japanese vessels are allowed to begin fishing. A need for more intensive investigation of the resource and its ability to stand up under

Japan (Contd.):

added fishing pressure is also foreseen. If the Soviets should pursue the saury south, into the main grounds of the Japanese fishery, an extension of the Japanese-Soviet fisheries treaty to cover this species is seen as a possibility, and one commentator has observed that in this case the positions which the two countries occupy with respect to salmon might be reversed, with the U.S.S.R. asking the Japanese for an annual saury catch quota. Another commentator has pointed out that it ill becomes the Japanese fishing industry, which raises the battle-cry of "freedom of the high seas" whenever objections are made to its own operations, to pull a long face at the prospect of foreign competition on the fishing grounds. The saury, it is pointed out, are a high-seas resource and thus open to all nations.

Increased Soviet competition is also feared in the field of whaling. Russia's whaling fleet, according to reports, is being augmented by a mammoth whaling factoryship (46,000 gross tons), the *Sovetskaya Ukraina*, which is soon to be launched at the Nosenko shipyards near Odessa. This ship is 715 feet long, 108 feet in beam, and 1.5 times the tonnage of the *Slava*, the factoryship which the Russians are using in the Antarctic at present. As completion of outfitting is estimated to require 6 months, the new ship cannot take part in the 1958/59 winter's whaling, but it is considered certain that she will be going to the Antarctic next year. (United States Embassy dispatch from Tokyo, September 25, 1958.)

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NEW GOVERNMENT CORPORATION ESTABLISHED TO PROMOTE EXPORTS:

On April 26, 1958, the Japanese Diet passed the "Japan Export Trade Promotion Agency Law" which provided for the establishment of a new government corporation to succeed the Japan External Trade Recovery Organization and to take over the functions, responsibilities, and facilities of that organization. On July 8, the Diet approved additional legislation which provided a capital fund of ¥2 billion (about US\$5.6 million) for the new organization. The new organization (Japan Export Trade Promotion Agency) was established as of July 25, 1958, with headquarters at Kokusai Kanko Kaikan Bldg., No. 1, Marunouchi 1-chome, Chiyoda-ku, Tokyo, Japan (the head office of the old Japan External Trade Recovery Organization had been at Osaka).

The Agency will have the same broad responsibilities for promotion of Japanese exports as did its predecessor organization. However, the predecessor organization operated as a quasi-government agency in the sense that a portion of its financial support was provided by Japanese Government appropriations. The remainder came from membership fees from about 300 members, comprising trading firms, manufacturing companies, and banks, and donations from prefectural and city governments. The new organization will operate as a wholly Japanese Government corporation. Its working capital will come from interest obtained from the capital fund, from yearly Japanese Government appropriations, from sales of publications, and services (for example, where some special service is provided a private firm such as exhibiting the firm's products at a trade fair), and possibly from donations. The new Agency is operating under a budget of approximately \$4.7 million for fiscal year 1958 (April 1, 1958-March 31, 1959).

The Minister of International Trade and Industry has appointed a president, vice president, and a secretary-general and auditor for the new organization and to date has approved the appointment of four directors.

The law creating the new Agency, in addition to providing for officers and directors, provided that an operations council should be established to act as a consultative body for the president of the organization and to deliberate and decide upon important matters concerning the operation of the organization.

The new operational council met on August 18, 1958, and approved an operating program for the new Agency that includes establishment of new overseas trade centers, a strengthened market research program, and participation in international trade fairs.

Included in the program for the balance of fiscal year 1958 are (1) overseas market research; (2) overseas special promotional work; (3) participation in international trade fairs; (4) export promotion of Japanese agricultural and aquatic products (includes concentrated market research to be carried out in the United States on raw and canned tuna

and vitamin oils); (5) modernization and improvement of design for Japanese export merchandise.

The working organization with headquarters in Tokyo will include these departments: (1) planning; (2) service; (3) finance; (4) trade center; (5) overseas public relations, overseas expositions, agricultural and aquatic products, machinery, and Brussels Exposition Administration. The working organization is set up to include overseas trade centers and joint offices with export associations. A joint office with the frozen fish export association is located at Long Beach, Calif.

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SAURY FISHING SEASON OPENS:

The saury, or mackerel pike (*Cololabis saira*), fishing season in Japan opened legally for boats under 20 tons gross on August 12, 1958, for 20-30 ton boats on September 1, and for larger vessels on September 12. Fishing will continue into January of 1959.

This species, which is not fished commercially elsewhere in the Pacific, is one of Japan's most important food fishes, and last year's landings of 929.6 million pounds were second only to anchovies in the Japanese catch. It provides cheap fresh fish for the domestic market and raw material for low-priced canned goods for export to Southeast Asia, Africa, and the Near East. Last year's average ex-vessel price was 1.4 U.S. cents a pound. Saury is also important as bait for tuna long-lining.

Landings have been increasing steadily since the war, and annually run 6 to 7 times higher than the prewar record. In the 1957/58 season, 1,909 vessels participated in the fishery, 746 of them under 20 tons and 577 between 20 and 50 tons. This season the number of smaller boats is down slightly, but the number of large boats taking part in the fishery has increased. This reflects changes in the size composition of the fleets engaged in other fisheries, as saury fishing is an off-season occupation for druggers, seiners, salmon gill-netters, and small tuna boats. The saury is captured primarily with a stick-held lift net (bokeami), the fish being attracted over the net by light.

The schools of this small (12-18 inch) pelagic fish first appear east of Hokkaido and move southward off the Pacific coast of Honshu as the cold water spreads out during the winter. Some saury are landed as far south as Kyushu, but the bulk of the landings is concentrated in the areas north of Tokyo, particularly in Fukushima and Chiba prefectures. Early season scouting this year by 13 research vessels from Hokkaido and 6 from northeastern Honshu have produced forecasts, based on the hydrographic picture and the pattern of appearance of the schools, of another heavy catch. A committee of government and industry has been working, as it does each year, to prepare transportation and marketing facilities to handle the flood of saury and to prevent the disastrous price breaks which too often result from heavy landings of this species in ports far from the main population centers. Special trains carrying saury from northeast Honshu to Tokyo will begin running on September 15.

The Saury Export Canners Association, meanwhile, has been laying plans for its new production year, which began August 1. The initial plan, set up early in July, was for a total of 830,000 cases, of which production was to begin as soon as possible on 650,000 cases and the final decision on whether or not to pack the remainder was to be left until the end of August, after it was seen how sales were progressing. The canners were reportedly eager to produce, while the Canned Fish Joint Sales Co. wanted to hold back, in view of the anticipated carryover of 170,000 cases of last season's pack. The packers are said to have threatened that if they did not get an additional quota of at least 100,000 cases, they would be forced to produce saury in soy sauce for the Philippines trade, an export which had been embargoed for 1 year after August 1 because of the serious competition it was giving Japanese canned sardines in that market. On August 29 it was finally decided to authorize an additional quota of 150,000 cases, making a total of 800,000 cases for the year.

The Joint Sales Company, faced with a total of 930,000 cases to sell--the carryover from last year is now put at 130,000 cases--has set up the following sales goal: Egypt, 100,000 cases in water; Burma, 200,000 cases in tomato sauce; Singapore and Malaya, 120,000 cases in tomato sauce; Ceylon, 90,000 cases in tomato sauce; New Guinea, 10,000 cases in tomato sauce, 80,000 cases in water; West Africa, 35,000 cases in tomato sauce; Indonesia, 20,000 cases in tomato sauce; Philippines, 75,000 cases in tomato sauce, 175,000 cases in water; other markets, 16,000 cases in tomato

Japan (Contd.):

sauce, 9,000 cases in water; totals, 476,000 cases in tomato sauce and 454,000 in water.

Prices at the canners' level this year for canned saury in tomato sauce are: No. 1 cans, US\$6.38; No. 3 cans, \$7.20; small No. 1 cans, \$5.68; and No. 7 fruit cans, \$3.60 a case. Prices for canned saury in water are: small No. 1 cans, US\$5.12; and No. 4 cans \$5.05 a case. This represents a drop of 27 U. S. cents a case on tomato sauce No. 3's and No. 4's in water, and of 13 cents on No. 1's in water. The No. 7 fruit can, which is a new pack, is set at 19 cents below the price for sardines in the same size can. (September 15, 1958, dispatch from the United States Embassy at Tokyo.)



Mexico

ENSENADA FISHERY TRENDS, THIRD QUARTER 1958:

Shrimp Fishery: During July 1958, the catch of shrimp in Sebastian Vizcaino Bay and the Puerto de Santo Domingo on the west coast of Baja California by boats largely from Sonora and Sinaloa was at a high level. In the middle of the month 7-10 shrimp trips arrived daily in Ensenada, selling at a reported 20,000 pesos a ton (about 72.6 U.S. cents a pound). The Ensenada area prospered from the good catch; shrimp were frozen and canned at the canneries; the vessels purchased so much ice as to exhaust the supplies of the local ice plants; and crew members helped to bolster retail store sales. At the end of the month the shrimp moved south and with them left a flotilla of 100 shrimp boats.

Spiny Lobster: The spiny lobster season was due to open on October 15, 1958, and continue until March 1, 1959. With the usual optimism, experts say that the season in Baja California waters should easily surpass that of the year before.

Canning: The sardine catch continued to be poor in the third quarter of 1958, and except for seasonal work, canneries at Ensenada complained that their business was still in a slump, which has already lasted two years. It is hoped that the anticipated good spiny lobster catch will stimulate activity in these canneries.

New Fishing Company: A new company, 100-percent Mexican-owned, which will engage in the catching, processing, and sale of tuna, has been formed with a capital of about US\$800,000. The firm will have six boats equipped with refrigeration. In addition, the company expects to maintain a well-equipped repair shop in Ensenada to service the vessels. These vessels will give business to the canneries of Ensenada, which, in addition to tuna, will can the lower-priced jack mackerel and striped tuna (skipjack).

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MERIDA SHRIMP FISHERY TRENDS, JULY-SEPTEMBER 1958:

During July-September 1958 shrimp exports (almost all to the United States) from the Merida area on Mexico's east coast amounted to 4,752,000 pounds, down about 4.4 percent from the 4,970,000 pounds exported in the third quarter of 1957. The usual increase in the landings of shrimp for this quarter failed to materialize this year. As a result, both the Campeche and Ciudad del Carmen boat owners were having financial problems.

Prices received for 15-20 headless shrimp at Brownsville, Tex., during the quarter averaged about 90 U. S. cents in July, 96 cents in August, and 88 cents in September. Smaller sizes brought from 5-8 cents less per pound for each smaller size group.

At the end of the quarter the United States market was weaker for frozen shrimp, particularly for the large and jumbo sizes. But shrimp prices often decline seasonally during the fall when landings on the United States Gulf of Mexico coast increase.

In addition to shrimp, other fishery products exported during the third quarter in 1958 were frozen fish (24,400 pounds), shark fins (2,700 pounds), and shark skins (18,200 pounds).



Morocco

FISHING FLEET AS OF JANUARY 1958:

As of the end of 1957 the Moroccan fishing fleet totaled 2,270 vessels, of which 1,850 vessels or 81.5 percent were under 5 tons in size. The number of fishermen totaled 8,588. Of the 1,850 small trawlers and line vessels ("palangriers"), only 129 were equipped with motors. The trawlers vary between 30

Table 1 - Moroccan Fishing Fleet as of January 1958

Fishing Port	Trawlers ("chalutiers et chalutiers-sardiniers")		Commercial Sardine Seine Fleet-1/ ("sardiniers")		Small Trawlers and Liners 2/ ("palangriers")
	Number	Tons	Number	Tons	
Tanger	7	327	1	6	104
Khenitra (Port Lyautey)	3	123	3	37	67
Rabat	1	13	9	83	98
Fedala	44	2,911	57	731	201
Casablanca	-	-	7	68	150
El Jadia (Mazagan)	32	1,126	94	2,347	245
Safi	1	23	12	256	196
Essaouira (Mogador)	30	1,189	118	1,859	765
Agadir	118	5,712	302	5,405	1,850
Total					

1/18-ton average.
2/3.4-ton average.

and 70 tons. The seiners, employing purse-seines ("cerco"), average 18 tons.

Nylon purse-seine nets are now widely used by the commercial sardine fleet and a large nylon tuna purse-seine was recently bought from Japan for experimental purposes. Experiments are also being made with electric fishing.

There are five tuna trap nets ("madragues") operating on the Moroccan coast, and a sixth is to be installed dur-

Morocco (Contd.):

ing the course of this year, the United States Embassy at Casablanca states in a dispatch dated September 23, 1958.



Norway

COD FISHING ON THE NEWFOUNDLAND GRAND BANK:

The Grand Bank of Newfoundland is now the scene of a greater international fishery than at any time in history. Bolstering the traditional fleets from Spain, France, Portugal, the United Kingdom, Italy, the United States, and Canada are fishing vessels from the U. S. S. R., Norway, and the Faroe Islands. Some of the latter countries have appeared on the scene only in the past year or two, for example the U. S. S. R., Norway, and the Faroese.

Three Norwegian long-liners arrived in the port of St. John's, Newfoundland, in June 1958. The biggest vessel was 348 gross tons and carried a crew of 22 men; the other vessels were approximately 220 tons and had a complement of 20 men. They left Norway April 9 and returned with their first load by the first week in July. After a two weeks' stay in Norway, they set out for the western banks again and returned with a second load of cod in October. The work of the crews is limited to catching, splitting, and salting the fish. Most of the catch is cured in artificial dryers by the company which buys their catch.

The catching method employed by the Norwegian fishermen is to use two lines to a tub. Each line is 75 fathoms in length and has 100 hooks attached. Thirty lines are joined together, which gives a total length of 2,250 fathoms (13,500 feet). They usually work two strings at a time, and sometimes three.

The lines are set at night while the crew rests. A good week's catch would be 80,000 pounds of salt fish. The price paid for top-quality salt cod is 12½ cents a pound and these fish must measure at least two feet.

The average Norwegian fisherman earns about 12,000 kroner (US\$1,780). Out of this he pays 1,000 to 1,200 kroner (US\$140-170) for his food.

Under the Norwegian method of processing, the fish are bled for two hours as soon as they are caught. Then they are split, salted, and stacked. After a period of about seven days the old salt is removed and the fish receive a light sprinkling of clean salt and are restacked. (Canadian Department of Fisheries Trade News, July 1958.)

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FISHERIES TRENDS, JANUARY-AUGUST 1958:

During the first eight months of 1958 landings by Norwegian fishermen totaled 927,579 metric tons as compared with 1,326,321 tons in the first eight months of 1957. As a rule about 85 percent of the annual catch is landed during the first eight months of the year; therefore, 1958 promises to be a relatively poor year for the fishing industry as a whole.

In a closely divided vote, the National Council of the Norwegian Fishermen's Association decided to urge the Government to proclaim a 12-mile fishing limit effective January 1, 1959, unless the fishing limits dispute between Iceland, the Faroes, and the British is settled satisfactorily before this date. The Government favors settlement of the dispute over fishing limits by means of an early international conference under the auspices of the United Nations. The Government, however, has observed the newly established Icelandic 12-mile limit by cautioning Norwegian vessels about fishing inside this limit.

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GOOD SHRIMP RESOURCES FOUND OFF WESTERN SPITZBERGEN;

The research vessel of the Tromsø Museum in northern Norway returned recently from a trip to Western Spitzbergen with a report that it had trawled for shrimp and found very good resources in the Isfjorden and Forlandet areas. The largest catch was 200 liters in a one-hour drag or about 5.7 U. S. bushels. The en-

Norway (Contd.)

tire catch was large fine shrimp, according to a September 17, 1958, report in Fiskaren, a Norwegian fishery trade paper.

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SEALING OPERATIONS IN DENMARK STRAIT TO BE ENDED GRADUALLY:

The Norwegian Minister of Fisheries stated to the press in September 1958 that the Ministry has worked out a plan to bring about a gradual cessation of Norwegian sealing operations in the Denmark Strait, the channel between South-east Greenland and Iceland. Under the plan no new concessions will be granted for sealing as old vessels are withdrawn from the operation. The gradual cessation of sealing in the Denmark Strait is being carried out in accordance with an agreement between Norway and the Soviet Union which the Storting ratified several months ago. No time limit for the cessation was stipulated in the agreement, but out of consideration for Norwegian sealing interests, the Soviet Union has agreed to let it take place by means of successive reductions over a period of time, the United States Embassy in Oslo reported on September 26, 1958.

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WHALING FLEET DEPARTS FOR ANTARCTIC:

Of the nine Norwegian whaling expeditions which will take part in the 1958/59 whale hunt, four left Norway during October for the 10,000-mile voyage to the Antarctic. The others will depart before November 10. Most of the ships are registered at Sandefjord, Tønsberg, and Larvik, in the province of Vestfold, where nearly 7,000 whalers have their homes.

Altogether 20 expeditions from 5 countries will participate in the coming whale hunt, same as last year. The total includes 9 Norwegian, 6 Japanese, 3 British, 1 Dutch, and 1 Russian. The number of catcher boats assisting the big factory-ships is also the same as last season--257, including those working out of the three land stations. Norwegian expeditions will have 92 catcher vessels, as a-

gainst 94 last season. Another 7 will be operated by the Norwegian land station at Husvik Harbor, on the Island of South Georgia, which was closed last year, giving Norway a total of 99 catcher vessels. Altogether 6,830 Norwegian whalers will be in the Antarctic during the coming season, including 2,110 hired by British and Japanese companies. Crews aboard Norwegian whaling ships total 4,720, an increase of 356 over last year's figure.

At the last meeting of the International Whaling Commission it was decided to limit the total catch quota for all nations to 14,500 blue-whale units, each corresponding to about 137 drums of oil. This is the same quota that applied to the two preceding whaling seasons. The Netherlands, however, has protested that the quota could safely be raised to 15,000 units. So far, no action has been taken on the Dutch proposal.

The Antarctic open season for fin whales begins January 7, 1959, while the blue-whale season will start on February 1. Last winter, the blue-whale quota was filled in only 44 days, and the fin-whale season was closed after 69 days. Norway's share of the baleen whale catch in 1958 dropped to 39.6 percent of the total, as against 45.5 percent in 1957. Norwegian expeditions processed some 125,000 metric tons of whale oil, over 29,000 less than in the preceding season, and 19,800 tons of sperm oil, an increase of 3,400 tons.

According to a dispatch to an Oslo newspaper, Norwegian whaling operators take a dim view of prospects for the coming season. Among the adverse factors are a drop in the price of whale oil on the world market and higher wage scales granted to Norwegian crews. On the basis of the latest price for whale oil, £67-10.0 (about US\$189) a long ton, the average Norwegian expedition will have to process over 15,500 tons to cover operating expenses, estimated to total about Kr. 21 million (US\$2,940,000). The result is determined by weather and wind, the skill of the crew and, not least, plain luck. Norwegian whaling companies have an additional handicap in relation to several of their competitors. They are operated as commercial enterprises and receive no

Norway (Contd.):

state subsidies or special privileges of any kind.

Norway has repeatedly taken the initiative to place whaling on a more rational and economic basis. Though there is no international agreement to reduce participation, the Norwegian government has since 1948 rejected all applications for building new factoryships or replacing old ones. Since 1952, the number of Norwegian expeditions has been reduced from 10 to 9, whereas other nations have increased their participation. On the initiative of Norwegian whaling companies, a voluntary reduction has been assured in the number of catcher boats attached to each factoryship. The Soviet Union, which is not a party to the international agreement, used 24 catcher boats for the one Soviet expedition which took part in the 1957/58 season, as against an average of 10.4 for each Norwegian expedition. And in the next three years, three additional Soviet expeditions are scheduled to join the Antarctic whale hunt. This prospect is a source of grave concern in Norwegian whaling circles (News of Norway, Oct. 23, 1958).

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WHALING INDUSTRY FEARS INCREASED SOVIET PARTICIPATION IN ANTARCTIC:

The Norwegian whaling industry is reported by the press to be very concerned over the prospects of increased participation by the Soviet Union in whaling operations over the next few years. The Norwegian Whaling Council held a meeting in Oslo recently to consider what action should be taken to meet the threat of added competition. According to the press, consideration was given to the advisability of Norwegian withdrawal from the International Whaling Convention, states an October 3, 1958, dispatch from the United States Embassy at Oslo.



Peru

FISH MEAL PRODUCTION DOUBLED IN 1957:

The 1957 production of fish meal in Peru amounted to 64,480 metric tons as compared with 30,969 tons in 1956. Although there is Government control over the construction of new reduction plants, expansion of the fish meal industry continues at a rapid rate. Prices for fish meal in September 1958, according to a September 30 dispatch from the United States Embassy in Lima, were about US\$145 a metric ton f.o.b. Callao.

There is some official concern over the increasing drain on anchovy resources as a source of fish meal. It is feared that the guano industry will be damaged as the large flocks of seabirds ("aves guaneras") are dependent on the anchovy as a source of food.



Philippines

RESTRICTIONS ON OTTER-TRAWL FISHING PROPOSED:

The Philippine Undersecretary of Agriculture and Natural Resources stated in October 1958 that the Department of Agriculture will issue an order restricting otter-trawl fishing in Manila Bay to certain areas to conserve the fish supply. This policy resulted from the charges of the small fishermen that trawl fishing was depriving them of their livelihood.

The proposed ban on trawl fishing is a recurrent problem which results from political pressure from small fishermen. The FAO fisheries consultant who recently completed a two-year study of commercial fishing in Manila Bay and San Miguel Bay, publicly stated that his studies had shown that trawl fishing, as practiced in the Philippines, did not deplete the supply of fish. Commercial fishing spokesmen claim that a shortage of fish would result if trawl fishing were banned. Officials state that one of the primary causes of fish depletion is the use of dynamite, which is primarily used by small fishermen.

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Portugal

CANNED FISH EXPORTS, JANUARY-JULY 1958:

Portugal's exports of canned fish during January-July 1958 amounted to 32,868 metric tons (2,012,800 cases), valued at US\$17.7 million, as compared with 23,971 tons, valued at US\$15.0 million, for the same period in 1957. Sardines in olive oil exported during the first seven months of 1958 amounted to 22,543 tons, valued at US\$12.1 million.

During January-July 1958, the leading canned fish buyer was Italy with 5,579 tons (valued at US\$2.9 million), followed by Germany with 5,225 tons (valued at US\$2.8 million), Great Britain with 3,496 tons (valued at US\$1.8 million), the United States with 3,085 tons (valued at US\$2.2 million), and Belgium-Luxembourg with 2,435 tons (valued at US\$1.2 million). Exports to the United States included 1,542 tons of anchovies. (*Conservas de Peixe*, September 1958.)

Species	January-July 1958	
	Metric Tons	US\$ 1,000
Sardines in olive oil	22,543	12,062
Sardinelike fish in olive oil	3,589	2,464
Sardine & sardinelike fish in brine	624	143
Tuna & tunalike fish in olive oil	1,019	815
Tuna & tunalike fish in brine	438	218
Mackerel in olive oil	3,919	1,744
Other fish	736	215
Total	32,868	17,661

CANNED FISH PACK, JANUARY-MAY 1958:

The total pack of canned fish for January-May 1958 amounted to 8,797 metric tons as compared with 9,204 tons for the same period in 1957. Canned sardines in oil (5,066 tons) accounted for 57.6 percent of the January-May 1958 total pack, higher by 15.4 percent than the pack of 4,389 tons for the same period of 1957, the September *Conservas de Peixe* reports.

Product	Net Weight	Canners' Value
	Metric Tons	US\$ 1,000
In Olive Oil:		
Sardines	5,066	2,739
Sardinelike fish	371	176
Anchovy fillets	1,542	1,334
Tuna	810	604
Other species (Incl. shellfish)	206	145
In Brine:		
Sardinelike fish	498	85
Other species	304	115
Total	8,797	5,198

Note: Values converted at rate of 28.75 escudos equal US\$1.

COD FISHING TRENDS, OCTOBER 1958:

The Portuguese cod fishing fleet operating on the Grand Banks and off Greenland was ordered to return to Portugal about the middle of October. The season's catch was estimated to be about 26,000 metric tons, or only about two-thirds of the fleet's capacity. A scarcity of cod and poor fishing weather contributed to the lower catch this season.

During the season six vessels were lost at sea (all crew members were saved) during the fishing season on the Grand Banks and off Greenland. About 1,500 tons of green salted cod were lost with five of the vessels (all of them more than ten years old). The loss of these vessels reduces the capacity of the Portuguese salt cod-fishing fleet to about 38,600 tons.

FISHERIES TRENDS, JULY 1958:

Sardine Fishing: During July 1958, the Portuguese fishing fleet landed 8,706 metric tons of sardines (valued at US\$1,096,939 ex-vessel or \$126 a ton). In July 1957, a total of 7,556 tons of sardines were landed (valued at US\$1,184,382).

Canneries purchased 53.4 percent or 4,652 tons of the sardines (valued at US\$625,148 ex-vessel or \$134.38 a ton) during July. Only 2 tons were salted, and the balance of 4,052 tons was purchased for the fresh fish market.

Matosinhos lead all other ports in July landings of sardines with 5,914 tons or 67.9 percent, followed by Portimao 937 tons (10.8 percent), and Penichi 611 tons (7.0 percent).

Other Fishing: The July 1958 landings of fish other than sardines were principally 4,650 tons (value US\$331,050) of chinchards, 2,208 tons (value US\$238,306) of anchovies, 320 tons of mackerel (value US\$34,900), 93 tons of tuna (value US\$22,400), and 44 tons of bonito (value US\$6,800). (*Consevas de Peixe*, September 1958.)



Republic of Korea

ACCOMPLISHMENTS OF UNKRA IN FISHING INDUSTRY:

A report on the accomplishments of the United Nations Korean Reconstruction Agency (UNKRA) program of aid to the Republic of Korea states that "The fishing industry was supplied with large quantities of nets, other gear, and ice plant and cold-storage equipment. UNKRA boat-building materials resulted in 486 new fish-

Republic of Korea (Contd.):

ing craft and repairs to more than 1,200 others. Ten deep-sea fishing trawlers also were built in Hong Kong for Korea. Two modern new fish canneries were established with a total capacity of 300,000 cases a year, increasing canning facilities by more than 50 percent." (United Nations press release dated October 13, 1958.)

UNKRA was established in 1950 "to help the Republic of Korea and its people toward the restoration of their war-wrecked economy. The latest report (Doc. A/3907) marks the conclusion of the Agency's operational activities, except for a very few projects which will be carried to completion by a small staff of UNKRA personnel.

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TUNA LONG-LINE VESSELS FISHING FOR AMERICAN SAMOA CANNERY:

Vessels of South Korea's long-line sea-fishing fleet are scheduled to fish tuna for the tuna cannery located on American Samoa, which is leased and operated on that Island by a United States west coast canner. One Korean vessel has been fishing for the American Samoa cannery since the spring of 1958. In the meantime, another vessel was reported sailing for fishing off that Island and another six long-line fishing research vessels are scheduled to fish for tuna in the same area. (Ou Min Sinbo, a Korean newspaper, dated September 9, 1958.)



Spain

OFFSHORE FISHING FLEET OPERATORS OPPOSE EXTENSION OF TERRITORIAL WATERS:

The Syndical Council of the Spanish Syndical Federation of Operators of Long Range Fishing Vessels (Federacion Espanola Sindical de Armadores de Buques de Altura) at a meeting in Vigo on September 11-12 went on record as opposing any extension of existing territorial fishing limits.

The nongovernment organization also voted to send a telegram expressing the admiration of Spanish trawlermen to the English Federation of Fishing Vessel Operators in Grimsby, for the firmness and tenacity with which it is defending recognized fishing rights against the unilateral decision of the Icelandic government.



Turkey

FISHING INDUSTRY EXPANDS:

Four-fifths of the total fish production in Turkey consists of salt-water fish (90 percent are caught in the Black and

Table 1 - Turkey's Production of Fishery Products, 1952-57

Year	Salt-Water Fish	Fresh-Water Fish	Total ^{1/}
.....(Metric Tons).....			
1957	90,470	18,500	108,970
1956	114,600	16,900	131,500
1955	83,000	20,000	103,000
1954	87,373	22,982	110,355
1953	67,031	25,369	92,400
1952	68,152	23,052	91,204

^{1/}Dolphin production is not included.

Marmara Seas), and one-fifth fresh-water fish. Of the total fish production, 75 percent is consumed on the local market

Table 2 - Turkey's Fishing Fleet, 1954-57

	1957	1956	1955	1954
Powered craft	1,230	995	975	950
Nonpowered craft	4,700	4,500	4,300	3,900

(70 percent as fresh fish, 30 percent as frozen, dried, smoked, or canned); 10 percent is reduced into meal or oil; and 15 percent is exported.

Table 3 - Turkey's Exports of Fishery Products and Byproducts, 1950-57

Year	Metric Tons
1957	19,660
1956	24,248
1955	15,846
1954	6,507
1953	4,787
1952	5,091
1951	4,260
1950	5,482

Turkey (Contd.):

About 25,000 persons are employed in the Turkish fishing industries, including canneries, reduction plants, etc.

The export of fish--including fresh and frozen fish, smoked and canned fish, fish meal and fish oil, and sponges, etc.--has increased considerably.

The annual per capita consumption of fish--including processed fishery products--has increased to 3.5 kg. (7.7 lbs.) in 1957 as compared with 2.5 kg. (5.5 lbs.) in 1952. (FAO General Fisheries Council for the Mediterranean, Information Bulletin, No. 14, Aug. 1958.)



U.S.S.R.

RUSSIAN METHODS FOR FREEZING FISH-AT-SEA:

The development of efficient fish-freezing-at-sea methods, and the construction of appropriate installations to effect this, are two of the most important problems facing the fishing industry, the British fishery periodical, The Fishing News of Sept. 26, 1958, reports in a summary of a paper presented by Soviet fisheries experts at a meeting held in Moscow.

These problems have been studied in Russia since 1888 when barges were constructed for frozen fish, and today about 300 large refrigerated fishing vessels are operated in the U.S.S.R. These vessels include refrigerated floating factories, non-powered floating refrigerators and fish-freezing barges, fishing freezer vessels of the Druzhba class, and large freezer trawlers.

Freezing in brine is used on some of these, with air-blast installations on others, including the freezer trawlers of the Pushkin class.

In the former case, sometimes the fish are dipped in cold brine, and sometimes it is sprayed over the fish. Various types of conveyors are used, some having automatically unloading baskets, others a wire-mesh conveyor belt carrying fish through the brine spray.

Most of the vessels (as distinct from the floating factories) are, however, equipped with tunnel freezers of the parallel air-blast type. The air coolers are located in the bottom of the tunnel on the factoryships, and beside it on the trawlers. The upper part of the tunnel has an overhead rail with a chain conveyor transporting the baskets of fish, which are in the tunnel from 4-5 hours according to size.

Aboard the trawlers, after unloading on to the upper deck, the fish is delivered through a bunker on to a table where six men are working. Each guts seven fish per minute by hand, so that about 60-65 tons of fish are dressed on the table each 24 hours. The gutted fish are placed on one of two conveyors, one leading to the fillet production line, the other for freezing drawn cod in blocks.

Machines are used on the filleting line for heading, filleting, and skinning, the filleting machine having an output of 20 fish per minute. Production of unskinned fillets is 42 percent of the whole fish, of the skinned 37.7 percent. The fillets are washed in brine, packed into pans, the pans loaded into trucks and run into the freezing tunnel. Eventually the fillets are taken from the pans and glazed with a water spray. The blocks are then cartoned, weighed and marked, and stacked in the hold.

There are four blast tunnels, each taking four trucks containing about 1,100 pounds of fish each.

Cod less than about 20 inches long are frozen in the round in blocks. After gutting and heading, the fish are washed in a special machine and placed in pans holding about 20 pounds, after which the freezing follows the same process as above described. The output in this section is about 35 fish per minute or 50 tons in 24 hours.

Comparative figures which have been produced show that the most perfect freezing installations are those operating on the large refrigerating freezer trawlers and some of the floating factories.

Even these, however, have certain faults which have yet to be eliminated: for instance the uneven distribution of the air current in the tunnel causing a variation in the freezing of the fish; and the mechanization of the installations still leaves much to be desired. Although baskets in the tunnel freezer in some of the floating factories are moved by means of a chain conveyor, as they leave the tunnel they must be transported manually. The heavy and bulky pneumatic machine used in moving the baskets containing the fish on the freezer-trawlers also needs simplification.

In all cases the use of removable pans to hold fish is considered a drawback. They are subject to damage, and floor space is taken up in their cleaning, repair and storage. In this connection a new method was evolved last year by the U.S.S.R. Scientific Research Institute for Refrigeration, whereby these faults were eliminated. In some cases defrosting the coils and the draining of the melted ice caused some trouble which needs investigation.

Those installations, including the trawlers, where the pans are provided with covers, give better results than where the pans are open. The covers reduce shrinkage (0.32 to 1.41 percent, reduced to 0.15 when covers are used), heat exchange conditions are improved, the upper surface of the block flattened, and its volume thereby reduced.

Because of drawbacks found in the process no more freezing-in-brine installations are being used in the U.S.S.R. except for tuna fishing. It has been found that the surface of the fish is salted, there is a great difficulty in maintaining the necessary temperature, and the working conditions for the personnel are unsatisfactory as they are in constant contact with cold brine.

However, the process has certain advantages, so research is continuing on the lines of finding an osmotically passive solution with a sufficiently low freezing temperature, so that the method could be used satisfactorily on some vessels.

Research on a large scale is also proceeding in the Soviet Union on methods of freezing by heat transfer by direct contact of the fish with the cooling surfaces--intermediate media, air and brine all being eliminated. Some experiments along these lines include a compression of the blocks which greatly increases the hold capacity. An experimental rotary quick freezer of this type has movable hollow wall moulds from which the frozen fish block can be removed without defrosting and the block is discharged automatically from the freezer. This work appears to be most promising.



United Kingdom

CANNED SALMON IMPORTS INCREASE SHARPLY WITH LIFTING OF RESTRICTIONS:

Japanese salmon canners are to expand exports to the United Kingdom to 836,000 cases by the end of the year, an increase of 300,000 cases as compared with last year's figure, according to a September 29 report from Tokyo.

The decision was made in an attempt to meet possible increased demands from Britain following the recent easing of import restrictions.

United Kingdom (Contd.):

First arrivals of canned salmon since the lifting of British restrictions on dollar imports are expected towards the end of November.

It is expected that the price to the consumer for some grades of salmon will be about 4s. 6d. a pound can (about 63 U. S. cents, and maybe much lower in the larger cut-price shops.

The free import of Canadian salmon is welcomed by the wholesalers who feel that the end of the artificial market for canned salmon is in sight. In the past some firms, including caterers, have been willing to pay exorbitant prices, but the bottom has now been knocked out of this market. The resale market has already felt the impact and at the time of writing the price per case of 48 half-pound cans had dropped by £2 (US\$5.60).

Canned salmon sold heavily in the industrial areas before the last war, which soon made it a "luxury" food. Liverpool handles most of the imports and it seems likely that the bulk of the trade will revert to the well-known pre-war brand names. (London Financial Times, September 30, 1958.)

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EXPERIMENTS ON TEMPERATURE OF FISH IN TRANSIT:

Tests to determine the temperature of fish while in transit from the point of landing to the inland point of destination were conducted in June 1958 by the Humber Laboratory, Hull, British Department of Scientific and Industrial Research. These tests were part of a series of studies on the temperature of fish at all stages of the distribution chain begun in 1956.

Two observers were stationed at Aberdeen, two at Lowestoft, and two at an inland depot at Wokingham. Those at the ports measured the temperature of the fish as it was packed into boxes and marked such boxes with a special label. These boxes then traveled with all the rest of the consignment by insulated trucks to the inland depot.

Here the other observers watched for them during unloading and measured the fish temperatures again. Finally, some of the boxes which had traveled from Aberdeen to Wokingham were sent on to Lowestoft to simulate the journey from the inland depot to the retailer, and the fish temperatures measured for a third time.

While all this was going on, other members of the Humber Laboratory staff remaining in Hull measured the temperatures of herring arriving there from Scotland in boxes on open trucks covered by tarpaulins.

This work was not simply a comparison between insulated and uninsulated trucks. That was only one of the differences. An important point which was noticed right at the beginning of the experiment was that the fish in insulated trucks was

always very well iced. That is to say, not only was there plenty of ice in each box, but it had been put in the right places, namely, both at the top and the bottom, as recommended.

Fillets, which at the time of packing in Aberdeen were at temperatures of 41° to 45° F., arrived at Wokingham at between 32° F. and 32.5° F. These are the average temperatures for the "best" and "worst" days, readings being taken for four days in succession.

Even when some of these boxes had been transferred from one truck to another and made the further journey to Lowestoft, their temperatures were between 33° F. and 35° F. Similarly, cod fillets, which left Lowestoft at 44° F. 46° F., arrived at Wokingham at 32° F.-33° F. In all cases the temperature of a box was obtained by taking the average of 12 temperatures measured in the fish.

Herring are slightly more difficult to cool than white fish, and although the average temperature of herring at Aberdeen varied between 37° F. and 42° F., i.e., lower than that of fillets, the average temperature of herring at Wokingham was a little higher--32° F. to 34° F. The difference, however, is very small. In all cases, for both herring and white fish, there was ice left in the boxes on arrival.

Many readings for other types of fish were also obtained and these results were all very close to those already given. In all, some 5,000 temperature measurements were made.

First of all there is no doubt that the fish had a good start on their journey. Herring, at a temperature of 37° F.-42° F., suggest icing at sea as well as icing and quick handling on the market. More recent observations at another port have shown that it is quite possible for a drifter to land herring with an average temperature of 50° F.

The temperature of the fillets at the start of their journey was also somewhat below the usual of about 50° F. A freshly-cut fillet tends to be at a temperature very close to that of the water used in filleting, and it is not easy in practice to keep this much below 50° F. even with the use of ice.

Thus with the present methods of the trade a temperature of 40° F.-50° F. in this stage of distribution is considered inevitable. The important thing is to get the temperature of the fillets down to 32° F. again as quickly as possible.

The most notable feature was the temperature at the end of the journey. These were very close indeed to the ideal figure of 32° F. In fact, some of them were slightly below this, for although pure ice melts at 32° F., a mixture of fish and ice can reach a slightly lower temperature (without freezing) because of the small amount of salt in the fish. Thus, although 32° F. is the ideal to aim at for wet fish, it is possible to do perhaps 1° F. better.

These results in this specialized distribution system may be compared with those obtained for herring arriving in Hull on open trucks under tarpaulins. When the latter were removed and the boxes unloaded it was found that 4 boxes out of 5 had no ice in them at all, and that the fifth only had one or two pieces.

As would be expected, the temperatures of the fish varied a great deal and although there were a couple of readings of 33° F. there were also several of 53° F. The over-all average of 900 readings on 32 boxes was 46.5° F. and only 5 percent of the fish were below 40° F.

Now the reason for these high temperatures is not necessarily the absence of insulation, although this will certainly be a contributory factor. More important still is the use of enough ice in the right place. The purpose of using ice is firstly to cool fish down, and secondly to stop it warming up again.

The amount of ice needed to cool the fish depends simply on the weight of fish and its temperature and has nothing to do with insulation. The rate at which the fish cools down depends on the way the ice is distributed. Where insulation matters is that it affects the amount of ice needed to keep the fish cool on the journey.

Within limits the more insulation the less ice. The man who uses open trucks would get as good a result as the man with insulated ones, but he would need to use more ice to do it. But as far as DSIR experience goes, the reverse seems usually to be the case.

United Kingdom (Contd.):

The same sort of argument applies if one is considering what thickness of insulation should be used. For any particular journey it should be possible to strike a balance between the cost of insulation and the cost of ice, bearing in mind that we have to consider not only the cost of these materials themselves but their effect on the payload of the truck.

However, as far as wet fish is concerned, there is a certain minimum amount of ice that we must have anyway, and if this ice is not distributed in the right places, no amount of insulation will give good results.

Of course, temperature is not the only thing that affects the quality of fish, and even the best distribution system cannot make fish any better than it was when it was landed. What it can do is to minimize the deterioration that inevitably occurs between the wharf and the retailer. In this respect there is much too big a difference between the best and the average. From Fish Trades Gazette (August 30, 1958), a British fishery periodical.

Note: Also see Commercial Fisheries Review, July 1958, p. 67.

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SMALL FISH MEAL
PLANT DEVELOPED:

An engineering firm of Hull, England, has developed an interesting range of small fish meal plants, which are sufficiently compact to be installed aboard ship or in other confined spaces and are also claimed to be entirely self-contained.

The plants are designed for the production of meal and oil from fish and fish offal, shellfish, abattoir, and industrial waste products. It is particularly designed for service in isolated areas and has its own power unit, a 60 hp. gas turbine whose exhaust gases provide heat for cooking and drying.

The standard unit in the range is claimed to be suitable for all types of gutted or ungutted fish and has a nominal fish or fish waste capacity of up to 2,000 pounds an hour and 1,500 pounds an

hour for shellfish or shellfish waste. A smaller plant has a capacity of 1,000 pounds an hour for fish or fish waste.

The working of the plant is described as follows: "The raw fish or waste is fed to the scraper elevator which discharges to the hogger, a machine specially designed for the reduction of fish, offal, and similar materials. From the hogger, the reduced material falls into a twin screw metering bin which feeds the cooker with a steady, continuous flow of raw material at a predetermined rate.

"The cooker is a horizontal tubular vessel fitted with a jacket through which a proportion of the hot gases from the gas turbine are circulated. A special form of screw conveys the material through the cooker.

"The cooked fish or offal is then lightly pressed in the new design, screw conveyor-press, which removes a proportion of the free liquors. The press discharges through a magnetic separator to a combined dryer and grinder where the turbine exhaust gases are introduced to provide latent heat. The time in the dryer-grinder is about three seconds.

"The dried meal is drawn through a cyclone separator and cooled in a further cyclone system which incorporates an adjustable cooling air intake and rotary valve discharge."

The standard fish-meal unit has a gross weight of just over 30,000 pounds and measures 21 feet long, 7 feet wide, and 10 feet high. (The South African Shipping News and Fishing Industry Review, August 1958.)

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SUMMARY OF WHITE FISH AUTHORITY
LOANS TO FISHING INDUSTRY,
APRIL 1, 1957 TO MARCH 31, 1958:

The loans outstanding under the British White Fish Authority program of financial assistance to the fishing industry

Type of Loan	Loans Outstanding March 31, 1957	Loans April 1, 1957- March 31, 1958	Repayments April 1, 1957- March 31, 1958	Loans Outstanding March 31, 1958
Fishing vessels	13,598	8,686	1,837	20,447
Engines	239	199	104	334
Improvements to vessels	251	287	51	487
Nets and gear	3	1	1	3
Processing plants	333	887	49	1,171
Cooperative organizations	16	5	1	20
Totals	14,440	10,065	2,043	22,462

United Kingdom (Contd.):

increased about 55.6 percent from April 1, 1957, to March 31, 1958. During the 1957/58 year about 86.3 percent of total

loaned (US\$10,665,000) to the fishing industry was used for the construction of new fishing vessels. (British White Fish Authority, Annual Report and Accounts, for the Year Ending March 31, 1958.)



Uruguay

FISH MEAL PLANT DONATED BY UNITED NATIONS:

The Uruguayan Oceanographic and Fisheries Service (Servicio Oceanografico y de Pesca), a government entity which holds a monopoly on the fishing industry, has been given a \$20,000 fish-meal plant. The plant was donated by the United Nations Technical Assistance Program. The cost of installation (esti-

mated at US\$46,000 at the exchange rate of 2.16 pesos to US\$1) and technical know-how will be supplied by Uruguay.

The new fish plant, manufactured by a British firm, is expected to be in operation by the end of 1958. Fish waste will be converted into a meal for poultry and hog feeding. Production at first will only cover domestic needs, but it is anticipated that eventually fish meal for export will be available.



"CHLORINE" BACTERICIDES IN FISHERY PLANTS

Although there are other bactericides which can be useful in a fish processing plant under certain conditions, the most common and the safest bactericides depend on "free chlorine" for their action. "Free chlorine" solutions quite efficiently kill most surface bacteria, and at the same time they tend to destroy undesirable odors. Suitable solutions of "free chlorine" may be prepared (1) by mixing chlorine gas, directly from a steel cylinder, with water; (2) by diluting a concentrated "liquid chlorine compound," similar to many household liquid bleaches; or (3) by dissolving a "solid chlorine compound," generally calcium hypochlorite. A system using chlorine gas is efficient and effective, but it requires special equipment designed and installed by experts. The liquid and solid chlorine compounds can be purchased from any local chemical or sanitation products supply house. The following is a rough guide for use of chlorine bactericides:

Use	Chlorine: Water	Liquid Compounds with 5 1/4% Chlorine	Solid Compounds with 50% Chlorine
General plant use . .	1:100,000	2 tbs./40 gal.	1/3 tbs./40 gal.
Rinsing hands	1:10,000	2 tbs./4 gal.	1/3 tbs./4 gal.
Treating washed, smooth surfaces .	1:3,333	6 tbs./4 gal.	1 tbs. 1/4 gal.
Treating washed, rough surfaces .	1:1,000	20 tbs./4 gal.	3 1/2 tbs. 1/4 gal.
1/Level standard tablespoons.		Tbs. = Tablespoons.	

Chlorine bactericides are of little value on dirty or slime-covered surfaces. Visible dirt, slime, grease, etc., must first be washed away--best with detergents. Then the chlorine can kill the bacteria, the invisible enemies of good quality. (NFI Flashes, September 14, 1958.)