



International

FUR-SEAL REPORT DISCUSSED AT TOKYO CONFERENCE

United States, Canadian, and Japanese government biologists and other officials concluded two weeks of discussion on November 24, 1954, in Tokyo on a fur-seal report. The report, which deals with a joint investigation carried out by the three governments during the winter and spring of 1952, has been completed and submitted to the governments for their approval. It describes the investigation of the distribution, migration, and food habits of the fur seals of the North Pacific, which was undertaken with a view to obtaining factual data which might assist in the formulation of a new international fur-seal conservation agreement.



The United States was represented by Ford Wilke, biologist of the Service's Seattle Office and William M. Terry of the Office of Foreign Activities in Washington.

SECOND SEAWEED SYMPOSIUM SCHEDULED

Following the suggestion made at the First International Seaweed Symposium in Edinburgh in 1952, the Norwegian Institute of Seaweed Research (Norsk institutt for tang-og tareforskning) announces a symposium in Trondheim, Norway, in July 1955.

The symposium is planned for July 14-16, 1955. Meetings will be held at Norges Tekniske Høgskole (NTH), Trondheim.

It is proposed to accept papers on the following main subjects: (1) chemistry of seaweeds, including methods used in the study of seaweed products; (2) technical subjects connected with harvesting and industrial exploitation of seaweeds; (3) experimental studies of the nutritional value of seaweed products; (4) algological studies on species which are used or may be expected to be used in industry.

The papers should preferably be presented in English. No papers will be read by title.

For information write to Second International Seaweed Symposium, c/o Professor T. Braarud, Blindern, Oslo, Norway.

INTERNATIONAL LABOR ORGANIZATION

PROPOSALS FOR FISHERMEN'S WORKING CONDITIONS: A committee of 12 experts on working conditions in the fishing industry concluded their meeting at the headquarters of the International Labor Organization (ILO) in Geneva November 5, 1954, by proposing three draft international instruments: (1) a minimum age for fishermen, (2) medical examination, and (3) articles of agreement for work on fishing vessels.

The Committee's recommendations were to be submitted to the ILO's Governing Body which met in Rome November 16-19. All these proposals relate to maritime fishing in salt waters.

Under the draft instrument on minimum age, children under 15 years of age would not be employed on fishing vessels, and persons under 18 years would not be employed on coal-burning fishing vessels as trimmers or stokers.

The second draft instrument proposes medical examinations for new fishermen and periodical examinations thereafter.

The third instrument suggests draft articles of agreement stating clearly the conditions of employment for fishermen, including wages or share of catch, scale of provisions, capacity in which the fisherman is to be employed, and voyages to be undertaken, if this can be determined.

In addition, the experts reached agreement on a set of principles recommended for inclusion in a possible international instrument on accident insurance for fishermen, a November 5 release from the United Nations reports.

MARINE OILS

WORLD WHALE- AND SPERM-OIL PRODUCTION AND TRADE, 1953: Total marine-oil exports in 1953 are estimated at 670,000 tons. This is slightly below 1952 exports and somewhat less than prewar, but substantially larger than in the early postwar years. Trade in whale and sperm oils was down last year but exports of fish oils increased by more than 40 percent from 1952 shipments. Sales by the United States and the Union of South Africa rose to record levels. Present indications are that exports of each of the three marine oils in 1954 will be larger than previous year.

Output of marine oils in 1953, estimated at 925,000 tons, is roughly 6 percent less than in 1952, and 12 percent below the 1935-39 average. The 1953 production, however, was half again as large as the 1945-49 volume. In 1953 both whole- and sperm-oil production were down from 1952, while fish-oil output rose slightly.

World "exports" of whale and sperm oils, for statistical purposes, have been considered equivalent to production, as the bulk of the whale oil and much of the sperm oil is produced from pelagic (open sea) operations, chiefly in the Antarctic Ocean. A large part of this production is transported direct from the whaling grounds to purchasing countries. The remainder usually is carried to the "home countries" of the whaling expeditions where it may be refined for domestic consumption or export, or stored for future disposal, reports an October 11 Foreign Agriculture Circular (FFO 19-54), a Department of Agriculture Publication.

The smaller trade in whale oil in 1953 is a reflection of the smaller 1952/53 Antarctic outturn. The decline in sperm-oil exports, however, can be attributed largely to low prices and demand for this oil during the early part of the season.

As early as April 2, 1954, the entire pelagic production of whale oil produced during the 1953/54 Antarctic season had been sold at prices ranging from \$169-204 per short ton. Norway, by far the principal producer and exporter, disposed of her 1953/54 Antarctic production approximately as follows: for processing in Norway, 61,900 tons; exports, 122,900 tons. Of this total, Western Germany took 50,850 tons, the United Kingdom and Sweden about 16,800 tons each, Denmark about 13,440 tons, and the balance went to Belgium, the Netherlands, and France.

Whale Oil: The world production of whale oil in 1953 is estimated at 420,000 short tons, or about 40,000 tons less than in 1952 (see table 1). While output of whale oil in 1953 was half again as large as the 1945-49 average, it was substantially less than in the 1935-39 prewar period. Antarctic production of whale oil,

Table 1 - World Whale Oil Estimated Production, by Major Producing Countries, 1946-53

Country	1953 ^{1/}	1952	1951	1950	1949	1948	1947	1946
(1,000 Short Tons)								
Norway	148	192	186	197	187	186	176	97
United Kingdom	81	80	79	88	102	101	95	45
Japan	44	43	29	30	23	20	14	-
Netherlands	19	17	17	14	20	15	14	-
Panama	29	18	23	-	-	-	-	-
Union of South Africa	33	41	35	32	33	36	40	2
Soviet Union	31	30	21	19	13	10	6	-
Australia	19	17	10	3	1	-	-	-
Argentina	6	7	7	7	9	8	8	8
Chile	2/	3	2	1	1	2	1	1
Others	10	12	26	34	31	12	11	12
World Total	420	460	435	425	420	390	365	165

1/ Preliminary.

2/ Not available.

which normally constitutes close to 90 percent of the total output, reached about 400,000 tons in the past (1953/54) season, or 7 percent more than in 1952/53. In 1953/54 the catch of baleen whales closely approximated the permissible catch limit of 15,500 blue-whale units (established by the International Whaling Commission) whereas in 1952/53 the total catch amounted to only 14,867 units, or considerably short of the 16,000-unit quota allowed at that time.

Sperm Oil: The world sperm-oil production in 1953 amounted to about 55,000 short tons, or more than one-third less than in the preceding year. The decline

Table 2 - World Sperm Oil Estimated Production, by Major Producing Countries, 1946-53

Country	1953 ^{1/}	1952	1951	1950	1949	1948	1947	1946
(1,000 Short Tons)								
Norway	6	22	29	12	22	11	7	1
United Kingdom	10	13	10	8	9	8	2	2
Japan	6	14	9	6	2	2	1	1
Netherlands	2/	3	2	1	1	1	2/	-
Panama	2	2/	14	-	-	-	-	-
Union of South Africa	5	8	10	5	10	9	7	4
Soviet Union	14	14	13	12	12	11	-	2
Portugal ^{3/}	3	4	4	2	3	4	3	3
Chile	4/	4	4	4	3	3	4	2
Others	9	3	25	5	3	21	21	-
World Total	55	85	120	55	65	70	45	15

1/ Preliminary.

2/ Less than 500 short tons.

3/ Mainly production of Azores and Madeira Islands.

4/ Not available.

occurred mainly in Antarctic output and was due chiefly to large stocks and unattractive prices. Antarctic production of sperm oil was up about 20 percent in the 1953/54 season and total output this year should be larger than in 1953.

WORLD FISH-OIL PRODUCTION AND TRADE, 1953: Production: The estimated world production of fish oils in 1953 (including liver oils) is 450,000 short

Country	1953 ^{1/}	1952	Annual Average 1935-39
. (1,000 Short Tons)			
Canada ^{2/}	8	12	17
United States	78	63	120
Western Germany	36	24	<u>3/</u> 9
Iceland	20	12	32
Norway	86	116	40
United Kingdom	24	25	20
Japan ^{4/}	19	22	138
Union of South Africa ^{5/}	24	21	-
Others	155	145	104
World Total	450	440	480

1/ Preliminary.
 2/ Includes Newfoundland.
 3/ Average 1939-43.
 4/ Includes Korea.
 5/ Includes production of South-West Africa.

tons, 2 percent above 1952, but 6 percent less than prewar (see table 1). A substantial drop in Norwegian production was offset by increased output in the United States, West Germany, and Iceland, reports a Foreign Agriculture Circular.

Continent and Country of Destination	1953 ^{1/}	1952	1951	1950	Average 1935-39
. (Short Tons)					
North America:					
British West Indies	-	-	113	-	12
Canada	2,108	488	1,734	1,696	458
Cuba	87	100	71	181	155
Mexico	114	122	63	128	45
Other	1	3	5	8	59
Total	2,310	713	1,986	2,013	729
South America	63	38	110	60	96
Europe:					
Belgium-Luxembourg	764	8	282	20	8
France	7	149	1,162	47	19
Western Germany ^{2/}	36,155	6,232	6,050	5,645	126
Italy	28	220	14	7	15
Netherlands	8,913	11,967	6,024	20,705	15
Norway	1,606	-	4,514	-	10
Switzerland	3,115	3,140	4,027	8,891	15
Other	322	43	-	34	92
Total	50,910	21,759	22,073	35,349	300
Asia:					
Philippines, Republic of	860	546	744	540	66
Other	37	20	7	25	24
Total	897	566	751	565	90
Other	37	3	-	-	19
Grand Total	54,233	23,079	24,920	37,987	1,234

1/ Preliminary.
 2/ Prior to January 1952 reported as Germany.

While the over-all decline in Norwegian outturn occurred mainly in herring oil, the opposite was true for Western Germany where herring landings increased 22 percent from 1952. Menhaden oil was primarily responsible for the marked increase in United States production. Although South Africa's fishing industry reached a new peak in fish-oil output in 1953, the very high rate of development maintained by the industry in recent years showed signs of slackening.

Table 3 - Fish Oil (Including Liver Oils) Exports from Specified Countries and Estimated World Total Average 1935-39 and 1945-49, Annual 1950-53

Continent and Exporting Country	1953 ^{1/}	1952	1951	1950	Annual Average	
					1945-49	1935-39
. (1,000 Short Tons)						
North America:						
Canada	19.9	13.4	12.0	13.0	10.1	12.0
United States	54.2	23.0	25.0	38.0	8.3	1.1
Europe:						
Denmark	7.4	2.9	4.3	3.6	0.6	^{2/} 2.5
Western Germany	6.6	0.7	0.2	-	-	4.4
Iceland ^{3/}	20.1	13.2	23.0	21.2	27.1	24.5
Netherlands ^{3/}	9.4	5.0	8.7	4.6	0.6	0.2
Norway	25.0	37.0	30.0	35.0	23.0	38.0
Portugal	4.6	2.8	2.7	2.7	1.7	^{4/}
United Kingdom	3.1	4.0	4.4	5.5	3.8	^{4/} 6.0
Other:						
Angola	^{4/}	2.9	9.5	3.5	^{5/} 1.4	0.7
Japan	8.2	3.6	7.3	4.5	0.7	35.0
Union of South Africa	18.2	7.5	2.9	4.5	1.7	2.2
World Total ^{6/}	195.0	130.0	140.0	145.0	85.0	135.0

1/ Preliminary.
^{2/} Prewar Germany.
^{3/} May include some whale oil.
^{4/} Not available.
^{5/} Less than 5 years.
^{6/} Includes estimates for countries for which data are not available and for minor exporting countries.

World Trade: World trade in fish oils in 1953 (including liver oils) is estimated at 195,000 short tons, one-half again as large as in the preceding year, and more than two-fifths above the prewar average. The United States was the largest exporter in 1953, followed by Norway, Iceland, Canada, and the Union of South Africa. United States fish-oil exports more than doubled in 1953, mainly due to sharply increased exports to Western Germany. The Netherlands, Switzerland, Canada, and Norway also took significant quantities of United States fish oil.

NORTH PACIFIC FISHERIES COMMISSION

MEETING AT VANCOUVER: The International North Pacific Fisheries Commission met in Vancouver, B. C., October 25-29, 1954, under the chairmanship of Stewart Bates, Canada's Deputy Minister of Fisheries, and attended by representatives of the three participating countries--the United States, Japan, and Canada. The new chairman is Iwao Fujita of Japan, who will take over from Dr. Bates in February 1955 and preside over the next annual meeting to be held in Tokyo, October 31, 1955.

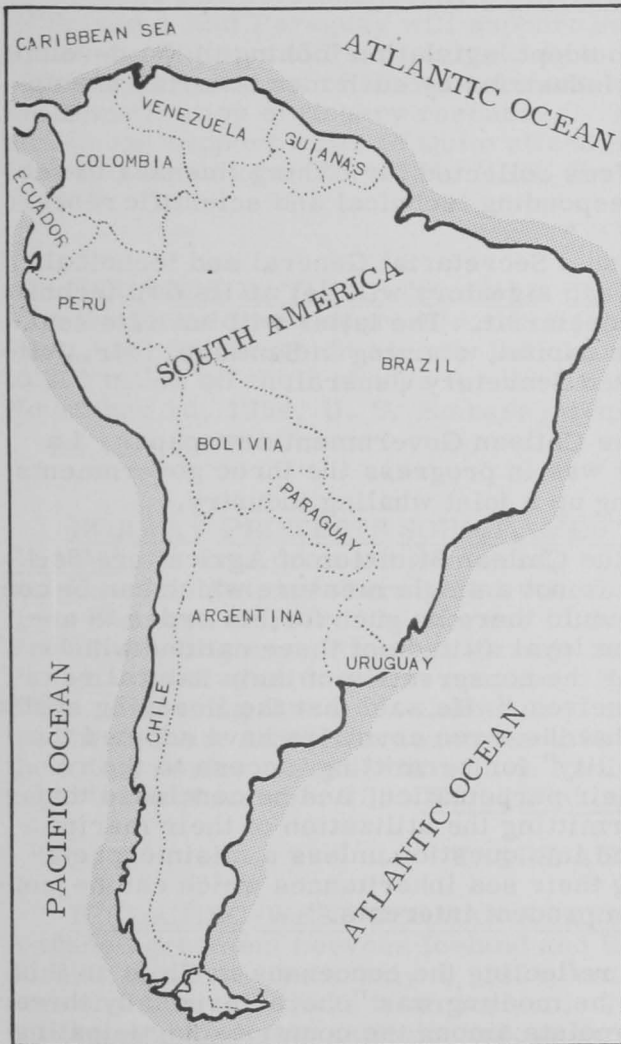
The major accomplishment of the Commission at this meeting was the adoption of a research program. Research in salmon populations in the North Pacific and king crabs in the Eastern Bering Sea will be conducted jointly by scientific personnel of the three countries. Proposals include the operation by Japan in 1955 of two government research vessels in the area of 175° W. longitude to catch specimens by various methods, to tag at least 2,000 fish, and to sample the water and plankton at different levels. The United States plans to operate 2 to 5 vessels in this area--

tagging salmon, recording sea temperatures, etc. Canada proposes to make a special study on the anatomy of salmon in the hope of finding a way to distinguish stocks of various origins, and will also cooperate in the tagging program. Canada will also conduct studies in the North Pacific in physical oceanography and on the distribution of plankton, especially that eaten by sockeye, pink, and chum salmon.

In 1955, while Mr. Fujita is chairman of the Commission, James Cameron of Pender Harbour, B. C., will be chairman of the Standing Committee on Biology and Research, and John L. Farley, Director of the U. S. Fish and Wildlife Service, will be chairman of the Standing Committee on Finance and Administration, a responsibility he already carries. Edward W. Allen of Seattle was chosen Commission Vice-Chairman and Stewart Bates becomes Secretary.

SOUTH AMERICA

REPORT ON SOUTH PACIFIC CONFERENCE ON CONSERVATION OF MARITIME RESOURCES: The special meeting of the Permanent Commission on Exploitation and Conservation of the Maritime Resources of the South Pacific was held in Santiago, Chile, October 4-8, 1954. The three participating nations--Chile, Peru, and Ecuador--unanimously approved a number of resolutions which had been prepared by the three working committees on juridical, administrative, and economic questions. In view of the fact that some elements of the resolutions exceed the competency of the Permanent Commission, it was decided to convoke on December 1, 1954, in Lima a Second Conference of the Exploitation and Conservation of the Maritime Resources of the South Pacific; the first Conference was held in Santiago in August 1952.



Among the resolutions adopted, which must now be submitted to the several Parliaments for approval and the subsequent enactment of implementing legislation, are the following:

(1) Agreement on conditions which must be met for the issuance of licenses for fishing and whaling operations. Licenses are to be issued by any of the three nations, by delegation from the Permanent Commission, to be valid for a period of one year. Each petitioner will be required to deposit a guarantee and submit dates of his proposed fishing activities.

(2) Establishment of a legal system of sanctions to be employed against foreign vessels which may be apprehended for unauthorized fishing or whaling operations in the jurisdictional waters of the three countries. These sanctions may be (a) fines of from 1 to 5 times the commercial value of the catch, (b) denial of permission to fish in the territorial waters for a period of not less than 6 months or more than 3 years. In cases of repeated violations, the three-power tribunal may

be (a) fines of from 1 to 5 times the commercial value of the catch, (b) denial of permission to fish in the territorial waters for a period of not less than 6 months or more than 3 years. In cases of repeated violations, the three-power tribunal may

raise the fine to an amount not to exceed the value of the offending vessel. The proceeds of such penalties would be divided equally among the three nations.

(3) Agreement of the three countries to act in the juridical defense of the principle of sovereignty over the territorial (including soil and subsoil) waters to a distance of 200 nautical miles (it being understood that a nautical mile has an extent of a minute of the arc measured at the equator which equals 1,852.8 meters). The three countries undertake to consult one another with respect to declarations or protests of other nations.

(4) Agreement on enforcement and control measures. Each country will undertake to exercise vigilance within its own area and may call on assistance from the other countries. Consuls of the three nations will be required to keep their governments abreast of any information obtainable concerning proposed South Pacific fishing expeditions.

(5) Recommendation to establish neutral maritime zones among the signatory powers. These zones would comprise an area 20 miles wide (10 miles on either side of the frontier lines) beginning 12 miles from the coast and running out the extent of the 200-mile limit.

(6) Recommendation to governments to adopt legislation looking to the development and protection of fishing and whaling industries by such means as tax exemptions, extension of credit, etc.

(7) Agreement to use the proceeds of fees collected for fishing licenses to set up marine biological stations and for corresponding technical and scientific research.

It was resolved, moreover, to establish a Secretariat General and technical bureaus of the Permanent Commission. Each signatory will set up its own technical bureau which will be attached to the Secretariat. The latter will have its seat for consecutive periods of one year in each capital, starting in Santiago. Mr. Julio Bourgeois of Chile was unanimously selected Secretary General.

With reference to resolution No. 7, the Chilean Government newspaper, La Nacion, reported that while the conference was in progress the three governments planned to explore the proposition of setting up a joint whaling industry.

In an address at the closing session, the Chilean Minister of Agriculture declared: "In all of these accords... there is not a single measure which can be considered discriminatory or exclusive, nor could there be such for, in order to arrive at them, there has been anticipated the loyal attitude of three nations which understand that they can obtain security for the conservation of their natural resources only by giving generously of themselves." He said that the licensing system for fishing and hunting operations means that the three countries have adopted the same criteria "of foresight and responsibility" for permitting access to the resources in question without endangering their perpetuation, and he concluded that "the liberality of the three countries in permitting the utilization of their marine resources never has been nor will be called into question unless a misinterpretation should be placed on their safeguarding their sea inheritances which can be jeopardized by the excesses of niggardly and imprudent interests."

The press, El Mercurio, undoubtedly reflecting the concensus in Chile on this question, editorialized on October 11 that the meeting was "characterized by three happy notes: the perfect unanimity of viewpoints among the countries participating in it; their firm decision to maintain full sovereignty within the limits set forth; and finally the immediate adoption of several practical measures for the preservation of the maritime resources." It said, "The accords now reached, in logical devel-

opment of the Declaration of 1952, offer juridically the interesting aspect of constituting the principle of a new American International Law with respect to sovereignty over jurisdictional waters."

El Salvador, Colombia, Mexico, and Costa Rica had representatives at the Santiago meeting in the capacity of observers.

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THREE COUNTRIES TO EXPLOIT OFFSHORE FISHERIES RESOURCES WITH WHALING FLEET: Ecuador, Chile, and Peru will exploit their offshore fisheries resources by forming a whaling fleet, according to the Ecuadoran press (La Nacion October 10, 1954.) This decision, in addition to other agreements, was reached by the three countries at the Santiago fisheries conference held October 4-8 on their claims to jurisdiction 200 miles off their coastlines for the conservation of fisheries resources, an October 21 U. S. Embassy dispatch from Quito points out.

TERRITORIAL WATERS

MORE SOUTH AMERICAN COUNTRIES SUPPORT 200-MILE CLAIMS: Both El Salvador and Paraguay will support the 200-mile territorial waters claims of Ecuador, Chile, and Peru, according to the Quito, Ecuador, press. The Minister of Foreign Relations of El Salvador was quoted as supporting the position taken for the conservation of fishery resources. The Paraguayan Minister of Education also announced support while in Quito attending the Inter-Ibero-American Education Conference, an October 28, 1954, U. S. Embassy dispatch from Quito reports.

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ECUADOR RATIFIES 200-MILE CONVENTION: At the close of its current session the Ecuadoran Congress ratified the Convention signed in 1952 by Ecuador, Peru, and Chile, which asserts the claims of the three countries to jurisdiction up to 200 miles off their shores for the purpose of conserving fisheries resources, a November 10, 1954, U. S. Embassy dispatch from Quito reports.

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NORWAY PROTESTS SOUTH AMERICAN 200-MILE TERRITORIAL WATERS CLAIMS: A note protesting in strong terms against the declaration of Peru, Chile, and Ecuador that their territorial waters extend for 200 miles beyond their coastlines has been delivered by Norway to the Governments concerned. A Norwegian-French whaling expedition has already been cancelled, and another fleet flying the Panamanian flag is unable to operate. Panama has already protested to Peru and Chile, declaring that their claims are "contrary to international law." Meanwhile, the three South American countries have reached agreement on measures to protect their territories. Poachers will be liable to have their vessels and catches seized, reports the November 1954 World Fishing, a British fishery magazine.

TRADE AGREEMENTS

ICELANDIC-WEST GERMAN AGREEMENT INCLUDES FISHERY PRODUCTS: A trade agreement between Iceland and Western Germany, signed in Bonn on May 20 and effective from July 1, 1954, calls for the shipment of a considerable volume of fishery products from Iceland. The agreement is effective for one year and will be extended automatically unless three months' notice is given by one country concerned, a July 29 U. S. Legation dispatch from Reykjavik points out. Iceland's exports of fishery products to West Germany will be as follows:

	Value	
	DM1, 000	US\$1, 000
Salted herring	1, 200	285
Fresh fish (including up to DM800, 000 of frozen fish) . . .	7, 500	1, 784
Canned fish and other fish products	500	119
Fish meal and herring meal . . .	5, 000	1, 189
Salted fillets, salt fish, and dried salt fish	5, 000	1, 189
Stockfish	5, 000	1, 189
Fish and herring oil, unrefined. .	3, 000	713
Whale oil, unrefined	2, 000	476

No fishery products will be shipped from West Germany to Iceland.

A special protocol is attached to the trade agreement to attempt to improve Iceland's sales of fresh fish on ice to Germany. In 1953 Iceland's quota for fresh fish on ice to Germany was IKr 30 million (US\$1.8 million), only about one-third that amount was sold due to misunderstandings between Icelandic exporters and German importers, and low prices in Germany.

Germany is particularly eager to receive Icelandic fresh fish on ice from September to December because during these months about 60 percent of Germany's fleet is fishing for herring. To keep the German populace well supplied with fish and to prevent the price of fish rising unduly on the German market, Germany wishes to assure a good supply of fish from Iceland. The earnings of foreign exchange are welcome to Iceland and the sale abroad of fresh fish on ice facilitates the hiring of fishermen on Icelandic trawlers since they can make purchases abroad with part of their earnings.

The protocol provides for the following concessions requested of Iceland by Germany: (1) Trawlers selling fresh fish to Germany should be under the direction of one party in Iceland. (2) Advance notice should be given of the arrival of an Icelandic vessel with fresh fish and the vessel should be directed to the harbor best able to receive the fish. (3) Icelanders should take into consideration German recommendations concerning quality and demand for fish species. (4) Transshipping of fish from one vessel to another, except for motorboat-caught fish, is prohibited. Iceland complained that its vessels did not receive the same treatment as German vessels concerning order of handling, discharging expenses, and auctioning dues. Germany agreed to try to give Icelandic vessels treatment equal to that for German vessels.

The agreement also provides for the transshipment of Icelandic salted fillets, salt fish, and dried salt fish, with the permission of the Union of Icelandic Fish Producers.

UNITED NATIONS

GENERAL ASSEMBLY ADOPTS TWO RESOLUTIONS PERTAINING TO FISHERIES: The United Nations General Assembly in mid-December 1954 adopted two resolutions pertaining to international fisheries that were recommended by Committee VI, the Juridical Committee. One of the resolutions pertains to the Economic Development, Conservation and Regulation of Fisheries. Recognizing the importance of having the conference of experts provided for in this resolution, the General Assembly acted promptly. The Secretariat has already gone to work and expert representatives of each of the nations interested met in New York. Other meetings were scheduled to lay the groundwork for the conference called at the Food and Agriculture Organization headquarters in Rome on April 18, 1955.

The resolution pertaining to the Continental Shelf was adopted with certain amendments which, although not exactly as recommended by Committee VI, is satisfactory to a majority of the nations, including the United States. It calls for the International Law Commission to complete its work on the regime of the high seas, the regime of the territorial waters, and all related problems, in time for consideration of these problems as a whole at the 1956 General Assembly.

The passage of these resolutions will give the International Law Commission an opportunity to study the whole topic of the Regime of the High Seas and the Continental Shelf before it makes its report to the Eleventh General Assembly in 1956. The Commission has requested the comments of governments on its drafts.

At the last session of the General Assembly in 1953 both subjects were referred back to the International Law Commission with the suggestion that all aspects of the regime of the high seas should be reported on before any action is taken. The United States and a number of other nations, feeling that some of the more difficult questions could be resolved more easily if some general agreement could be reached on the continental shelf and fisheries questions, proposed that these two should be considered again at the current session (Ninth General Assembly).

The General Assembly acted promptly on the resolution pertaining to the technical aspects of the fisheries question sponsored by 10 nations, including the United States, which called for an international technical conference to study, make recommendations, and report on conservation and regulation of the fisheries. The principal parts of this resolution are:

ECONOMIC DEVELOPMENT OF FISHERIES AND QUESTION OF FISHERY CONSERVATION AND REGULATION-- Belgium, China, France, Greece, Iceland, Netherlands, Panama, Turkey, United Kingdom of Great Britain and Northern Ireland, and United States of America: draft resolution (as amended):

Having regard to the fact that the technical studies relating to the conservation, protection and regulation of fisheries and other resources of the sea are also closely linked to the solution of the problems mentioned in the preceding paragraph;

Requests the Secretary-General to convene an international technical conference at the Headquarters of the Food and Agriculture Organization on the 18th of April 1955 to study the problem of the international conservation of the living resources of the sea and to make appropriate scientific and technical recommendations which shall take into account the principles of this resolution and shall not prejudice the related problems awaiting consideration by the General Assembly;

Invites all States Members of the United Nations or of the specialized agencies to participate in the conference and to

include among their representatives individual experts competent in the field of fishery conservation and regulation;

Invites the interested specialized agencies and intergovernmental organizations concerned with problems of the international conservation of the living resources of the sea, to send observers to the conference.

Requests the Secretary-General to arrange for the necessary staff and facilities which would be required for the conference, it being understood that the technical and secretarial services of Member Governments and of the Food and Agriculture Organization shall be utilized as fully as practicable in the arrangements for such a conference;

Requests the Secretary-General to circulate for information the report of the conference to the Governments of all States invited to participate in the conference;

Decides to refer the report of that scientific and technical conference to the International Law Commission as a further technical contribution to be taken into account in its study of the questions to be dealt with in the final report which it is to prepare pursuant to resolution. . . .

The resolution pertaining to the continental shelf was adopted in Committee VI by a vote of 44, with 9 abstentions (including Australia, Bolivia, Syria, Afghanistan, Lebanon, and 4 of the Communist bloc countries). This resolution, as amended, calls for the International Law Commission to complete its work on the regime of the high seas, the regime of the territorial waters, and all related problems, in time for consideration of these problems as a whole at the 1956 General Assembly.

United States Views in International Fishery Conservation and Regulation: James P. Nash, Alternate United States Representative, in Committee VI, on the question of fishery conservation and regulation made the following statement on December 3, 1954:

Mr. Chairman:

Recent events have given renewed emphasis to many of the comments contained in the fisheries section of the report of the International Law Commission presented to the Eighth Session of the General Assembly. These events would seem to justify terms used by the Commission such as "a condition approaching anarchy," and to indicate that in its choice of words the Commission may have even indulged in understatement when it said that the inadequacy of existing law on the subject results in conditions "productive of friction."

In the light of these events, my Government feels more than ever the urgency of United Nations consideration of the fishery question as the first step in resolving differences which are increasingly causing friction and ill feeling between friendly nations. The longer the United Nations delays consideration and action on the question, the greater is the opportunity for the fishery question progressively to become more difficult. Differences which it may now be possible to reconcile may, if not dealt with promptly, grow to such proportions that they become major issues.

In view of the overwhelming arguments as to the urgency of this question, I think it need not be emphasized further. However, I would like to refer to some of the other issues which have been raised in connection with immediate consideration of the fishery question by the United Nations.

In its report to the Eighth Session of the General Assembly, the International Law Commission submitted its recommendations concerning fisheries. This was one of the several questions it was studying within the scope of the general topic of the "regime of the high seas." The latter topic has been under study by the International Law Commission since its first session in 1949.

By its action in submitting a separate draft of articles on fisheries after four years of study, the International Law Commission clearly indicated that this question can be considered separately from the other questions within the scope of the topic "regime of the high seas." In its report, the International Law Commission also referred to the "general importance and recognized urgency of the subject matter of the articles in question," and made the following comments:

"It is generally recognized that the existing law on the subject, including the existing international agreements, provides no adequate protection of marine fauna against extermination. The resulting position constitutes, in the first instance, a danger to the food supply of the world. Also, insofar as it renders the coastal State or the States directly interested helpless against wasteful and predatory exploitation of fisheries by foreign nationals, it is productive of friction and constitutes an inducement to States to take unilateral action, which at present is probably illegal, of self-protection."

There may be some differences in opinion concerning these comments, but there can be little question that they apply in general to a large part of the world.

The United States Government is of the opinion that the International Law Commission has made an excellent contribution to the formulation of the problems and principles concerned in the conservation of international fisheries, and that the Commission has progressed about as far as it can on the basis of legal considerations alone. It is, therefore, of the opinion that study of the technical and administrative aspects of international conservation and regulation of fish-

eries and the operation of international research and conservation bodies now is highly desirable if not essential to effective treatment and solution of the problems. The results of such study should be invaluable to the General Assembly when further consideration is given to this matter.

Through its experience in this field, involving 8 conventions dealing with 20 other countries, the United States has become convinced that technical and administrative considerations play an exceedingly important role in determining the principles and courses of action which will contribute most to the successful handling of international fishery conservation problems. It seems reasonable that the United Nations should give careful consideration to technical and administrative phases of the matter of fisheries regulation and control before it takes action on a set of principles such as those proposed by the International Law Commission.

The United States Government is convinced that, as a practical matter, the question of fisheries can constructively be considered separately from other questions concerned with the "regime of the high seas." In fact, it seems highly probable that progress in solving fishery questions would facilitate progress in solving some of the other related questions. The international fishery conservation experience of a number of states has been that solution of some of the less complex parts of the over-all problem has made possible progress in solution of the more complex.

It appears highly desirable and fully practical to seek agreement upon principles of international fishery conservation upon the high seas, even though there now are considerable differences among nations regarding the proper extent of the territorial sea. This question is under study by the International Law Commission. In the meantime, under present concepts of the territorial sea, even according to the more extreme versions, there are broad areas of high seas; and there are populations of fish which frequent these areas during all or part of their life cycles. These fish populations support important and growing international fisheries. New techniques for locating and catching fish have greatly increased the efficiency of modern fishing operations and have their effect upon fishery resources. Joint action by nations concerned is needed to provide for the continued maximum productivity of these resources. Development of an agreement upon adequate and effective principles for the conservation of international fisheries need not and should not be held in abeyance pending settlement of the other issues.

Progress in resolving this question, or phases of it, rather than handicapping efforts to reach agreement on related questions, should be helpful. If the United Nations can develop agreement on principles or procedures for safeguarding the continued productivity of high seas fishery resources in such a way as to give proper consideration to the interests of all nations, it may prove less difficult to reconcile differences with regard to the necessary extent of the territorial sea.

If we are first to limit and then to reduce the area of disagreement among friendly nations, which up to now has been widening, concerning the "regime of the high seas," it is essential that we find some area of agreement. We can then labor to expand this area until our differences diminish, and, we hope, in time vanish. Conservation may well provide this area of agreement.

Mr. Chairman, a draft resolution, co-sponsored by Belgium, China, France, Greece, Iceland, Netherlands, Panama, Turkey, United Kingdom, and the United States, has

been tabled, and is now before the Committee. This resolution provides for the convening of a conference to deal with problems of conservation and regulation of international high-seas fisheries. We would like to see the proposed conference restrict its attention to the fishery questions dealt with by the International Law Commission and the problems related to the conservation of international fisheries. We would like to see the conference study the principles proposed by the International Law Commission and particularly consider their adequacy and practicability from the technical and administrative standpoint. It is not intended that the conference consider the subject of marketing or other economic matters divorced from conservation. In any event, however, it is evident that exploration of the problems above outlined, by an ad hoc conference with appropriate representation of experts, is a necessary prerequisite to any further constructive step which the United Nations may take in this field.

Note: See Commercial Fisheries Review, December 1954, pp. 45-47; June 1954, pp. 25-35.

My Government wishes to bring to the attention of this Committee and the General Assembly the fact that the Organization of American States is planning to convoke a specialized conference in 1955 for the broad purpose of studying as a whole the different aspects of the juridical and economic system governing the submarine shelf, oceanic waters, and their natural resources, in the light of present-day scientific knowledge. The date for this conference has not yet been determined. Although the purpose of this conference covers matters far outside the subject of the United Nations conference proposed in the draft resolution now before this Committee, it is desirable to avoid any conflict in the dates set for the two conferences since such conflict might provide a handicap to some countries in arranging for representation. My Government therefore, suggests that the Secretary General, in arranging for the proposed conference, consult with appropriate representatives of the Organization of American States for the purpose of setting conference dates which do not conflict, bearing in mind that the United Nations conference is to be convened not later than July 1955.



Australia

AUSTRALIANS LOWER CANNED TUNA PRICES ON WORLD MARKETS: Australian tuna in popular-size cans is now being offered overseas at or near world prices, reports the September 1954 Fisheries Newsletter, an Australian trade magazine. A Sydney firm has quoted the following prices (sterling) c.i.f. London:

These prices place Australian tuna-in-oil on practically the same level as recent quotations for Norwegian, Peruvian, and other foreign packs. Shipment at these prices depends on the receipt of large orders (5,000-

Pack	Per Dozen Cans	Per 48-Can Case US\$
7-oz. fancy light meat in oil	18s. 4d.	10.25
6-oz. shredded light meat, in oil	16s. 4d.	9.10
7-oz. fancy light meat, in brine	15s. 9d.	8.56

15,000 48-can cases). The United Kingdom will take some Canadian salmon, but there should be plenty of demand for tuna at these new prices, the article points out.

The intention to can tuna in brine is an innovation in Australia. The Japanese export large quantities of this pack to the United States in order to take advantage of the lower United States import duty of 12½ percent, compared with 45 percent for tuna in oil. Originally put up in 1-lb. and 4-lb. cans for the institutional and lunch-counter trade, tuna-in-brine is now being packed in ½-lb. consumer-size cans and has enjoyed ready sale.

In 1953 Australian canned tuna in 3½-oz. cans was selling freely in the United Kingdom, but the small-size can was unpopular and complaints were received that the price was far too high. In fact the Australian 3½-oz. can was just a little cheaper than the 7-oz. can offered by some other countries. This tuna sold in the United Kingdom only because imports from non-Commonwealth countries were restricted. Early in 1954 British orders dried up.

The 7-oz. cans and equipment are now available. More boats on the south coast of New South Wales are fitting up for tuna and with the experience of fishing for the southern bluefin species gained in the last few years, greatly increased de-

liveries to Eden and Narooma canneries are anticipated during the coming season. On the basis of this anticipated supply of fish, which will enable canning to be planned on more economical lines, the Sydney firm has worked out a very tight cost schedule to enable the product to stand on its own feet in the world market.

To a canning company in Australia it must be comforting to feel that if anything goes wrong with markets for the canned product, the raw material bought from the fishermen can be disposed of in another way, the article states. During 1949-50, quantities of tuna frozen in the round were exported to the United States with a satisfactory margin of profit. Today, however, increased handling and shipping charges make it necessary to work out costs very close.

There is probably a margin of profit if fishing boats land fish in Sydney. But if fish is landed at Eden, it would cost $1\frac{3}{4}$ d. ($1\frac{3}{4}$ U. S. cents) per pound to transport it to Sydney in a refrigerated vehicle, and that might be sufficient to cancel out the profit. Fishermen receive 8d. (8 U. S. cents) per pound (US\$160 per ton for southern bluefin tuna at Eden. Freight from Sydney to San Francisco alone amounts to 4.26d. ($4\frac{1}{4}$ U. S. cents) per pound and the many other handling and incidental charges bring the total cost of sending frozen tuna from Eden to California almost to $8\frac{1}{2}$ d. ($8\frac{1}{2}$ U. S. cents) per pound.

There may be changes in freight rates or in prices paid by California canneries in the near future. In all events this market will need to be watched carefully in view of its importance as a backstop to the Australian tuna industry, the article points out.

* * * * *

EXPLORATORY TUNA FISHING CONTINUED: Exploratory tuna fishing off the eastern Queensland coast of Australia was extended early in August for another month, according to the September 1954 Fisheries Newsletter, an Australian fisheries magazine. This fishing is being carried out by the commercial vessels Fair-tuna and Fairventure by arrangement with the Commonwealth Government under the direction of the Director of Fisheries.

Note: See Commercial Fisheries Review, October 1954, p. 55.

* * * * *

NEW AREAS EXPLORED FOR SHRIMP: Recent exploitation of the trawling grounds off Bundaberg, Queensland, Australia, have produced good quantities of shrimp, reports the September 1954 Fisheries Newsletter, an Australian fishery magazine.

The principal shrimp taken is the large banana shrimp (Peneus merguensis). Previous production of this species has been mainly confined to the Logan, Mary, and Burnett Rivers where it is known as king shrimp. From the beginning of June to the first of August, the trawling fleet brought in about 200,000 pounds of this species, for which the average price received was between 3s. and 3s. 6d. (33-37 U. S. cents) per pound.

The banana shrimp has been picked up in experimental trawls along the entire Queensland coast from the New South Wales border to the Gulf of Carpentaria. As the species is a tropical one, it is hoped that even bigger stocks are awaiting exploitation farther north.

* * * * *

SHORE-BASED WEST-COAST WHALING SEASON SUCCESSFUL: Australia ended a highly successful west coast whaling season on September 15, 1954, when the last of the 3 companies operating in that area filled its catch-quota of 600 whales, according to the November 1 Foreign Crops and Markets, a Department of Agriculture publication. One shore station, located at Carnarvon, completed its season on August 31 with 600 whales taken in a record 85 days. A smaller company, with an increased quota of 120 whales, also finished late in August.



Although whales were reported as somewhat thinner than in previous years, improved plant and handling facilities are expected to increase financial returns. All products had been sold early in the season, and by late September most of the whale oil and other export products had been shipped to Europe.

Data regarding total production of whale oil by all 5 Australian shore stations are not yet available. In 1953, 4 Australian shore stations produced some 19,000 short tons of whale oil, nearly all of which was exported.

In addition to the 3 whaling companies operating in Western Australia, 2 companies are located in New South Wales. According to one source, one of the latter 2 concerns was allotted a quota of 600 whales (a reduction of 100 from the 1953 quota) in 1954 and the other, established in 1954, a quota of 120 whales.



Canada

FISHERIES EXHIBIT IN NEW YORK CITY: A Canadian fisheries exhibit, designed to broaden the United States market for Canadian fisheries products, was formally opened to the public in October 1954 at the Canadian Showroom in Rockefeller Center, New York City. The exhibit continued until November 20. The products were presented in an appetizing, up-to-the-minute display, according to the October 1954 Trade News, a Canadian Government publication.

The 30 Canadian firms who combined to put on the display showed fish to cater to nearly every taste. Canned lobster, kippered snacks, and sardines were displayed with the more utilitarian cod, herring, and haddock; salmon, whitefish, lake trout, pickerel, and pike were included in the exhibit. Two special frozen-food refrigerated units helped to solve the display problem, and the selling job begun by the attractive show was carried forward in literature designed to give prospective buyers further information.

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LOBSTER TRAP INSURANCE RATES INCREASED: A slight upward revision of premium rates for lobster trap insurance under the Federal Government-sponsored Fishermen's Indemnity Fund and a corresponding downward revision of the rate of indemnity has been announced by the Canadian Department of Fisheries. The new regulations will affect the lobster districts in southwest Nova Scotia and the Bay of Fundy area where the long lobster fishing seasons are in effect. The Department will also examine the insurance rates for the other districts where the short seasons prevail.

The revisions have been made following a study of the experience gained during the first year of the Fund's operation during which the Canadian Government paid

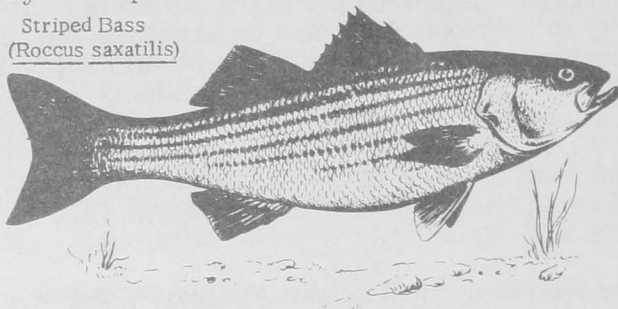
out C\$46,110 in claims in the Martime area alone, while receiving only C\$11,722 in premiums. The new rates have been approved by Order-in-Council.

The value category of lobster traps upon which the premium rates are determined have also been adjusted, according to an October 28, 1954, release by the Department of Fisheries. Whereas they previously were calculated in C\$2 increases, under the new regulations the value categories are in C\$15 jumps which will offset to some extent the revision in rates.

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STRIPED BASS INVADE BAY OF FUNDY: Forty square miles of the Bay of Fundy--that part known as the Annapolis Basin--suddenly in the summer and fall of 1954

Striped Bass
(*Roccus saxatilis*)



swarmed with striped bass ranging from 5 to 20 pounds each in weight and averaging about 12 pounds. The invasion, which began early in July 1954, was the result of an irregular and unpredictable migration known as "feeding concentration." Fish experts attribute the remarkable run to the presence in the Annapolis Basin and its tidal river estuaries of enormous quantities of herring on which the striped bass feed.

The largest fish taken was a 35-pounder in the mouth of the Round Hill Brook. Over 100 of the fish were taken in one day by anglers fishing from the main highway bridge over the Bear River.

It is three years since a similar run of the striped bass was reported in the Bay of Fundy, according to the September Trade News, a Canadian Department of Fisheries publication.



Chile

SECOND U. S. FIRM INVESTS IN CHILEAN FISHERIES: The application of a California fish cannery, the second United States firm to invest in Chile under the new Chilean foreign investments program, has been approved by Decree 775 of the Ministry of Economy, dated September 1, 1954, and promulgated in the Diario Oficial of October 1, 1954.

Under the terms of the Decree, the firm is investing in a Chilean fishing company, a completely Chilean-owned corporation which has been operating since 1945. The investment will be made in the form of five fishing boats, which have a total value of US\$497,872. Three of the boats are already in Chile and the other two were expected to arrive soon. Transfer to Chilean registry of the five vessels was in progress, an October 8 U. S. Embassy dispatch from Santiago reports.

The Chilean firm plans to produce frozen and canned fish for export, as well as for the domestic market, and will also produce fish meal.

The California company's investment will enjoy the guarantees with regard to repatriation of profits and capital and the freeze on taxes and controls provided by the foreign investments law (Decree-Law 437 of February 2, 1954). As an export industry, it will enjoy the advantage of being able to apply the exchange returns from its exports to the profit and capital transfers to which it is entitled.

Since the fishing boats are not new, they are not entitled to free entry under the terms of the investments law, but do enjoy customs exemptions provided to stimulate the development of the Chilean fishing industry.



Cuba

FISHERIES TO BE DEVELOPED: The Cuban fishing industry is still in an early stage of development, and possibilities of expanding the industry are being carefully studied, according to the October 16, 1954, Foreign Trade, a Canadian Government publication. The Cuban Government is faced with a restricted sugar production and has been studying ways of supplementing the lost income. With the end of an all-out sugar era, the unexploited wealth of the surrounding ocean is taking on a new importance.

Present Status: Cuban waters teem with over 450 varieties of edible fish, but only a few types are used at present--particularly snapper, cherna, bonito, and albacore, plus spiny lobster and Moro crab. The annual industrial catch is about 40 million pounds of fresh fish, 2.5 million pounds of crabs and lobsters, and 2 million pounds of clams, oysters, inkfish, etc.

The industry gives regular employment to some 9,000 fishermen and to 6,000 persons engaged in packing, selling, and transporting the catch. Several thousand others find part-time employment in the supporting activities of sail-making, boat-making, etc. The number employed is relatively small compared with the sugar industry which normally employs, on a part-time basis, over a half-million workers.

Havana is the main center for the industry, with Batabano, about 25 miles south of the capital, considered next in importance. Other ports are Caibarien, Manzanillo, and Cienfuegos. Fishing on a minor scale is also carried on from almost all the other little ports.

It is estimated that there are 2,500 fishing boats, most of them one-man sailboats or rowboats. The major fishing fleet, based in Havana, has 57 boats of 100 feet or more and it is interesting to note that a number of these are old Nova Scotian schooners. About 60 percent of the larger boats based at Havana have facilities for icing but the rest are of the old tank type known as "viveros." Most fishing is done with hand lines; a few small hand nets and cast nets are in use. There are no purse seines or other types of high-production gear and rigging.

Marketing: The Cuban authorities appreciate the need for better organization in the fishing industry and are making proposals to improve the situation. An organized industry would do much to lessen gradually the heavy fish imports now being made for local consumption. Cod imports from Canada and Norway alone average 25 million pounds a year and cost over 5 million pesos (US\$5 million).

A larger fish production would also help to relieve the annual meat shortage. At the present time Cuban per-capita consumption of beef is 60 pounds a year, of local fish 8.62 pounds, and of imported fish 7.73 pounds.

Refrigeration Needed: Lack of adequate refrigeration facilities is one of the industry's major problems. Although a few Havana firms do provide them, the space available is still inadequate. When, as frequently happens, the entire fishing fleet returns to Havana at the same time, the catch must be kept on board until the market can absorb it. This sometimes takes weeks and the whole catch may be spoiled.

The present system of marketing tends to cut down the number of trips that any one boat can make each year. The larger boats fishing in the Gulf of Mexico and off Florida have found themselves in the awkward position of not knowing what they can sell or at what price when they return.

Because of the refrigeration problem, fresh fish is only available around the coastal regions and, in a few instances, in some of the larger towns in the interior.

The average retail price for fresh fish in Havana is $67\frac{1}{2}$ U. S. cents a pound which automatically curtails consumption. Beef prices are fixed at 40 U. S. cents a pound for grade one and 30 U. S. cents a pound for grade two. Both Norwegian and Canadian cod retail for under 50 cents a pound.

Government Aid: In 1950 the International Bank for Reconstruction and Development in collaboration with the Cuban Government studied various phases of the economy, including the fishing industry. The International Bank's report confirmed the belief that the industry could be developed and recommended the following steps: (1) identify the various species in Cuban waters; (2) determine the location and abundance of these species by actual sample counts; (3) study depletion, if suspected, of the present commercial species; (4) study the growth rate, spawning time, spawning grounds, age and size at maturity, and other characteristics of all important fish in Cuban waters.

Several government agencies have begun to implement these recommendations. The Agricultural Section of the Cuban entity known as BAFIAC (Banco de Fomento Agrícola e Industrial de Cuba) has instituted a department to work with the fishing industry and a Fishery Research Center has been established.

National Fishery Institute Proposed: Recently the governmental advisory board proposed a bill to create a National Fishery Institute which would regulate the whole fishing industry. Some of the assignments proposed for the industry were: (1) to see that the fishermen get a fair remuneration for their work while protecting the consumer from paying exorbitant prices for this primary food product; (2) the establishment of adequate refrigeration facilities, especially in Havana where 80 per cent of domestic production enters; (3) the establishment of a distributing center in Havana; (4) the stimulation of fish sales in areas not previously reached; (5) the channeling of fresh and frozen fish to butcher shops, groceries, and other similar establishments.

These proposals if effected, would do much to encourage the growth of the long-neglected fish industry. Canadian exports of cod to Cuba should not be overly affected, because the original purpose in reorganizing the industry was to give greater employment as well as to increase fish consumption. The hope is to double fish consumption (now only a little over 16 pounds per-capita a year) by bringing prices within reach of the average consumer.

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SPONGE FISHERY: Ever since 1882 sponge fishing on a commercial scale has been carried on in Cuban waters, though the industry has had its ups and downs. It reached a production peak in 1928, when sponges brought an average price of US\$2 a pound and sales totaled over US\$1 million. Up to 1939 the value of production was maintained at about US\$600,000-800,000 a year.

Disaster struck in 1939, when a strange unknown disease attacked the sponge beds and almost wiped them out, not only in Cuba but in the two other producing areas of North and South America--the Bahamas and Florida. The Bahamas suspended all sponge fishing operations (a suspension that still remains in effect) but Cuba resumed operations the following year, though on a much smaller scale.

Scarcity and the outbreak of war sent prices soaring until they reached nearly US\$20 a pound. Prices remained generally high until 1946, when they began to decline; currently they average about US\$5 a pound. In 1954 production, it was estimated, reached about US\$260,000.

Originally, Cuban waters yielded four main classes of sponges--wools, velvets, yellows, and grass--but the epidemic wiped out the velvets and yellows, though small

quantities of these are now reappearing. Before 1912 Europe bought substantial quantities of Cuban sponges but since then the bulk of production has gone to the United States market. Canada also buys sponges from Cuba and in 1953 imported about US\$13,000 worth. Chief competition for Cuba comes from certain Mediterranean countries, such as Tunisia, Libya, Egypt, Greece, etc., and in recent years from synthetic sponges, but these replace largely the grass or cheapest variety. Cuba manages to sell its entire production, however, at reasonably good prices, even discounting normal seasonal slacks.

In peak years sponge fishing in Cuba employs some 100 vessels and about 1,000 to 1,200 men; the fishermen work from auxiliary boats in waters of two to four fathoms, using pole and hook. There are deeper beds but dive fishing has never been attempted as it is in Florida. Chief deterrent to increased production today is the inability of the industry to meet the competition for labor from the growing lobster, shrimp, and tuna-packing industry which gives fishermen an opportunity for higher earnings.



Denmark

NORTH DENMARK TUNA FISHERY IMPROVES: The tuna fishery off Skagen in northern Denmark was poor in August 1954 but improved considerably in September, according to Dansk Fiskeritidende (October 15), a Danish fisheries periodical. Forty fishing cutters participated in the fishery and as of September 24, 1954, had landed 2,654 tuna, averaging 407 pounds each--a total of over one million pounds.



Ecuador

PRESS COMMENTS ON FISHING IN TERRITORIAL WATERS: The Quito, Ecuador, press (El Comercio, November 16, 1954) carried an editorial on the right of innocent passage for navigation on the high seas as contrasted to fishing activities in territorial waters.

The editorial begins by stating that in maritime law there is an institution which cannot be altered without causing inconceivable dismay to world navigation: the right of innocent passage of vessels or inoffensive transit. The article then states that during the centuries it has not occurred to anyone to attempt to modify this institution; the seas are free for all.

However, El Comercio then takes the position that it is quite a different matter in the case of fishing vessels; that their activities are of a very special nature and that such ships are not "in transit" but are dedicated to commercial operations within the area of maritime sovereignty. It says that such vessels do not simply pass or travel through territorial waters but that they go through such zones with definite purposes, namely to catch fish. The article continues that it is, therefore, not possible to accept the argument that might be made by such vessels when caught within Ecuadoran waters that they were simply engaged in innocent passage, states a November 16 U. S. Embassy dispatch from Quito.



French Cameroons

FISHERY PRODUCTS IMPORTS, 1953: A total of 2,703 metric tons of canned fish and 2,473 tons of dried and salted fish were imported into the French Cameroons during 1953, according to a consular dispatch (October 11) from Leopoldville. In 1952, 1,837 tons of canned and 2,209 tons of dried and salted fish were imported.



German Federal Republic

FISHERY PRODUCTS EXPORTS TO UNITED STATES, JANUARY-JUNE 1954: West German exports of fishery products to the United States in the first six months of 1954 totaled 1,786 metric tons, valued at DM2.6 million (US\$615,000), according to an October 18, 1954, U. S. consular dispatch from Bremen (see table). Frozen

German Federal Republic Fishery Products Exports to the United States, January-June 1954			
Item	Quantity	Value	
		DM	US\$
Frozen Fish:	Metric Tons	1,000	1,000
Cod, ocean perch, coalfish (pollock), and haddock	9.3	15.0	3.6
Other marine fish	0.3	1.0	.2
Fillets of marine fish	1,471.6	2,145.0	510.5
Total	1,481.2	2,161.0	514.3
Canned Fish (in airtight containers):			
Coalfish (pollock)	0.1	1.0	.2
Sprats	4.9	18.0	4.3
Herring	65.3	130.0	30.9
Other (including mackerel)	233.6	274.0	65.2
Total	303.9	423.0	100.6
Other:			
Herring	0.8	2.0	.5
Grand Total	1,785.9	2,586.0	615.4

fish, including fillets, comprised 83 percent of the total volume, the remainder was mostly canned fish. Frozen fillets was the principal fishery item exported from West Germany to the United States in January-June 1954, followed by "other" canned fish (presumed to be mostly mackerel).



Iceland

LARGE OCEAN PERCH CATCHES ON GREENLAND BANKS: Since the Icelandic trawlers recommenced fishing for ocean perch in August 1954, there have been 52 deliveries to Reykjavik, totaling 30.0 million pounds, according to reports in recent issues of Fiskets Gang, a Norwegian trade paper. The average catch has been 576,000 pounds per vessel with the largest catch--768,000 pounds--being landed by the trawler Juni. Practically all the ocean perch were taken on Greenland Banks.

One of the trawlers conducted exploratory fishing for ocean perch in August 1954 on the East Greenland Banks about 28 hours sailing from Maalarrifi, Iceland, or about 340-360 nautical miles distant. It returned from the 9-day trip with about 628,425 pounds of good-quality ocean perch.

Earlier reports stated that there should be some improvement in the economic position of the trawlers as the result of an agreement between the Icelandic Trawlers Association and the Freezers Sales Association to raise the raw fish ex-vessel price of ocean perch from 0.85 to 0.90 kroner per kilo (2.4-2.5 U. S. cents per pound).

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FISHERIES TRENDS, JULY-SEPTEMBER 1954: Iceland's fisheries economic development during the third quarter of 1954 was generally favorable, according to a U. S. Legation dispatch (October 15) from Reykjavik. The 1954 catch of groundfish, particularly cod and ocean perch, was considerably larger than during the previous two years. Over half of the catch of groundfish was processed into frozen fillets, reflecting the favorable market for this commodity. The herring catch in 1954 was very poor--only the 1952 catch was lighter in recent years--and Iceland is unable to fulfill its export agreements. The production of salted and dried fish in 1954 was less than last year, because of the relative attractiveness of the market for frozen fish fillets. However, sales of both salted and dried fish are satisfactory.

The trawler industry experienced economic difficulties in 1954. The Government alleviated the situation temporarily by granting a subsidy to trawler owners for the balance of 1954 from a fund created by a special automobile tax amounting to 100 percent on the price of most automobiles. Wage increases granted to trawler seamen improved the availability of seamen for trawlers, but the additional expense to trawler owners cancels out part of the benefits from the special subsidy. The matter of the profitability of operation of both trawlers and motorboats was to receive careful reconsideration by the Government at the end of 1954 when the present subsidy systems for both trawlers and motorboats were scheduled to terminate.

Iceland has been engaged on various fronts presenting and defending its views on fisheries limits--in a polemic between British and Icelandic newspapers, in the Council of Europe, in the Nordic Council, and in the United Nations. An interesting new development in these discussions was Iceland's publication of a white book concerning its fishery limits.

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FIRMS USING NORWEGIAN HERRING STORING PROCESS: Some Icelandic companies are adopting a Norwegian innovation in the storage of herring for reduction, an October 15, 1954, U. S. Legation dispatch from Reykjavik points out. Salted preserved herring for reduction can be kept for a limited period. Also, the value of the meal produced is less as the salt percentage increases. The new preservative made up of two parts of nitrium nitrate dissolved in three parts of water and 40 percent formaldehyde is reported to protect the herring for as long as two months.

The State Herring Factories have announced in the fall of 1954 that the price of first-quality herring meal on the local market was 253 kronur per 100 kilograms (US\$141 per short ton) f. o. b. port near the factory. Interest and fire insurance charges were to be added after September 15, 1954.



India

FISHERY PRODUCTS SUPPLY AND CONSUMPTION, 1954: Production of fishery products (mostly from coastal waters) in India during 1954 is estimated to be about one million long tons, reports an October 25, 1954, U. S. Embassy dispatch from New Delhi. Inland pond-fish production is being developed slowly. Imports

of fishery products in 1953/54 (April-March) were valued at 18 million rupees (US\$3.8 million)--quantity not available--while total exports amounted to 27,000 long tons, valued at 42 million rupees (US\$8.8 million). In 1952/53 the total imports were valued at 15 million rupees (US\$3.2 million); and exports totaled 24,000 long tons, valued at 39 million rupees (US\$8.2 million).

The annual consumption of fishery products in India during 1954 is estimated at 6.0 pounds per capita.



Japan

OPERATING COSTS OF TUNA LONG-LINE VESSELS: A study has been made of a number of Japanese tuna long-line vessels to determine operating costs and other

Table 1 - Cost Price Per Pound for Tuna Caught by Selected Japanese Tuna Long-Line Vessels (by Size)

Size of Vessel Gross Tons	Trip Expenses 1/		Weight of Landings		Cost Price
	US\$		Lbs.		U. S. Cents Per Pound
300	162,272	÷	1,447,250	=	11.2
150	80,090	÷	667,695	=	12.0
100	62,339	÷	496,200	=	12.6
50	24,596	÷	184,884	=	13.3

1/ Includes owners' expenses and crews' share.

er financial data. The data compiled were published in The Skipjack Fishery and the Tuna Fishery, by Yutaka Imamura, printed by the Dai Nippon Suisankai in September 1953, and translated by a U. S. Fish and Wildlife Service employee stationed at the Pacific Oceanic Fishery Investigations office in Honolulu. The study in-

Table 2 - Japanese Tuna Long-Line Vessel Operating Data

Item	Unit	Size of Vessel			
		300-Ton (Steel) 510 hp.	150-Ton (Steel) 250 hp.	100-Ton (Wood) 240 hp.	50-Ton (Wood) 110 hp.
Crew	No.	30	24	22	16
Baskets fished	No.	350	300	250	150
Cruises per year	No.	5	5	6	12
Length of cruise	Days	50	50	43	19
Catch per cruise	Lbs.	289,450	133,536	82,700	15,407
Catch per year	Lbs.	1,447,250	667,695	496,200	184,884
Value of catch per cruise	US\$	35,000	16,147	10,000	1,863
Value of catch per year	US\$	175,000	80,737	60,000	22,356
Per Cruise:					
Running	Days	33	30	24	} 19
Fishing	"	17	20	19	
In port or at anchor	"	8	8	6	
Other	"	6	6	5	
Total	"	64	64	54	4
Per Year:					
Running	"	165	150	144	} 228
Fishing	"	85	100	114	
In port or at anchor	"	40	40	36	
In drydock	"	30	30	30	
Under repair	"	45	45	31	60
Total	"	365	365	365	48
					29
					365

cluded 11 vessels at Misaki, and 23 in Shizuoka Prefecture for the 150-ton class; 10 vessels at Misaki, 10 in Mie Prefecture, 12 in Miyagi Prefecture, and 8 in Shizuoka Prefecture for the 100-ton class; and 7 vessels in Kagoshima for the 50-ton class. The figures are averages for 1951-52 operations. The data on the vessel of the 300-ton class were supplied by the tuna-boat owners' association.

Tonnages of Japanese vessels are usually given as gross tonnage, that is, $\frac{1000}{353} m^3$ of the total volume of the enclosed spaces, and it is presumed that such is the mean-

Table 3 - Annual Operating Expenses of Japanese Tuna Long-Line Vessels

Item	Size of Vessel			
	300-Ton (Steel) 510 hp.	150-Ton (Steel) 250 hp.	100-Ton (Wood) 240 hp.	50-Ton (Wood) 240 hp.
	(US\$)			
Fishing gear replacement (4 percent of value of catch less handling charges)	6,397	-	-	-
Fuel oil	24,917 (575 tons)	11,700 (270 tons)	11,440 (264 tons)	4,160 (96 tons)
Lubricating oil (3 percent of fuel-oil cost)	2,564	1,204	1,174	428
Bait @ 6 yen apiece (incl. 30 percent spares)	3,223 (193,375 pcs.)	3,250 (195,000 pcs.)	3,088 (185,250 pcs.)	2,850 (171,000 pcs.)
Ice per year	2,180 (625 tons)	1,220 (350 tons)	1,150 (330 tons)	1,255 (360 tons)
Ice per cruise	125 tons	70 tons	55 tons	30 tons
Total food	1,890	1,512	1,100	800
Food per man per month	- (US\$5.25)	- (US\$5.25)	- (US\$4.17)	- (US\$4.17)
Market handling charges (6 percent of gross)	10,208	4,979	3,900	1,565
Miscellaneous expenses ^{1/}	2,778	2,083	2,167	1,667
Total trip expenses	54,155	29,068	26,463	12,725
Gross receipts less trip expenses	115,984	53,912	38,537	13,357
Total owner share	75,389 (65 percent)	32,347 (60 percent)	23,122 (60 percent)	8,014 (60 percent)
Total crew share	40,594 (35 percent)	21,565 (40 percent)	15,415 (40 percent)	5,343 (40 percent)
Value of one share (Note that there are slightly more shares than crew members)	1,194	869	871	297

^{1/} The total of the individual items does not add up to this line due no doubt to a discrepancy in the conversion.

ing of the tonnages in these tables. All weights and sums of money have been converted at the rates of 8.27 pounds per kan and 360 yen per U. S. dollar. Some discrepancies in totals and products in the original tables have been noted, but left uncorrected.

Table 4 - Japanese Tuna Long-Line Vessel Owners' Annual Expenditures

Item	Size of Vessel			
	300-Ton (Steel) 510 hp.	150-Ton (Steel) 250 hp.	100-Ton (Wood) 240 hp.	50-Ton (Wood) 110 hp.
	(US\$)			
Hull repairs	7,500	5,556	4,583	1,389
Fishing gear (at US\$32 per basket) ^{6/} .	11,107	9,086	6,489	2,596
Vessel equipment	287	833	56	28
Amortization of vessel	^{1/} 17,188	^{2/} 3,472	^{3/} 1,984	^{4/} 992
Insurance on vessel (3 percent per annum on 80 percent of the vessel cost)	5,000	1,000	500	250
Interest on loans	7,422	1,563	794	397
Crews' insurance (US\$17 per man per year)	510	408	374	272
Crews' bonus	2,142	3,478	2,372	-
Indirect expenses	5,116	2,465	1,715	-
Taxes and public charges	11,250	2,347	1,595	604
Total	67,522	^{5/} 29,457	20,462	6,528
Owners' share	75,390	32,347	23,123	8,014
Owners' expenditures	67,522	29,457	20,462	6,528
Owners' profit	7,868	2,890	2,661	1,486

^{1/} Built in May 1952 for US\$208,335 (US\$694 per ton).

^{2/} Built in June 1948 for US\$41,667 (US\$278 per ton).

^{3/} Built in June 1948 for US\$20,834 (US\$208 per ton).

^{4/} Built in June 1948 for US\$10,417 (US\$208 per ton).

^{5/} The figures in this column actually add up to \$30,208, but the source of

of the discrepancy cannot be discovered.

^{6/} The cost of long lines per basket given times the number of baskets the vessel is supposed to have does not produce the total gear cost given.

On the basis of the data, Imamura summarizes the cost price or cost of production of tuna for the different size vessels in table 1. He concludes that the small vessels cannot compete economically with the larger ones.

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NORTH PACIFIC FLATFISH EXPEDITIONS RETURN WITH GOOD CATCHES:

The two Japanese mothership-type flatfish trawling expeditions to the North Pacific have returned to Japan with good catches. The Miyajima Maru fleet fished 32 days and caught 4,172 metric tons, and the Einin Maru fleet fished 45 days and took 4,093 tons, a November 5, 1954, U. S. Embassy dispatch from Tokyo reports.

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WHALE OIL TO THE NETHERLANDS: Three Japanese fisheries companies in the fall of 1954 were reported about to close a sale of 7,300 tons (presumed to be metric) of whale oil at a price of £74 per ton (US\$188 per short ton) cost and freight, delivered in Rotterdam. The actual return was to be 4,000 tons of sugar, subject to governmental approval, according to the November 8, 1954, Foreign Crops and Markets, a Department of Agriculture publication.

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ARAFURA SEA PEARL-SHELL FLEET COMPLETES OPERATIONS: The Japanese pearl-shell expedition (which has been operating in the Arafura Sea under the terms of an interim agreement between the Australian and Japanese Governments) reached the agreed-upon limit of shell (957 metric tons) on October 9, 1954, and ceased operations. The fleet of one mothership and 25 diving luggers was expected to return to Kushimoto on October 31, a U. S. Embassy dispatch (October 22) from Tokyo points out.

JAPANESE GOVERNMENT



Republic of Korea

FISHERIES TRENDS, JANUARY-MARCH 1954: Although the South Korean fishing industry is in poor condition basically, there were some signs of improvement during the first quarter of 1954, an April 27, 1954, U. S. Embassy dispatch from Seoul reports. With an estimated total catch of 67,700 metric tons during the quarter, production appeared to be slightly greater than during the same period in 1953. The individual small fisherman, whose standard of living has decreased in recent years, has obtained considerable relief from the extremely low rice prices. Although there are some islands that are overcrowded with refugees and completely dependent on relief grain and where the food situation is serious, most fishermen are better off now than they have been in several years.

Since the coastal areas are overfished (there is little attempt to enforce conservation regulations), one of the principal objectives of the United Nations Korean Rehabilitation Administration (UNKRA) aid program has been to increase the offshore fleet. Lack of modern boats, equipment, and technical "know-how" has blocked attempts to exploit the deep-sea fisheries more fully. During the first quarter of 1954 the number of new offshore boats purchased abroad or under construction in Korea more than offset the number sunk or put out of commission for the first time since 1949. Most of the Korean boats are old, and repair facilities are so inadequate that keeping the fleet in operation has been difficult. Nineteen boats were imported, and construction was begun on 23 during the quarter. In March contracts were signed in Hong Kong for the construction of ten 75-ton trawlers, to be paid for out of UNKRA funds.

It is estimated that about one-third of the industry's current requirements for fishing supplies, such as nets, cordage, oakum, paint, nails, etc. are being financed through UNKRA. These supplies are supposed to be paid for in hwan by the fishermen, with the money desposited in a special counterpart fund administered by a joint ROK-UNKRA committee, but since most fishermen have no cash the payments

are largely made with the help of credit supplied at the direction of the Government. During the quarter 7, 500, 000 hwan from the special fund was allocated for repairs and new construction at the Seoul wholesale fish market. Credit was extended for the construction of an ice plant at the Pusan fish market and a new market at Incheon. The chief obstacle to increased improvement of handling and distribution facilities as well as new boat construction is the shortage of hwan.

Progress in the work of rehabilitating Seoul's important fish market was noted officially on May 4 with the presentation of a scroll and a gold cup to the head of the fisheries rehabilitation program being conducted by the United Nations Korean Reconstruction Agency (UNKRA), according to a May 13 bulletin from that agency.

Fish is second only to rice as a food in Korea. The US\$1, 900, 000 program now being carried out by UNKRA includes the provision of netting and boat lumber for fishermen, importation of chemicals and equipment for rehabilitating three canning factories, ice-manufacturing machinery for storage plants, and the establishment of a loan fund to enable fishermen to finance boats and equipment. Almost US\$500, 000 worth of supplies had been landed, and most have been distributed to end-users.

The Seoul City wholesale fish market was virtually destroyed in the Korean fighting. The important center was completed by June, with the outdoor stalls moved under shelter, sanitation pumps installed, the refrigeration plant rebuilt, and a new market sales center (57 by 200 feet) established.

A new fisheries law was promulgated in December 1953, and the first three months of 1954 were a period of reassignment of fishing rights and the issuing of new licenses. A bill to provide for the establishment of fishery cooperatives was approved by the State Council and submitted to the National Assembly. No action was expected until after the general elections on May 20, 1954, however.

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FISHERIES TO GET \$49 MILLION UNKRA FUNDS IN FIVE-YEAR PERIOD: An estimated US\$49 million will be supplied the South Korean fisheries during the next five years, a June 10, 1954, bulletin from the United Nations Korean Rehabilitation Administration (UNKRA) reports. This is the fisheries share of the US\$1, 250 million in international funds to be provided the Republic of Korea over the five-year period. The Agent General of UNKRA stated that with the help of these funds South Korea can become self-supporting within five years.

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UNKRA SUPPLIES MARINE DIESEL ENGINE EQUIPMENT: Marine Diesel engine equipment worth \$33, 000 arrived in South Korea during September as part of the aid program of the United Nations Korean Reconstruction Agency (UNKRA), a November 2, 1954, release from that agency reports. Probably a good part of this equipment is for fishing vessels.

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REVIEW OF THE FISHERIES, 1953: Production: The total production of South Korean fisheries in 1953 amounted to 279, 053 metric tons, according to statistics supplied by the Fisheries Bureau of the ROK Ministry of Commerce and Industry (table 1). ROK fishery statistics are liable to considerable error, and the Bureau estimates that the total reported amount is from 10-15 percent less than the actual catch, a September 8, 1954, U. S. Embassy dispatch from Seoul points out.

Fresh fish production totaled 176, 235 metric tons or 64 percent of the total; shellfish totaled 50, 101 tons and comprised 18 percent; seaweed and miscellaneous fishery products made up the remaining 21 percent.

Table 1 - Republic of Korea Production of Fishery Products, 1953

	Metric Tons		Metric Tons
Fresh Fish:		Shellfish, Etc. (Contd.):	
Porgy	8,238	Heart clam	545
Mackerel	22,820	Topshell	410
Flounder	6,244	Abalone	524
Gurnard	441	Sea mussel	1,796
Herring	40	Crabs	755
Perch	1,447	Octopus	1,589
Cod	2,236	Shrimp	21,743
Halibut	3,349	Cuttlefish	18,082
Pollock	17,997	Sea slug	1,258
Croaker	2,907	Miscellaneous	887
Pomfret	325	Total Shellfish, Etc.	50,101
Choggi (Covenia)	31,656	Seaweeds:	
Yellowtail	22,116	Glue seaweed	386
Hairtail	23,659	Gulfweed	2,028
Anchovy	11,408	Dulse	5,029
Skipper	6,492	Japanese jelly plant	3,931
Shark	8,900	Camariariodes	2,625
Carp	1,879	Fusiforme	574
Ray	4,081	Green laver	712
Total Fresh Fish	176,235	Total Seaweeds	15,285
Shellfish, Etc.:		Miscellaneous:	
Cockle	392	Whales	824
Oyster	873	Unclassified	36,608
Mactra sachalinensis	316	Total Miscellaneous	37,432
Stiegle mussel	345	Grand Total	279,053
Clam	586		

Fishing Fleet: During 1953 the South Korean fishing fleet was comprised of 43,584 vessels with a total gross tonnage of 173,145 (table 3). Large coastal sail boats made up the bulk of the fleet--77 percent of the vessels and 54 percent of the tonnage.

Table 2 - Republic of Korea Processed Fishery Products, 1953

Item	Quantity
	Metric Tons
Salted fish	20,906
Canned fish	1/ 5,070
Processed seaweeds	699
Laver	699
Agar-agar	350
Total	27,724

1/ Equal to 337,912 actual cases.

Processed Fishery Products: South Korean processed fishery products in 1953 amounted to 27,724 metric tons (table 2). Salted fish (20,906 tons) and canned fish (5,070 tons) made up the bulk of the processed fishery products.

Exports: Total exports of fishery products from South Korea in 1953 amounted to 9,366 metric tons (table 4). Fresh fish and shellfish were the principal fishery items shipped out of the Republic.

Table 3 - Republic of Korea Fishing Fleet, 1953

Item	Vessels	
	Number	Total Tonnage
Deep-sea bull trawlers	162	8,586
Coastal bull trawlers	107	4,280
Mackerel purse seiners	38	950
Whaling catcher boats	21	840
Motorboats (coastal)	2,939	22,784
Large sail boats (coastal)	33,149	93,685
Small sail boats	7,168	42,020
Total	43,584	173,145

Table 4 - Republic of Korea Exports of Fishery Products, 1953

Item	Quantity
	Metric Tons
Dried fish & shellfish	841
Fresh fish & shellfish	4,941
Salted fish & shellfish	87
Canned fishery products	48
Agar-agar	350
Laver	567
Fish-liver oils	21
Miscellaneous	2,211
Total	9,366

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DEEP-SEA TRAWLERS TO BE BUILT BY UNKRA: A total of ten 77-ton fishing trawlers are under construction to augment the Republic of Korea's war-depleted fishing fleet and provide needed marine products, information received from United Nations Korean Reconstruction Agency (UNKRA) headquarters in Seoul revealed June 29, 1954. The trawlers, larger and more powerful than those now being used, will be capable of fishing the Bering Sea for cod and the East China Sea for all types of bottom fish.

A contract for construction of the 75-foot vessels was awarded to a Hong Kong shipyard. They are designed for deep-sea fishing and will be built according to plans and specifications approved by the Korean Ministry of Commerce and Industry, the Korean Fisheries Control Committee, and UNKRA.

The boats are the first to be purchased by UNKRA under its \$1,900,000 program of fisheries rehabilitation. They are scheduled for delivery in six months.

The Republic's fishing fleet now stands at about 50 percent of its pre-1945 strength and brings in about 270,000 metric tons of fish yearly. Its 50-ton trawlers are limited in the range of their operations. The new vessels, powered by the latest British-made Crosley 180-horsepower Diesel engines, will provide the nucleus of a fleet of offshore vessels with a range of more than 1,000 miles.

The boats will be equipped with winches and gear designed for two-boat (bull-trawler) fishing, and in appearance will combine the best features of Western and Eastern fishing craft.

UNKRA experts have estimated that an additional 125,000 tons of fish yearly are needed to balance the Korean diet, which mainly relies on rice. The Agency's fisheries rehabilitation program has already brought into the country more than US\$500,000 in supplies such as fish nets, modern canning units, chemicals, lumber, and other equipment. The important Seoul fish market has been rebuilt and enlarged, and UNKRA has established a loan fund to aid small fishermen.



Mexico

FISHING TO BE LIMITED IN TERRITORIAL WATERS: The Mexican Chamber of Deputies is considering a law to limit commercial fishing rights in Mexican waters to Mexican citizens and corporations. Foreigners caught trespassing would be liable to heavy fines, according to the November 1954 World Fishing, a British fishery magazine.



Netherlands

FIRM TO PROCESS FISH POWDER: A Gouda, Netherlands, engineering firm has acquired the licensing rights of a new method for processing fresh lean sea fish into a powder with high nutritive value, a November 2, 1954, U. S. Embassy dispatch from The Hague reports. This powder is suitable not only for animals but also for human consumption.

The finely ground fish emulsion is converted, according to this method, into a dry substance which will keep for a considerable period, and which possesses an albumen content eight percent higher than that of ordinary fish meal. The process takes place on rollers heated by low pressure steam, and is completed in 15 seconds.

After this operation, the product is ready to be pulverized. It is possible to improve the taste of this fish powder by adding a suitable flavoring agent. Apart from its use as a conditioning food the meal is also suitable as a basic product for the food industry.



Norway

TUNA CATCH HIGHER: The total tuna catch landed by Norwegian fishermen in the 1954 season amounted to 9,348 metric tons by 433 seiners as against 7,775 in 1953. Ex-vessel values were Kr. 16.1 million (US\$2.3 million) and Kr. 8 million (US\$1.1 million), respectively, reports a November 4 bulletin from the Norwegian Information Service.

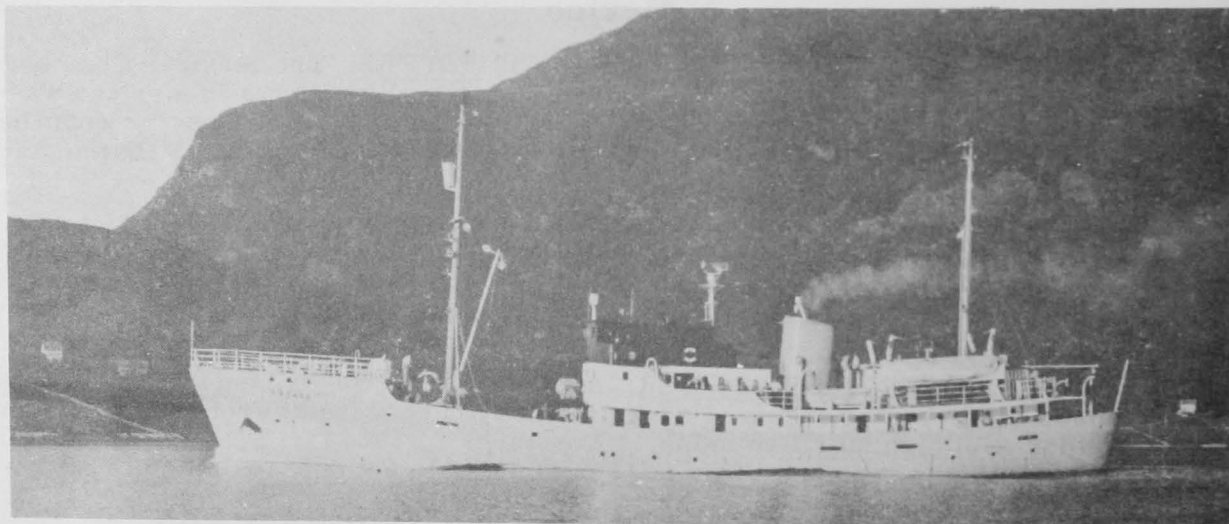
Ex-vessel prices varied from 1.51-1.82 kroner per kilo (9.6-11.6 U. S. cents per pound), but were mostly in the 1.52-1.54 (9.7-9.8 U. S. cents) range. Bluefin-tuna livers brought from 3.25 to 3.47 per kilo (20.7-22.1 U. S. cents per pound). In contrast to 1953 and 1952, most of the tuna was landed in the more northerly provinces instead of in western Norway although, for the first time, significant catches were made in the fjord below Oslo in southern Norway, according to reports in the October 27 issue of Fiskaren, a Norwegian trade paper.

Most of the tuna went to Italy for 2.54 kroner per kilo (16.1 U. S. cents per pound). A total of 41 carloads of frozen tuna was shipped by railway from North Norway to Italy in the fall of 1954, reports a December 2 bulletin from the Norwegian Information Service.

Japan has become interested in the Italian market and has exported frozen tuna to Italy at lower prices.

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HERRING PURSE-SEINE TESTS PROVE SUCCESSFUL: The recent summer cruise of the Norwegian research vessel G. O. Sars in ocean waters between Ice-



Norwegian research vessel G. O. Sars.

land and Jan Mayen included tests of purse seining for herring in the open sea. Articles in Fiskaren (September 22 and 29, 1954), a Norwegian trade publication, in quoting Dr. Finn DeVold (who was in charge of the cruise) and the accompanying

purse-seine expert, stated that the tests indicate that purse seining in this area can be carried on profitably on a commercial scale. The catch may be used either for salting on the vessel or for transporting to Norway (a couple of days distant) for manufacture into herring meal and oil.

ASDIC or similar scanning equipment must be used to locate the herring schools as the usual vertical echo-sounding apparatus is not adequate. After locating a herring school with the ASDIC on the G. O. Sars the seine boat was directed to the school. The boat located the school on its own depth finder before setting the purse seine. The herring were mostly at a depth of 10 fathoms. A purse seine with a depth of 35-40 fathoms was recommended as most suitable. The herring were always found in waters of about 43° to 46° F., suggesting the need for temperature-measuring equipment on the fishing vessels.

Large schools of herring should be found off Iceland in July and off Jan Mayen in August.

The fat content of the herring varied from about 17 percent in mid-July to 24 percent at the end of August, compared with only 7 to 13 percent for Norwegian winter herring. Presumably the Norwegian herring meal and oil factories could pay more, therefore, for the ocean herring than for the winter herring.

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REVIEW OF THE HERRING INDUSTRY: In the last 20 years the production of herring meal and herring oil in Norway has grown into an industry of national importance, meeting domestic demands and selling in export markets. The annual catch of herring is large and modern fishing methods have increased it considerably during the last five years. Had it not been for a parallel modernization and expansion of the herring processing factories, much of the fish would have been wasted. As it is, during the season the factories, despite round-the-clock operations, are filled literally to overflowing with herring.

Present annual production of herring oil totals 40,000 metric tons, or double the 1939 figure; production of herring meal has now reached about 180,000 tons. This last figure is slightly less than the annual United States production and about 22 percent of present world production. Norway's domestic consumption of herring meal is some 60,000 tons a year; the rest is exported. Chief purchasers in 1953 were the United States (18,000 metric tons), Western Germany (16,000), the United Kingdom (26,000), and the Netherlands (9,000). Total value of oil and meal produced annually is estimated at some Kr. 300 million (US\$42 million); a record of Kr. 350 million (US\$49 million) was reached in 1954.

Between 70 and 80 percent of the total herring catch goes to the factories; there are now about 80 plants, all situated on the West Coast and stretching almost the length of the country, from north to south. There is also one floating factory for fishermen working far out from the coast.

The plants are striving to make 100 percent use of the raw materials supplied and to help in this the central organization has established a special research institute near Bergen. Here experiments are carried out not only on more efficient production but also on improving the quality of the finished products. The institute also provides an advisory service and its investigations cover both the chemical and the biological fields. One of the main preoccupations at the moment is the search for a method of preserving the immense quantities of fresh herring delivered to the factories so that the fish can be used before deterioration sets in and arrangements made for a more convenient spread-out of the work involved.

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FROZEN FILLET CONSUMPTION UP: The per-capita consumption of fish in Norway, according to an August 18, 1953, report, is about 88 pounds per year.

Inland consumption of frozen fish fillets in Norway is increasing rapidly in step with the expansion of frozen food marketing facilities. According to the Ministry of Fisheries, most of the frozen fish is marketed in inland areas in southern Norway. Coastal cities and districts depend primarily on the supply of fresh fish. The Ministry of Fisheries estimates the total amount of frozen fish fillets marketed during 1952 at 600 metric tons, and during 1953 at 2,000 tons. The forecast for 1954 is about 4,000 tons. The increase is expected to continue during 1955, a U. S. Embassy dispatch (November 16, 1954) points out.

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WHALING EXPEDITION COSTS HIGH: To build and equip a modern whaling expedition would cost about Kr. 100 million (US\$14 million), estimates one Norwegian whaling operator. Annual operating expenses would amount to about Kr. 25 million (US\$3.5 million), according to a November 11, 1954, bulletin from the Norwegian Information Service.



Panama

COMMISSIONERS TO INTER-AMERICAN TROPICAL TUNA COMMISSION: The following were appointed as Panamanian Commissioners to the Inter-American Tropical Tuna Convention by Decree No. 103, states a U. S. Embassy dispatch from Panama City: Domingo Diaz Q., Panamanian Consul General at Los Angeles, California; Walter Myers, Jr., Secretary, Panamanian Embassy at San Jose, Costa Rica; and Miguel A. Corro, Secretary for Commerce and Industries as representative of the Panamanian Ministry of Agriculture, Commerce and Industries.



Peru

SHRIMP FISHERY CENTERED AT CALETA CRUZ: The present center of the Peruvian shrimp fishing fleet is at Caleta Cruz, an October 15, 1954, U. S. Foreign Operations Administration dispatch from Lima points out. The number of vessels in the fleet varies from 25 to 35, and the craft range in size from 30 to 45 feet. Most of the vessels fish with 20-foot beam trawls; a few have 35-40 foot otter trawls. Fishing is carried on 24 hours a day in depths of 4 to 5 fathoms. The average catch is 125 pounds of 15-count (heads off) shrimp per day. Upon landing, the shrimp are iced and taken to Mancora for packaging and freezing in 5-pound packages.



Portugal

FISHERIES PRODUCTION GOOD IN 1954: Generally, Portuguese fisheries production was good in 1954, an October 28 U. S. Embassy dispatch from Lisbon states.

Reliable sources expect that the Portuguese cod catch in the 1954/55 fishing season will be somewhat higher than the 65,646 metric tons caught in 1953/54. The catch of this important Portuguese food staple has been rising steadily in recent years.

The same sources state that the sardine catch was also unusually good in 1954 all along the Portuguese coast, especially in the Algarve, and that the canneries worked full time. Most of the sardines, however, were small and unsuitable for the boneless-and-skinless varieties usually exported to the United States.

The mackerel catch was reported to be about the same as in 1953; while the anchovy and tuna catches were poor.

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WHALING REGULATIONS: Regulations on the taking of whales in the waters of continental Portugal and the adjacent islands (including the Azores) were promulgated by Decree No. 39, 657 published in the Diario do Governo, May 19, 1954, at Lisbon. The regulations provide:

A ten-year concession is necessary to pursue whaling in the waters stipulated, and covers the following species only: sperm whale (Physeter catodon Linnaeus); fin or razorback whale (Balaenoptera physalus Linnaeus); blue whale or Sibbald's rorqual (Balaenoptera musculus Linnaeus); lesser rorqual (Balaenoptera acutorstrata Lacepede); sei whale or Rudolphi's rorqual (Balaenoptera borealis Lesson); humpback whale (Megaptera nodosa Bonnaterre).

The concessions, obtained from the Minister of the Navy, grant a whaling area within which only the holder has the right to engage in whaling, subject to legal and regulatory provisions. Concessions are renewable for another ten-year period after the first has expired.

The sum of 100,000 escudos (US\$3,450) must be deposited for the concession.

A concessionaire is obligated to set up a whaling fleet, properly equipped to engage in whaling, by June 30 of the first year of the period of the concession.

Only vessels of the type described in the Decree may be used.



Spain

RECORD TUNA CATCHES IN BAY OF BISCAY:

The run of striped tuna along the Bay of Biscay in Spain continued at record levels in the fall of 1954, reports an October 15 U. S. consular dispatch from Bilbao. According to one report from the important fishing town of Castro-Urdiales, the total 1954 catch may be the highest in history. Prices have remained firm, averaging from 9 to 11 pesetas per kilo (36-45 U. S. cents per pound) wholesale.

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MINIMUM PRICE AND CATCH LIMITS FOR BAY OF BISCAY HORSE MACKEREL FISHERY:

In late October 1954 a general meeting of Fish Syndicate heads, fishermen, and packers was held in Santander, Spain, to prepare for the coming horse mackerel (chicharro) season in the Bay of Biscay. Among other decisions were those setting a minimum wholesale price of 50 centimes per kilogram (about 1 U. S. cent per lb.). This measure, it was explained, would prevent a repetition of the previous year, when abundant catches resulted in such



low payments to the fishermen as to make it virtually uneconomical for them to go to sea. It was also decided to limit boats of the provinces of Biscay, Santander, and Guipuzcoa, because of their greater potential, to a maximum daily catch of 11,000 pounds as compared to 17,600 pounds for Oviedo and 22,000 pounds for Lugo. Only one trip a day will be authorized, and it will be illegal for one boat to sell part of its catch on the high seas to another boat, according to a November 16 U. S. consular dispatch from Bilbao.

In addition to these measures, designed to increase economic benefits from the coming horse mackerel season, the meeting passed a number of other resolutions: (1) to recommend that the state-run Instituto Nacional de Industria (INI) set up a factory to convert fish byproducts into fertilizer; (2) to petition the Instituto Social de la Marina (State Maritime Lending Agency) to increase its loans for construction of fishing boats from 60 to 90 percent of the cost, as well as to liberalize its credit terms; (3) to request official permission to export fresh fish, once domestic needs are met; (4) to urge installation of additional radio transmitters and receivers to assist fishing boats in their work; (5) to form a confederation of the various fish syndicates of the provinces fronting on the Bay of Biscay, from La Coruna to Guipuzcoa.

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VIGO FISHERIES TRENDS, AUGUST 1954: Production: In spite of the scarcity of sardines (the principal species), landings in the Vigo area of Spain during August increased over the previous month's, but were substantially lower than a year earlier.

While albacore constituted the bulk of the catch, substantial quantities of jurel (Tracharus tracharus) and alcrique (needlefish) helped maintain the volume during August. For the first time in months jurel was so abundant that large quantities were acquired by fish-oil and fish-meal processors at low prices. Alcrique, on the other hand, is in good demand by the canning industry since it is being packed for local markets as a substitute for sardines, a September 14, 1954, United States consular dispatch from Vigo points out.

The medium-range fleet operating off Ireland and the Grand and Petit Soles continued to operate under difficult conditions and according to many operators the higher prices hardly compensated for the increased costs of operation.

Canning: Fish canning plants in the Vigo district took advantage, for the second consecutive month, of the seasonal runs of albacore tuna and plants were fairly busy during the month. However, production is reported to have averaged only 20 to 22 percent of capacity.

Canners claim that while the new exchange rate for canned fish is helpful, it is still insufficient to facilitate competition abroad and that unless the Government permits free trade or is disposed to subsidize exports, foreign markets will be gradually disappearing.

Purchases of fish by the canning plants in the Vigo area during August totaled 2,962,000 pounds as compared to 2,341,000 pounds in the previous month and 4,213,000 pounds in August 1953.

SOCIAL SECURITY FOR FISHERMEN: The recent government decision to include the short-range fishermen (pesca de bajura) under Social Security Insurance has been the source of much criticism on the part of fishing vessel operators. These crews so far have not been getting a salary, but receive instead a percentage of the catch value. Owners claim that they are operating most of the vessels without profit and that insurance contributions are almost impossible under the present circumstances.

Surinam

SHRIMP FISHERY: The largest catches of shrimp are made during the long dry season, according to a recent survey of the Surinam fisheries. Surinam has two dry seasons, a long and a short one. The demand for fresh shrimp has never been very large in Surinam, so that practically the entire catch is dried, according to the August 1954 Monthly Information Bulletin of the Caribbean Commission.

Shrimp fishing is dependent on the season, partly because of large concentrations in the river mouths and partly because of the sun-drying processing method. Investigations made, however, have indicated that almost all year round shrimps are found. These shrimp consist mainly of the smaller species, although they are sometimes mixed with large ones. However, fishing offshore in periods other than the long dry season is not remunerative if all the shrimp have to be dried.

During October and November 1953, a total of 22,000 pounds of dried shrimp were exported at a reasonable price, and it is hoped to increase the quantity for 1954 to full production capacity. As there is a guaranteed foreign market for considerable quantities at prices which give the fisherman a larger profit than formerly, prospects in shrimp fishing are bright.



Turkey

FISHERY PRODUCTS SUPPLY AND DISPOSITION, 1953/54: The total production of fishery products in Turkey during 1953/54 (July-June) amounted to 125,400 metric tons, according to an October 27, 1954, U. S. Embassy dispatch from Ankara. This is considerably greater than the production in recent years--the 1952/53 production was 88,000 tons; 1951/52, 76,000 tons; and 1950/51, 79,000 tons.

Turkish exports of fishery products in 1953/54 totaled 3,950 metric tons, and as there were no imports the available supply was 121,450 tons. This supply was disposed of as follows: food, 75,910 tons; industrial use, 22,000 tons; and as waste, 23,540 tons.

The per-capita consumption of fishery products in Turkey during 1953/54 averaged 5.7 pounds per year.



United Kingdom

LARGE OCEAN PERCH FILLET ORDER FROM U. S. ARMY: A Grimsby, England, firm has received the largest ocean perch fillet order it has ever had from the U. S. Armed Forces for the troops in Britain, Germany, and other parts of Europe, according to the September 25, 1954, Fish Trades Gazette, a British fishery magazine. The firm had received previous substantial orders from the United States authorities.

This is a new market for British ocean perch which has hitherto been practically unwanted at Grimsby where it is known as "reds." Trawlers have only taken them as part of their catches when fishing for cod. "We still have one contract running and our commitments for the American Forces are higher now than they have ever been," stated a director of the firm.

The firm's contract includes exports to the United States, but there was one difficulty--that of finding a sufficient supply of ocean perch.

When the Hull trawler Tesla landed an exceptionally large quantity (280,000 pounds) of ocean perch at Grimsby recently, the firm bought them all for export.

"On the present contracts we are holding it might almost be worth while fishing deliberately for ocean perch," said the firm director. He added that the ex-vessel price of ocean perch had been higher at Grimsby during the past 3 to 6 months than would have been the case had his firm not obtained these contracts, which were for quick-frozen ocean perch and cod fillets.

Some of the fish would go to Germany and from there be distributed to United States units all over Europe, and some would go to United States units stationed in Britain.

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FACTORY TRAWLER "FAIRTRY" HAS ANOTHER GOOD TRIP OFF GRAND BANKS: So successful has been the second trip of the factory trawler Fairtry that the owners may build other vessels of the same type sooner than was expected, according to the October 29, 1954, issue of The Fishing News, a British fishery magazine. A representative of the firm said when the vessel began unloading at Immingham on October 28: "We did not intend to develop any further for a considerable time but this trip has been so successful and we are so delighted that anything might happen."

The Fairtry caught and processed 540 metric tons of fish off Greenland and Newfoundland in only 57 fishing days. This includes 240 tons of whole haddock, 175 tons of haddock fillets, 100 tons of cod fillets, and small amounts of halibut and other varieties. On the maiden voyage the catch was 460 tons in 65 days of fishing.

"We have been able to catch large amounts of fish every day and we have actually been working for as long as 14 hours on some days," said the spokesman.

All the teething troubles of the first voyage have been overcome successfully and the Fairtry had been at sea continually without touching port. More machinery for handling smaller fish would be installed for the next trip.

With regard to quality, the spokesman said that excellent reports have been received from consumers everywhere and the patients from one hospital had written the owners to say that "they have never tasted anything quite so good." He said that though fish frozen immediately on catching was always colored because the blood was still in it, the quality of taste was excellent and they hoped to overcome the coloring.

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FISH BEHAVIOR TO TRAWLS AND NET STUDIED: In order to discover the reactions of white fish to trawls and seine nets, underwater experiments with models were carried out the summer of 1954 in Lunan Bay, states the September 24, 1954, issue of The Fishing News, a British fishing paper.

The experiments were carried out by two members of the staff of the Marine Laboratory, Aberdeen, who were able to secure a number of underwater photographs.

In October another member of the laboratory staff was due to carry out similar experiments in the Moray Firth, but it is doubtful if the lighting then would be good enough for underwater photography.

The efforts to secure more information on the reactions of fish towards nets and the workings of nets underwater follow the success obtained two years ago with the seine net and flatfish. Frogmen, working with scientists, were then able to secure remarkable underwater pictures of the behavior of the fish and the net as it was towed along the sea bottom.

The experiments now being carried out by the Aberdeen Laboratory's staff are to try to secure further information and photographic records on the various factors that influence the operation of the seine net, such as conditions of tide, nature of the sea bed, the number of warp coils used, and the effect that the warps may have of herding fish into the path of the net.

In 1953 some experiments were carried out in Broad Bay, when attempts were made to discover the reactions of white fish to the seine net, but there were not sufficient white fish at a depth where frogmen could work and where light would enable photographs to be taken.

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WHITE FISH AUTHORITY VESSEL CONSTRUCTION PROGRAM: Good progress is being made towards the White Fish Authority's goal of a new fleet of 500 vessels in 10 years, according to a report from the retiring Chairman in late September 1954. The Authority's grants and loan policy was introduced in August 1953 to stimulate modernization of the fishing fleets.

Since August 1953 grants have been made for the building of 35 new trawlers for near- and middle-water fishing amounting to £632,000 (US\$1.8 million). In addition, loans towards their building totaled £1.5 million (US\$4.2 million). For 95 inshore vessels, grants amounted to £141,000 (US\$400,000) and loans to £250,000 (US\$700,000). For engines for 68 inshore vessels, grants amounted to £25,000 (US\$70,000), and loans to £39,000 (US\$109,000).

Total sums advanced to September 1954 amounted to £798,000 (US\$2.2 million) in grants, and £1,789,000 (US\$5 million) in loans. In each case not less than 15 percent of the cost of construction has been provided by the owner.

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FIRM ORDERS TEN DIESEL TRAWLERS: An order for the building of 10 Diesel trawlers at a total cost of approximately £1 million (US\$2.8 million) is reported to have been placed with a Selby shipbuilding firm by a Grimsby trawling company. The new vessels will be of the North Sea type but capable of westerly and Faroes fishing, a November 19, 1954, U. S. consular dispatch from Manchester reports. The Grimsby firm has a fleet of 23 trawlers ranging from 96 to 249 net tons each.

The 10 trawlers are being built in close collaboration with the White Fish Authority and full use is being made of the Authority's grant and loan scheme. The White Fish Authority was set up at Knaresborough, Yorkshire, under the Sea Fish Industry Act of 1951, with the functions of reorganizing, developing, and regulating the white-fish industry. It is empowered to make grants for new fishing vessels of not more than 140 feet in length and in certain cases for new engines.

This new building order tends to lessen the concern which arose following the news in October that another Grimsby firm has placed an order with a German shipbuilding firm for two modern deep-water trawlers fitted with exhaust turbine engines giving a speed of 14 knots. These two trawlers will be the first turbine-driven fishing vessels to be owned by a Grimsby firm. They also comprise the first order in the history of the town's trawling industry that has been placed abroad.

It is said that although the German-built trawlers are each £10,000-15,000 (US\$28,000-42,000) less than a British equivalent, the deciding factor in placing the order with the German yard was not so much cost as speed of delivery. The German firm's delivery date is reported to be more than a year earlier than any of the British yards. The first vessel should be delivered in July 1955 and the second in the following September. It is understood that these new ships will be used to replace scrapped tonnage.

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"COLLEGE FOR FISHERMEN" PROPOSED: To encourage recruiting to the fishing industry, a new scheme for a "college for fishermen" has been proposed by Councillors for Waveney Ward, according to the October 15, 1954, issue of The Fishing News, a British fishery magazine.

One Councillor has drawn up a draft scheme for a "Ness Point College for Fishermen," and has had discussions with representatives of the fishing industry, and with a Member of Parliament who is to discuss with those interested how to put the proposals into practice.

"There is no other trade handling such a vast amount of modern machinery involving huge capital outlay which has not some collective scheme for training its employees," says the Councillor in a foreword to his draft scheme.

Many lads inclined to take up fishing for a living have been "frightened and disheartened" after one or two trips to sea, he says. "The solution is obviously a more gradual introduction to the conditions which must be arduous no matter how modern a ship may be."

He suggests that a college be built "for this and other purposes" at Lowestoft. It would contain a complete trawler and drifter ashore with all essential working parts reproduced as near as possible under working conditions at sea. There would be an engine room with modern Diesel engine, auxiliary engines, and other paraphernalia pertaining to fishing vessels; a bridge reproduced to scale with a screen in front on which films of harbors, channels, and buoys could be projected by a camera connected to the wheel; decks built to resemble actual trawler and drifter decks with winches, capstans, bollards, and fishing gear; and all modern methods of navigation and fish-detecting devices. Training would include electrical and wireless cookery with a ship's cookhouse and classroom attached--rigging and workshops for teaching repairs which could be done at sea, avoiding a return to port for such repairs.

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CONSUMPTION OF FISHERY PRODUCTS, 1953/54: The per-capita consumption of fishery products in the United Kingdom during 1953/54 amounted to 20.8

United Kingdom Per-Capita Consumption of Fishery Products, (Edible Weight), 1953/54 with Comparisons			
Type	1953/54	1952/53	Prewar Average
	Lbs.	Lbs.	Lbs.
Fresh, frozen, and cured fish	19.1	19.7	21.8
Shellfish	0.7	0.8	0.9
Canned fish (imported)	1.0	1.1	3.5
Total	20.8	21.6	26.2

pounds (edible weight) as compared to 21.6 pounds in 1952/53 and the prewar average of 26.2 pounds per person (see table). The lower consumption in 1953/54 was due to lighter landings and imports as well as a reduced demand because of the greater availability of other protein foods, an October 25 U. S. Embassy dispatch

from London points out. Consumption in 1954/55 should be affected by the derationing of meat, and the downward trend for fishery products may continue. This is especially possible because retail fish prices are relatively high as compared with other protein foods.

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TELEVISION TO BE USED ABOARD WHALING FACTORYSHIP: The British whaling factoryship Balaena has had a miniature television camera built in a specially-constructed hut on its stern and it will be used to transmit pictures on a closed circuit over 750 feet of cable to a monitor installed on the ship's bridge. The short season for whaling started in December and during that time whales are caught steadily. Besides delivery of whales, other ships in the fleet of 19 may come alongside to get stores or replenish stocks.

Control of these operations from the bridge has been tricky because there is nearly 500 feet between the bridge house, which is forward, and the forecastle. As whales and ships tie up at the stern, the problems of controlling the operations are difficult and it is hoped that the installation of the television camera will help to solve the problems, the September 18 issue of Fish Trades Gazette reports.



U. S. S. R.

LARGE HERRING CATCH IN NORTH PACIFIC: Large quantities of herring have been caught by Soviet fishermen in the Okhotsk Sea, far North Pacific, reports the Tass Soviet News Agency. Soviet scientists had found quantities of the fish in the northwest and central part of the area and near the Soviet island of Sakhalien, north of Japan.

The trawlermen, who are being helped by Baltic fishermen experienced in North Atlantic fishing, say that they have caught as many herring in three months in 1954 as would represent a year's catch in the North Atlantic.

Three expeditions are equipped with modern trawlers, floating factories, echometers, and aircraft. The area is known as the "Icebag" because of the ice floes and severe storms encountered there even in summer, according to The Fishing News (September 24, 1954), a British fishing paper.



ELIMINATING "BLACK SPOT" ON ICED SHRIMP

It is stated that formation of "black spot" on iced shrimp can be inhibited by dipping them immediately after heading and for a second time after 7 to 8 days in a 2½-percent solution of NaHSO₃. Traces, or small amounts of black spot, are reported to have been formed after 17 days as compared with untreated shrimp which developed black spots by the 10th or 12th day. Organoleptic tests do not seem to indicate any adverse effect on flavor or texture of shrimp by the NaHSO₃ treatment.

--Gulf and Carribean Fisheries Institute, Abstracts, 1953