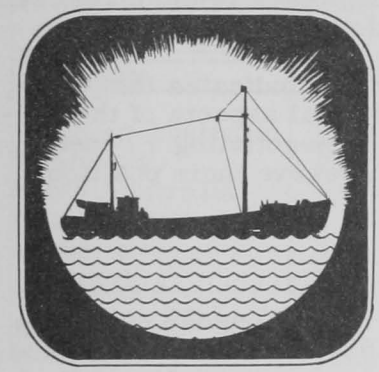
International

NORTHWEST ATLANTIC FISHERIES COMMISSION

REGULATION OF NET-MESH SIZE IN SUBAREAS 3 AND 4 AGREED UPON AT OTTAWA MEETING: Acting on the advice of scientific advisers who predict heavier catches will result, the Commission approved the setting of minimum mesh sizes for cod and haddock fishing in Subareas 3 and 4 of the Convention Area (excepting territorial waters) where at present free fishing prevails. For Subarea 3, which takes in the Newfoundland banks and adjacent waters, the Commission recommended a 4-inch minimum mesh size, while a $4\frac{1}{2}$-inch mesh size was recommended for Subarea 4 which covers the Nova Scotian waters with the Gulf of St. Lawrence and the Bay of Fundy. The $4\frac{1}{2}$-inch mesh size in Subarea 4 will become effective in 1956 provided approval is granted by member nations. The recommendation for different mesh sizes in the two areas is based on biological evidence which shows that the species grow more slowly and mature later in the more northerly Subarea 3. This agreement to regulate mesh sizes in subareas 3 and 4 was the highlight of the Fifth Annual Meeting of the International Commission for the Northwest Atlantic Fisheries at Ottawa early in June.



Up to the present, the only fishing grounds in the Convention Area subject to mesh size regulations are Georges Bank and the Gulf of Maine located in Subarea 5, where a $4\frac{1}{2}$-inch mesh regulation has been in effect since July 1, 1953. This regulation applies only to haddock, but the Commission approved an amendment to make it applicable to cod as well. In order to avoid impairment of fisheries conducted primarily for species other than cod and haddock, the regulations, both proposed and in effect, permit the use of smaller mesh nets in all three subareas when fishing for species other than haddock and cod. A specified amount of cod and haddock taken incidentally in fishing for other species may be legally retained. Landings of all species from Subarea 5 last year amounted to 154,649 metric tons, from Subarea 4 around 300,000 metric tons, and from Subarea 3 approximately 500,000 metric tons.

Captain Tavares de Almeida of Lisbon, Portuguese Commissioner, on the international Commission for the Northwest Atlantic Fisheries, was elected Chairman for 1955, at the conclusion of the meeting on June 11. He succeeds Dr. Stewart Bates, who relinquishes the chairmanship after a two-year term. K. Sunnanaa, Norwegian Commissioner from Bergen, was elected Vice Chairman, a post previously held by Almeida. Officers elected to head the Standing Committees are: Standing Committee on Research and Statistics, Dr. Lionel A. Walford, Chief, Branch of Fishery Biology, U. S. Fish and Wildlife Service, Washington, D. C.; Standing Committee on Finance and Administration, J. Howard MacKichan, Halifax, N. S. Panel Chairmen are: Panel 1, B. Dinesen, Under Secretary, Ministry of Fisheries, Copenhagen; Panel 2, Commander H. F. Barbier, Representative of the French Merchant Marine in the United States and Canada; Panel 3, C. L. Chicheri, Commercial Attache, Spanish Embassy,

Ottawa; Panel 4, J. Howard MacKichan, Halifax, N. S.; and Panel 5, F. W. Sargent, Director, Division of Marine Fisheries, Department of Conservation, Boston, Mass.

The European representatives urged that a meeting of the Commissioners be held in Europe and it was agreed to do so in 1957. Portugal has already extended an invitation for the Commission to meet in Lisbon.

TERRITORIAL WATERS

CHILE, PERU, AND ECUADOR REAFFIRM PRINCIPLES OF 200-MILE TERRITORIAL WATERS ZONE: Representatives of Chile, Ecuador, and Peru met for two weeks in Santiago (meetings ended May 30) relative to a reply of the three governments to a proposal made by the United States on problems deriving from the declaration on a 200-mile territorial waters zone established in the agreement of Santiago of 1952. A communique released May 30 states that the representatives of the three countries acted on the basis of a complete unanimity of criterion reaffirming the principles of the tripartite declaration and agreed on the text of a reply which was scheduled to be delivered to the United States Government. The agreements reached were incorporated in the Act, which was signed by the representatives of each of the three countries, a May 30 U. S. Embassy dispatch from Santiago points out.

An item in the Peruvian press (La Prensa, Lima, May 25), indicates that Chile, Peru, and Ecuador have agreed to decline to submit the juridical aspects of the 200-mile claim to the World Court, but that they are agreeable to negotiating a conservation convention with the United States, provided they can reserve their position regarding maritime jurisdiction.

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200-MILE TERRITORIAL WATERS ZONE RATIFIED: The Peruvian Congress on May 5 ratified six conventions signed on December 4, 1954, by Peru, Chile, and Ecuador concerning fishing and the 200-mile territorial waters zone, a May 6 U. S. Embassy dispatch from Lima reports. At the same time Congressional approval was given similar conventions signed at the first conference on exploitation and conservation of resources of the South Pacific held at Santiago, Chile.

Australia

JAPANESE CANNED TUNA OFFERED IN AUSTRALIA CHEAPER THAN AUSTRALIAN PRODUCT: Japanese tuna (fancy light meat in cottonseed oil) was offered in Sydney in April at reported prices of 12s. 9d. (US$1.43) and 13s. 6d. (US$1.51) per dozen cans wholesale for $3\frac{1}{2}$-oz. cans and 22s. 3d. (US$2.49) for 7-oz. cans. Corresponding prices of Australian canned tuna are 19s. 3d. (US$2.16) and 26s. 9d. (US$3.00), respectively.

Adding the usual retail mark-up, the Japanese product which wholesales at 12s. 9d. (US$1.31) a dozen $3\frac{1}{2}$-oz. cans would probably retail for about 1s. 9d. (20 U. S. cents) a can.

Australian canners could not hope to compete with such prices which are made possible by Japan's low-wage economy. If sufficient Japanese tuna were imported it would kill the young Australian tuna canning industry and might even affect other Australian canned fish as well. It is understood that fish canners are approaching the Dept. of Trade and Customs for protection, the May 1955 Fisheries Newsletter of the Commonwealth of Fisheries points out.

The import position is affected by the cuts which came into force on April 1. Quota imports have been reduced by 15 percent (value) of the base year (1950-51). But any importer who used to hold sterling and Japanese quotas for any particular item can now devote both to importing that item from Japan.

On the application of the Fish Canners' Association of Australia, the Tariff Board has had referred to it for investigation the question of what rates of duty should be imposed on fish imported in tins or other airtight containers which is classifiable under Items 51c (1) and 51c (4). The first affects salmon and the second fish other than salmon (and crustaceans). The second would therefore cover tuna. The dates of the public hearings of this application have not been announced.

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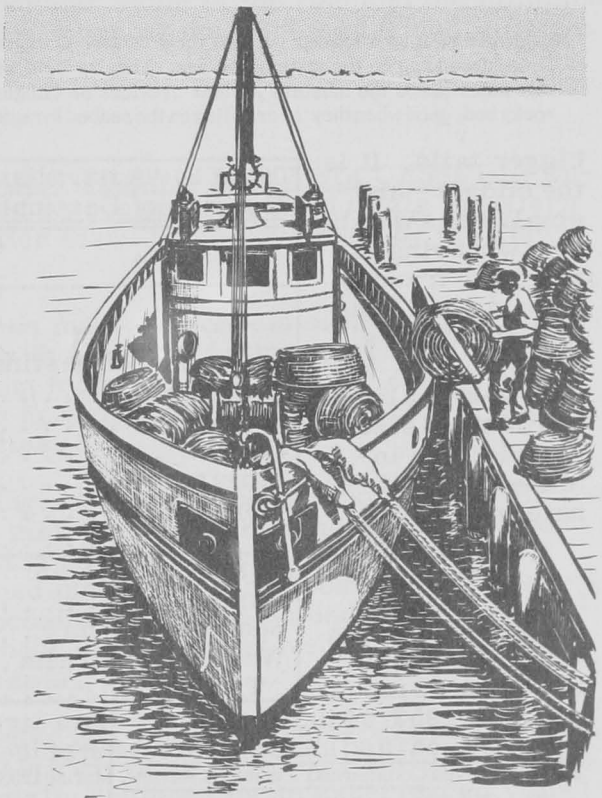
SPINY LOBSTER INDUSTRY, 1953/54: Production: The spiny lobster catch in Australia during the 1953/54 season (July 1 to June 30) totaled 17,094,400 pounds (weight in the shell), reports the October 1954 Fisheries Newsletter of the Common-

Table 1 - Australian Spiny Lobster (Crayfish) Catch by States, 1952/53 and 1953/54 1/

State	1953/54	1952/53
	Lbs. 2/	Lbs. 2/
Western Australia	9,137,500	8,098,602
Tasmania	2,350,000	2,744,390
South Australia	3,850,000	3,500,000
New South Wales	563,000	528,000
Victoria	1,193,900	755,568
Total.....	17,094,400	15,626,560

1/ Fiscal year July 1 to June 30.
2/ Round weight (landed weight).

wealth Director of Fisheries (table 1). The large increase in production in Victoria brought the catch in that State to over one million pounds for the first time. However, no spiny lobsters are exported from either Victoria or New South Wales since spiny lobsters command high prices on the Melbourne and Sydney markets.



Australian spiny lobster fishing boat taking on pots of South Fremantle.

Exports: The bulk of the Australian spiny lobster production is exported and in 1953/54 an estimated 13 million pounds of the total was packed for this market. The United States is the leading buyer and in 1953/54 received 98 percent of the total exports, nearly all in the form of frozen tails. The total exports in 1953/54 amounted to 4,168,600 pounds of tails and 65,738 pounds of whole spiny lobsters, valued at £1.6 million (US$3.5 million), as compared with the previous year's total of 3,941,368 and 130,029 pounds, respectively, valued at £1.4 million (US$3.2 million). In 1953/54, a total of 3,672 pounds of frozen spiny-lobster meat was also reported.

The most important feature of the Australian spiny lobster industry is its contribution to dollar earnings. In the 1953/54 season the industry earned US$3.5 million as compared with US$3.2 million the previous year and US$1 million in 1948/49.

During the 1953/54 year export prices showed a tendency to level off at an average of about 7s.4d. to 7s.6d. (82-84 U. S. cents) per pound. The highest ascertained

Fishermen haul up a lobster pot into their cutter. Catches are variable, depending on the state of the sea. They're light when turbulent water keeps the lobsters in their crevices or clinging to the rocky bed; good when they're crawling on the seabed foraging for food.

price was 7s. 10d. (88 U. S. cents) and the lowest 6s. 10d. (77 U. S. cents) per pound, the latter presumably for an all-midget consignment.

Tasmania and South Australia produce the southern spiny lobster (Jasus Ialandi) which is the same species as exported by South Africa and New Zealand. But Western Australia has the western spiny lobster (Panulirus longipes) which, though not less enjoyable than the southern species, has yielded a greater proportion of very small sizes (midgets). The United States market likes the medium sizes best. With the very large sizes, a method of splitting the tail lengthwise has been adopted in some cases which has tended partly to overcome the difficulty of disposing of the bigger tails. It is the midget and small sizes which are worrying American traders, according to Australian sources.

New Zealand has adopted size restrictions intended to eliminate midgets.

During the last few years, the prices brought by Australian spiny-lobster tails mounted, but in 1953/54 they steadied. To a large extent, prices of competitive food products such as meat and shrimp, affect the prices which can be obtained for spiny lobsters.

Table 2 - Australian Spiny Lobster (Tails and Whole) Exports by Country of Destination and State of Origin, 1952/53 and 1953/54

State	1953/54 Quantity		1952/53 Quantity	
	Tails	Whole	Tails	Whole
	Lbs.	Lbs.	Lbs.	Lbs.
By Country of Destination:				
United States	4,159,860	3,125	3,921,558	49,907
Hawaii	4,240	1,015	605	-
Canada	1,000	230	11,455	61,266
Singapore	3,375	61,308	7,750	18,856
Other	125	60	-	-
Total	4,168,600	65,738	3,941,368	130,029
By State of Origin:				
Tasmania	97,630	3,960	161,715	77,347
South Australia	827,535	260	956,475	33,826
Western Australia	3,243,635	61,518	2,823,178	18,856
Total	4,168,600	65,738	3,941,368	130,029

Note: Also see Commercial Fisheries Review, March 1953, p. 37.

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WESTERN AUSTRALIAN SPINY LOBSTER CATCH AT RECORD HIGH: Record catches of spiny lobsters are being reported at Abrolhos Islands, Western Australia, since the fishing season commenced on March 15, reports The Fishing News (May 20), a British fishery publication. Spiny lobsters are being found in greater numbers than ever before and generally fishermen are bringing in larger catches per unit than previously.

This season 168 men and 104 vessels are operating in the area, compared with 139 men and 85 craft last year.

The State's chief spiny lobster exporter is endeavoring to establish outlets in Denmark, Germany, and other Continental countries, and to this end recently

dispatched samples of cooked spiny lobster to test the markets. Determined efforts are also being made to boost the present substantial exports to the United States.

Canada

LABELING REQUIREMENTS FOR IMPORTED FISHERY PRODUCTS: The specific law relating to the marking of containers of fish and shellfish imported into Canada, according to recent correspondence from the Canadian Department of Fisheries' Director of Inspection and Consumer Service, requires that the label bear the following information:

1. Kind, grade, and weight of fish (or shellfish).
2. Name and country of origin.
3. Name and address of the packer.

For the purposes of administration, the Department has ruled that on labels of fish sticks and other processed fish the vernacular name of the fish and the minimum net weight of the contents be in lettering and numbering not less than $\frac{3}{16}$ inch in height on the main body of the label.

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BRITISH COLUMBIA MIDWATER HERRING TRAWL TESTS SUCCESSFUL: Encouraging herring catches have been reported on preliminary field trials in waters off the coast of British Columbia of a midwater trawl being developed by the Fisheries Research Board of Canada.

Numerous successful night sets have been made on schools of herring in the lower Strait of Georgia. (Purse seining near the surface is the usual method of catching herring.) Catches of herring ranging from 10 to 30 tons per drag were made in midwater at depths of from 15 to 20 fathoms, reports the February Trade News of the Canadian Department of Fisheries.

The midwater-trawl development is being undertaken to test and adapt to British Columbia conditions an efficient alternative method for catching herring and other species. The project was requested by certain segments of the British Columbia fishing industry, and the work is being carried out by the Fisheries Research Board for the Industrial Development Service responsible for projects undertaken by the Federal Department of Fisheries to bring about new and improved production and processing techniques in the fisheries of Canada.

Operating from the chartered otter trawler Sea Pride II, the experimental fishing is being done with a trawl net made almost entirely of nylon. The trawl net with its specially-constructed otter boards was specially designed by an experienced Vancouver herring fisherman.

It is believed that the development of a successful midwater trawl could open a new field of operation for trawl fishermen in British Columbia in that they would be able to catch herring at times when they have normally been unavailable.

To complete the research, further tests were planned for this summer off the west coast of Vancouver Island.

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QUEBEC RAISES MINIMUM SIZE OF LOBSTERS FOR CANNING: The minimum size of lobsters for canning to be caught by Quebec lobstermen has been raised from

$2\frac{5}{8}$ inches to $2\frac{3}{4}$ inches carapace measure by the Federal Department of Fisheries at the request of the Quebec government.

Biologists have discovered that the larger lobster has a greater meat yield, and as a result brings higher returns to the fishermen. It is expected that through the increased minimum size limit in areas 9 and 10, the Quebec fishermen will capitalize on the resulting increased stocks of larger lobsters. The $2\frac{5}{8}$-inch lobsters, which are caught legally in all other Maritime canner-size lobster fishing areas, will in Quebec waters be allowed their freedom to grow larger, heavier, and more profitable.

Areas 9 and 10 in Quebec include the waters of the north and south shore of the Gulf of St. Lawrence, the Gaspe Peninsula, and the Magdalen Islands.

Carapace measure means the measurement from the rear of either eye socket along a line parallel to the center line of the body of the rear end of the body shell.

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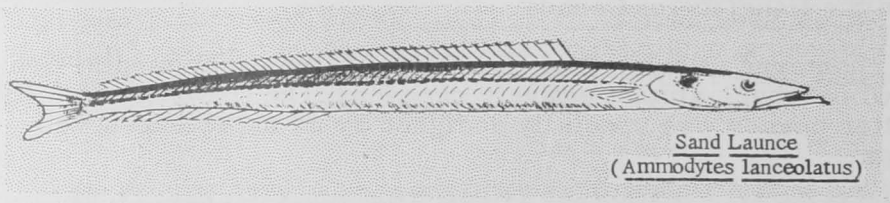
COMMERCIAL ATLANTIC SALMON SEASON IN NEWFOUNDLAND: An opening date was set for the beginning of commercial fishing for Atlantic salmon in Newfoundland for the first time since the Confederation, reports the April 1955 Trade News of the Canadian Department of Fisheries. Regulations passed by the Federal Department of Fisheries set the opening date in Newfoundland for commercial salmon fishing for May 15, except in the waters from Cape St. George to Pass Island where the opening date was set for May 5.

The setting of opening dates for commercial salmon fishing in Newfoundland is in keeping with that Province's desire to make a contribution to the program of the Atlantic Salmon Co-ordinating Committee designed to increase stocks of Atlantic salmon for both the angler and commercial fishermen.

Atlantic salmon angling in Newfoundland opened as usual on May 24 with a daily bag limit of six salmon in all areas and a weekly limit of 21 salmon.

Denmark

SAND LAUNCE USED FOR FISH MEAL: A Danish fish which heretofore has been considered of little value has recently become important in the production of fish meal, according to Dansk Fiskeritidende (May 20), a Danish fishery periodical. The fish is the sand launce (Ammodytidae), which previously has been used as bait. Now it has been found to be well adapted to the production of fish meal and several hundred tons have been purchased by fish-meal plants. It has provided a welcome supplement to other raw materials and has brought the fishermen 8 to 10 øre per kilo (0.5-0.7 U. S. cents per pound). Many boats on the west coast of Jutland have had catches of up to 400 boxes after one or two days of fishing.



Sand Launce
(Ammodytes lanceolatus)

Dominican Republic

COMMERCIAL FISHING INDUSTRY STARTED: A company has been formed to initiate a commercial fishing industry in Dominican Republic waters, a U.S. Embassy dispatch (June 8) from Ciudad Trujillo points out. Equipped with 2 or 3 small boats, the firm will begin operations by fishing for spiny lobsters, shrimp, and tuna, both for domestic consumption and export to the United States. If conditions prove favorable it may expand to include canning and other fish-processing industries.

Ecuador

FOREIGN VESSELS REQUIRE LICENSE TO FISH WITHIN 200-MILE ZONE: The Government of Ecuador has announced the opening of its territorial waters (up to 200 miles) to foreign fishermen obtaining licenses, according to the Quito press (El Comercio, May 8). The Decree (No. 955-A) was signed April 29, a U. S. Embassy dispatch (May 9) from Quito reports, and reads as follows:

"Article 1. With the exception of species known as cabrilla of cod, shrimp, crayfish and lobsters, vessels of foreign registry shall be permitted to engage in commercial fishing for marine species in Ecuadoran territorial waters, both continental and insular, which for the purpose of maritime fishing and hunting in general, shall be considered in a zone within 200 nautical miles measured from the lowest tide line, following the irregularities of the continental coast, and that within 200 nautical miles measured from the lowest tide line at the most salient points forming the contours of the Conlon Archipelago, without prejudice to the said extension being modified by any subsequent determination of what is understood as the territorial waters of the Republic.

"Article 2. The authority granted in the previous article to vessels of foreign registry shall be limited to a zone of 1,000 meters seaward along the continental coast from the Colombian border to the town of Playas; from there this limit will follow a straight line to the island of Santa Clara or El Muerto, and thence another straight line to Boca Capones on the Peruvian border.

"Article 3. Bait fishing shall be prohibited to foreign national vessels in a maritime zone extending 1,000 meters along the coastline at either end of the coastal villages, and 1,000 meters seaward measured from the shore. This prohibition shall not apply to domestic fishermen.

"Article 4. The prohibition contained in Article 1 of Executive Decree No. 0160 of January 29, 1952 is hereby rescinded, as well as any other executive decree or regulation contrary to the provisions of the present decree, with the limitations that have been established.

"Article 5. The Ministers of Economy, National Defense, Foreign Relations, and Treasury shall be charged with carrying out the present decree, which will enter into force upon its promulgation."

On May 14, 1955, the President of Ecuador signed Executive Decree No. 1085 which defines the scope of Decree No. 955-A, reports a May 17 U. S. Embassy dispatch from Quito.

The new decree provides for two principal additions to Decree No. 955-A. The first of these consists of the introduction of language to make it very clear and explicit that foreign-flag fishing vessels must first obtain the necessary fishing permits and registrations (matriculas) before they will be permitted to fish within continental territorial waters as defined by the Ecuadoran Government pursuant to the Declaration of Santiago. Decree No. 955-A, although it did not explicitly mention the need for obtaining fishing permits, did not in any way eliminate the necessity for foreign-flag fishing vessels to obtain such permits. Article 1 of the new decree explicitly refers to this need.

The other main modification involves the addition of a provision prohibiting whaling. Article 2 of the new decree provides that fishing permits granted for operations in Ecuadoran territorial waters shall not confer the right to hunt for whales after the agreement signed in Lima in December 1954 entitled "Agreement Concerning the Granting of Permits for the Exploitation of the Riches of the Southern Pacific" has entered into force.

German Federal Republic

MARINE-OIL INDUSTRY, 1954: Production: Total production of marine oils in West Germany in 1954 amounted to 31,700 metric tons of raw oil (all herring oil), as compared with 32,700 tons of raw herring oil in 1953. This decline was due primarily to an increased demand for herring for edible purposes. The estimated future annual production of herring oil continues at 27,300 metric tons of raw fish oil, reports a May 24 U. S. Embassy dispatch from Bonn.

Imports: West German imports of marine oils in 1954 totaled 231,800 metric tons (value DM190.5 million or US$45.3 million), consisting of cod-liver oil 1,200 tons (value DM1.4 million or US$330,000), whale fat and oil 121,400 tons (value DM102.8 million or US$24.5 million), and other marine fats and oils 109,200 tons (value DM83.6 million or US$20.5 million). The bulk of the 1954 imports was utilized for food purposes. The 1953 imports totaled 203,600 tons--cod-liver oil 400 tons, whale fat and oil 120,500 tons, and other marine fats and oils 82,700 tons.

The United States was the leading supplier of other marine fats and oils (excluding whale fat and oil and cod-liver oil), shipping 34,000 metric tons (value DM26.8 million or US$6.4 million), followed by Netherlands 22,000 tons (value DM17.1 million or US$4.1 million), Great Britain 12,700 tons (value DM10.0 million or US$2.4 million), Norway 10,000 tons (value DM8.7 million or US$2.1 million), and Portuguese West Africa 9,000 tons (value DM6.7 million or US$1.6 million). However, of the 1954 imports from the United States, only 9,800 metric tons were purchased direct. The United States was the leading shipper of other marine fats and oils to West Germany in 1953 also, supplying 32,000 tons. Japan and Norway were the leading suppliers of whale fat and oil in 1953 and 1954, respectively.

Among the changes in duties and nomenclature affecting West German's import tariff classifications on oils and fats put into effect as of April 1955 were the following:

1. Under the Tariff Number 1507 was inserted the footnote "raw oils under this number, inedible, or made unfit for human consumption under customs supervision, or for processing in the chemical or pharmaceutical industry under customs supervision - free of duty."

2. Under the Tariff Number 1512 was inserted the footnote "hardened whale oil and hardened fish oil for the production of margarine, shortenings or other finished edible fats under customs supervision - 2% ad valorem."

The fats and oil items added to the dollar liberalization list by West Germany include the following:

Customs Tariff No.	Commodity
1504: 10	Raw cod-liver oil
21	Purified medical cod-liver oil
29	Purified other cod-liver oil
53	Sperm whale oil for industrial purposes
60	Fish-liver oil (excl. cod-liver oil) for industrial purposes

Exports: West German exports of marine fats and oils in 1954 totaled 7,600 metric tons, consisting of 1,500 tons of cod-liver oil, 700 tons of whale fat and oil, and 5,400 tons of other marine fats and oils.

Wholesale Prices, April 1955: The wholesale purchase price of fish oil in Hamburg at the end of April 1955 was DM116-117 per 100 kilos (12.5-12.6 U. S. cents per pound), and the whale-oil price was DM121-122 per 100 kilos (13.1-13.2 U. S. cents per pound).

Greece

FROZEN FISH CONSUMPTION INCREASING: There was a noticeable increase in the consumption of frozen fish in the Athens-Piraeus markets of Greece during 1954 and the first four months of 1955, reports Aleia (April-May 1955), a Greek fishing periodical. Greek consumers are gradually getting accustomed to frozen fish.

The vessel Evridiki which fishes off the northwest coast of Africa recently delivered 120 metric tons of frozen fish caught on a two-months' trip. An Athens fishery cooperative has contracted with a French fishing firm in Casablanca to deliver approximately 40 tons of frozen fish every 45 days.

Iceland

NEW FISH-PROCESSING PLANTS: Two new fish-processing plants are under planning and construction in Iceland, reports a May 26 U. S. Legation dispatch from Reykjavik.

A new fish-freezing plant, begun in 1954, is scheduled to be completed in about a year and a half at Seydisfjordur on the East coast. The Development Bank of Iceland has granted a 15-year loan of IKr. 1.8 million (US$110,000) to complete the construction on which IKr. 1.9 million (US$116,000) has already been spent in the past.

The Icelandic press reports that a freezing plant capable of producing 24 metric tons of fish fillets per day and having a storage capacity for 1,200 tons of frozen fish and 260 tons of ice is to be built at Akureyri. The Development Bank has granted the Akureyri Trawler Company IKr. 3.5 million (US$214,000) for expenditure during 1957-59 for partial repayment of a German loan of IKr. 6 million (US$368,000) now being negotiated. Sales of stock have thus far brought in IKr. 1.2 million (US$735,000).

These plants will not add greatly to Iceland's total capacity but they are important locally since they provide employment and cut down the transit time of locally-owned fishing vessels.

India

STATUS OF THE FISHERIES: Consumption of fisheries products in India is only about 5 pounds per person per year as compared with 70 pounds in Burma and about 20 pounds in Ceylon, states a U. S. Foreign Operations Administration dispatch

(May 19) from New Delhi. The improvement of fisheries in India is needed as a means of increasing food production and improving the nutritional value of the Indian diet.

Only a fraction of India's water area of 15 million acres under rivers, lakes, etc., has been utilized for fishing. At a number of important fishing areas, especially along the west coast where India's largest fisheries are located, fishing is hampered by obstructed harbor entrances. Proper dredging of such harbors would increase productive fishing time by about 25 percent. Experimental fishing in the Bay of Bengal, and some distance from the west coast of India, by larger types of craft such as are used in American, European, and Japanese fisheries, has shown that there is a rich variety of commercial species of fish only partially exploited.

A large proportion of the vessels are propelled only by sail and oars. They are limited to fishing grounds within a few miles offshore and must spend considerable time in going to and from these grounds which would otherwise be spent in productive fishing. Consequently, production is very low. Mechanization of such craft as are suitable for this purpose and replacing others by small motorboats will increase the productive fishing time and enable the fishermen to reach offshore waters presently inaccessible to them.

Efficient marketing is of great importance for the development of fisheries and the improvement of the lot of fishermen. Most of the fresh-water fish is marketed and consumed fresh. On the other hand, only 20 percent of the sea-fish catch is marketed fresh and the remaining 80 percent is either preserved as sun-dried fish or as salted fish, or converted into fish meal and fertilizer. Increased marketing of sea fish as fresh fish is necessary not only to meet the large unsatisfied demand for fresh fish but also in the interest of the small fisherman who receives a higher price for fresh fish. However, there are problems of rapid transport, cold storage, and supply of ice which must be met if the catch is to be marketed fresh.

INDO-AMERICAN FISHERIES PROGRAM: The need for substantial improvement in the fisheries industry of India is recognized by the Government of India. The first Five Year Plan emphasizes the development potentialities of several aspects of the industry. These are in the fields of vessel mechanization, harbor clearance, fishing requisition, cold storage, land transport, offshore fishing, and training facilities.

The Indo-American program has provided assistance in each of these areas. The 1953 agreement stressed marine fisheries development and the 1954 agreement provided equipment to develop inland fisheries.

Under the 1952 agreement the Indo-American program provided 140 small Diesel engines for the use of Indian fishermen on the west coast. Some of the engines were installed in boats for demonstration purposes in order to instruct Indian fishermen, but most of them were sold below cost on a four-year credit basis to fishermen and cooperatives through the agency of the State Governments. With mechanized vessels, Indian fishermen have been able to almost triple the catch formerly made with old sailing vessels; from the increased earnings, Indian fishermen are able to make payment for the engines over the four-year credit period. In the future an increase in the number of mechanized boats should be possible from the increased earnings. The 1954 Indo-American agreement provided 115 additional Diesel engines and 12 outboard motor engines because of the great improvement provided by the engines under the 1952 program.

Proceeds from the sale of these engines as well as other equipment in the program will be used for other developmental projects in the Indo-American program.

The Indo-American program furnished fishermen fishing hooks, yarn, twine, nylon, and other line in short supply not available in the domestic market. These items are imported under the Indo-American program and sold to fishermen on credit below cost. Indian fishermen are increasing their earnings with the use of these new items, and as in the case of engines, should be able in the future to purchase them without special assistance.

Improvement in marketing of fish is being accomplished by better transportation and storage of the fish so that a greater market may be reached. The Indo-American program has provided ice and cold-storage plants in order to furnish the larger fishing villages and other centers of distribution with adequate facilities for the preservation of fresh fish. In addition, nine insulated road vans were provided for improving transportation of fresh fish from fishing villages to centers of distribution and consumption within a radius of approximately 60 miles. This equipment was provided under the 1952 agreement; additional equipment of similar type for the same purpose will be provided under the 1954 agreement.

The promotion of offshore fishing, including the introduction of mothership operations, is another facet of the Indo-American program. This has provided a number of vessels fully equipped for exploratory and experimental fishing as well as for the training of Indian fishermen in the use of such craft and equipment. The vessels provided under the 1952 agreement include 30- to 40-foot multipurpose fishing boats of various designs, the 45-foot vessels for use as motherships, and 3 100-ton Japanese bull trawlers. Also under the program, the 2 existing trawlers were renovated and equipped with modern facilities.

The two vessels to be used as motherships are for towing small fishing craft to fishing grounds which they cannot reach under their own limited power, thus increasing their range of operations. Each of the vessels can tow about 15 small boats and has insulated space for carrying ice and storing catches.

The Indo-American program has financed the conversion of two Indian Government-operated trawlers into paired bull-trawl fishing vessels. Prior to conversion the catch of these two vessels was very low. After conversion with the help of three Japanese technicians (financed by the Indo-American program) on each vessel, the catch has increased considerably. In November 1954 the Japanese technicians, including a master, mate, and engineer, returned to Japan and the vessels were turned over to Indian crews. The catch under Indian crews has been extremely good and record catches were obtained. As an example, 54 metric tons were obtained in 12 days, or 27 tons per vessel. This is 4 times the catch made prior to the conversion of the vessels.

The provision of adequate training facilities for Indian fishermen is another phase of the program which has assisted the Government of India and the states concerned in establishing a number of training centers to teach Indian fishermen improved fishing methods. These centers are utilizing some of the equipment furnished under the program. Full advantage is also being taken of the training facilities offered by the Food and Agricultural Organization.

Although the major results of the program are still to be realized, the immediate effects have been considerable. The almost three-fold increase in the catch of small boats after mechanization as compared to the previous catch is an important indication of the value of this facet of the program. In the field of larger fishing vessels, the demonstration program has already begun to have wider effects. Not only has the catch of converted bull trawlers been substantially increased under Indian crews as well as Japanese crews, but private capital has been attracted into the field. The former director of fisheries at Bombay, with other Bombay residents, formed an Indo-Japanese fisheries company with 51 percent Indian capital to import

four bull-trawl vessels for private fishing operations. This increase in the investment of private capital in the industry is one of the important indications that the Indo-American program is succeeding in the demonstration phase of its work.

Japan

CANNED TUNA MOVEMENT TO UNITED STATES: Because the various Japanese companies exporting tuna became concerned over the prospect of uncontrolled marketing of canned tuna in the United States, arrangements were made to place their stocks in the joint hands of two large Japanese trading companies for marketing. There were about 600,000 cases of canned tuna in stock in Japan early this year.

The trading companies sent two representatives to New York to survey the market. As a result of this visit, the two trading companies decided upon a schedule of exports from Japan at the rate of 100,000 cases a month for March and April and 150,000 cases a month for May and June.

The actual figures on Japanese exports of canned tuna and bonito to the United States as furnished by the Japanese Customs Bureau (converted to standard cases of 48 7-oz. cans a case) are: January 81,398 cases, February 87,811 cases, and March 105,580 cases.

Customs figures are not available as yet for April but the amount given by the exporters is 108,714 actual cases. The f.o.b. price of canned albacore tuna in brine was quoted in May as US$9.55 per standard case of 48 7-oz. cans, states a May 31 U. S. Embassy dispatch from Tokyo.

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COOPERATIVE SALES ASSOCIATION TO ALLOCATE FROZEN TUNA EXPORTS: A Japanese cooperative sales association (Kyohankai) to handle the export of frozen tuna has been established by the Japanese Frozen Food Export Association with Japanese Government consent, reports a June 3 U. S. Embassy dispatch from Tokyo.

Decreased demand, coupled with recent good catches, has depressed the Japanese market price of frozen tuna to US$240 or US$250 per ton, far below the export check price of US$300 per ton, and industry and government circles apparently feel that drastic action is necessary to prevent circumvention of the check-price system and adverse criticism from the United States tuna industry. The establishment of such a sales organization is possible under the Marine Products Industries Law.

The purpose of the cooperative sales organization is to maintain the check price, stabilize the United States tuna market, and strengthen Japan's tuna export position. The organization will be responsible for all exports of frozen albacore tuna, the species which forms the bulk of frozen tuna exports to the United States, with allocations of business to the participating firms being made on the basis of their share of the market during the most favorable two-year period during the last three years. A proposal to allow the sales organization to assign orders to firms designated by the foreign buyer was deleted from the plan on the grounds that this would open the door to collusion between buyer and supplier to get around the check-price system.

A new scale of check-price levels was also established by the Frozen Food Export Association as follows: albacore tuna US$270; yellowfin tuna US$230; skipjack tuna US$190 a short ton.

The plan provides for the export of 10,000 metric tons of frozen albacore tuna from June 1 to July 31, with approximately 5,000 tons which were already warehoused by May 31 to be handled outside of this limitation.

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EXPORT POLICIES REVISED: Two recent actions were taken by the Japanese Government which may affect that country's exports, according to Economic Developments In Japan, 1954, a U. S. Department of Commerce publication.

One of the most important factors contributing to the expansion of Japanese exports was the use of export promotion measures such as the "link system" processing and barter transactions, and the export-retention system. Such special measures were put into effect for the specific purpose of making Japanese exports more competitive in foreign markets.

The link system consisted of two practices: (1) the linking of raw material imports and exports of manufactured products, and (2) the compensating link, whereby an exporter of an unprofitable item such as a ship was compensated for below-cost prices by an import license for an especially profitable item such as sugar. It has been estimated that at least 20 percent of Japan's 1954 exports were affected by the use of such practices as the link system, the foreign-exchange retention system, and barter trade. The Japanese Government has announced that use of the compensatory link system would be discontinued after March 31, 1955.

The Japanese Government also announced that the amount of foreign exchange which may be retained by an exporter as an export incentive would be reduced as of March 1, 1955, from 10 percent to 5 percent of his export proceeds. Such funds retained by an exporter are used for imports of specified raw materials, travel, expenses of oversea branches, and other specified purposes.

The U. S. Department of Commerce states that in 1954 Japanese trade agreements were in effect with 24 countries, of which 14 were in the open-account area, 4 in the sterling area, and 6 in the dollar-cash-settlement area. However, the trade deficit with the United States in 1954 rose 8 percent over 1953, from US$523 million to US$567 million.

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FISHERIES TRAINING VESSEL TO SAIL FOR NORTH PACIFIC: The Japanese fisheries training vessel Oshoro Maru, with a crew including 35 fisheries cadets from the University of Hokkaido and 6 scientists, was due to depart from Hakodate on June 15, for a training and research cruise in North Pacific waters, a May 31 U. S. Embassy dispatch from Tokyo states. During the period June 25-July 15, the vessel will be engaged in making oceanographic observation in correlation with investigations being made during the same period by the Scripps Institution of Oceanography, the University of Washington's Department of Oceanography, the Pacific Oceanographic Group of Nanaimo, B. C., and the U. S. Fish and Wildlife Service.

The Oshoro Maru is a motor vessel of 617 gross tons used by the Ministry of Education for the training of fisheries cadets and presently attached to the University of Hokkaido.

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"FISH SHELTERS" TO IMPROVE INLAND SEA FISHING: "Fish apartment houses" is the term used to describe the hollow concrete blocks which the Hyogo Prefectural Government is lowering to the bottom of Japan's Inland Sea in a move to increase the fish population and thus help commercial fishing. The Inland Sea

fishing grounds are an important source of food for southern Japan, but have never fully recovered from the serious depletion caused by the intensive wartime fishing, states a May 12 U. S. Consular dispatch from Kobe.

The concrete forms are being sunk in selected spots in and near the channel between Awaji Island and the mainland and will serve to obstruct and hinder the currents along the bottom and thus afford shelter for bottom fish and a breeding ground for plankton and other marine life on which fish feed. The blocks, 4x4x5½ feet, have windowlike openings on all sides and top, and are being sunk in 16 groups of 80 units each, making a total of 1,280 blocks. Total cost is estimated at approximately 9 million yen (US$27,000).

Prefectural officials, basing their expectations on experiments conducted in Osaka last year, estimate that the catch of bottom fish (bream, perch, bass, sand ell, and octopus) off Awaji will increase 20-30 percent in two years because of the blocks.

Artist's conception of Japanese "Fish Shelters".

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EXPERIMENTS WITH FRESH-WATER PEARL OYSTERS: The fresh-water fishery association of Osaka has embarked on a series of experiments in raising pearl oysters in the small- and medium-sized fresh-water irrigation ponds that are so numerous in the Osaka City and Prefecture Area. These tests are designed to find a way to make full use of these ponds, and as a substitute for lost business due to a decline in carp and roach sales, states a June 6 U. S. Consular dispatch from Kobe.

Pearl oysters have been successfully raised in limited numbers in the fresh waters of Lake Biwa near Otsu by the Shiga Prefectural Association in recent years, and it has been reported that the rate of pearl output there compares favorably with the salt-water pearl farms. Temperature and impurity balance are extremely important in oyster culture and the Osaka ponds may not prove to be fit for such use. Should these attempts prove successful, however, the considerable water surface available in suburban Osaka could perhaps be developed into a valuable asset.

Netherlands

FISHERIES CATCH, 1954: The total quantity of fishery products landed in Netherlands fishing ports in 1954 amounted to over 660 million pounds (landed weight), valued at fls. 94.5 million (US$24.9 million) ex-vessel. The totals for 1953 were 682 million pounds, valued at fls. 96 million (US$25.3 million). The slight decline is partly due to very poor weather conditions in December, which made intensive fishing impossible and partly to the ending of the salted herring season at an earlier date than in 1953, according to the February 1955 Holland Fish Trade, a Netherlands fishery periodical.

Fresh Herring Landings: The volume of the production of fresh herring in 1954 set a new record. Never before was a quantity of 120 million pounds brought ashore in one single year. In 1953 landings totalled 114 million pounds. In the years 1930-38, average landings were 55 million pounds; in the years 1947-49, 92 million pounds; and in 1950-52, 88 million pounds. The 1954 increased production resulted from the enormous catches of drift-net luggers in October. The results of the herring trawl fishery by steam and motor trawlers were less favorable.

Although landings of fresh herring were exceptionally high in 1953, owing to the fine October catches, it is most probable that in the coming years the production of fresh herring will be even more voluminous. This expectation is accounted for by more modern-equipped vessels, with echo-sounders, fish finders, etc., and more powerful engines.

As hauls become larger crews will lack the time to salt the herring aboard the vessels. Moreover, it is not quite impossible that with shrinking outlets for salted herring, the luggers will land more herring in a fresh condition. In 1954 the abundant landings could be cleared thanks to a demand three times that of 1953, particularly from West Germany. The canneries packed more than 33 million pounds as against 42 million pounds in 1953.

Purchases by the fish-meal industry amounted to 20 million pounds compared with 33 million pounds a year earlier.

Salted Herring Landings: During the 1953 season, prices for salted herring were rather high until November, owing to small supplies. In that month enormous landings occurred, which were taken up at reasonable prices.

In 1954 supplies of salted herring amounted to 208 million pounds, valued at fls. 30 million (US$7.9 million) as compared with 235 million pounds, valued at fls. 34.8 million (US$9.2 million).

Shellfish Landings: As regards crustaceans and molluscs, there was a large increase from 1953 to 1954 in the production of mussels--viz: from 126 to 139 million pounds. This level had not been reached in preceding years. The delivery of oysters rose from 2.6 to 3.1 million pounds.

Shrimp landings were on the same level as in 1953 (9.2 million pounds). However, the ex-vessel price went up from fls. 2.9 to fls. 3.4 million (US$0.8 to 0.9 million).

Other Species: Mackerel landings increased from 24 to 25 million pounds. The production of roundfish rose from 44 to 48.2 million pounds. The increase would undoubtedly have been greater but for the December gales. Practically all roundfish species were higher with the exception of whiting, landings of which dropped from 14.3 to 10.8 million pounds.

Haddock arrivals showed a remarkable increase from 1953 to 1954--from 13 to 19 million pounds. The production of small-sized haddock nearly doubled, the other categories only increased slightly.

Landings of cod went up from 10.3 to 11.2 million pounds. The rise comprised the large- and small-sized cod. Coalfish (pollock) supplies rose from 4 to 5 million pounds. The quantity of flatfish marketed decreased from 51 to 43 million pounds. This large decline in landings was compensated for by a rise in the ex-vessel value caused by a decrease in the supply of small plaice.

Plaice landings reached a total of 25 million pounds as against 33 million pounds in 1953. The production of sole went up from 10.8 to 11.4 million pounds.

Both flounder and dab supplies fell off from 2.0 to 1.5 million pounds respectively, and 3.1 to 2.4 million pounds. The production of turbot (1.5 million pounds) remained unchanged as did that of grill and lemon sole.

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FISH-CANNING INDUSTRY DEVELOPING FAST: The Netherlands fish-canning industry is a relatively young branch of the fisheries, according to the May 1955 Holland Fish Trade. In a country like the Netherlands where for ages, the smoking and marinating industries have been playing an important part in the fisheries, this is a remarkable feature. In the past the fishing industry has never had much trouble finding markets for fresh, salted, or smoked fishery products so that there was no powerful stimulus to look for new preserving possibilities. A few fish canneries operated before World War II, but they were of little significance in the general picture.

Not until the war was this situation radically changed. Imports were cut off and a large number of foodstuffs became very scarce. This scarcity appeared to be the necessary stimulus to give birth to the fish-canning industry, which developed very rapidly. The important question was whether this young industry would be able to maintain itself after the war when it became necessary to compete with long established and renowned foreign industries.

In the first postwar years the industry had to face enormous difficulties such as the shortage of tinplate and the ban on canned fish of Netherlands origin in the home market. However, all these obstacles were overcome. In a few years the Netherlands fish-canning industry has grown into a full-fledged industry of great significance.

Netherlands exports of canned fishery products in 1954 totaled 15,543 metric tons, (see table) valued at 20.8 million guilders (US$5.5 million), as compared with

Netherlands Foreign Trade in Canned Fishery Products, 1954 with Comparisons

Item	1954			1953			1952		
	Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	1,000 fl.	US$ 1,000	Metric Tons	1,000 fl.	US$ 1,000	Metric Tons	1,000 fl.	US$ 1,000
Imports:									
Canned fish	2,478	6,596	1,736	1,673	3,478	915	797	2,416	636
Canned crustaceans and shellfish . . .	92	561	148	51	331	87	18	132	35
Total Imports	2,570	7,157	1,884	1,724	3,809	1,002	815	2,548	671
Exports:									
Canned fish	14,531	19,705	5,186	15,599	21,588	5,681	11,592	17,455	4,593
Canned crustaceans and shellfish . . .	1,012	1,046	275	936	1,118	294	742	948	249
Total Exports	15,543	20,751	5,461	16,535	22,706	5,975	12,694	18,403	4,842

1953 exports of 16,535 tons, valued at 22.7 million guilders (US$6.0 million). Netherlands canned fishery products were shipped to more than 95 foreign canneries in 1954.

Imports of canned fishery products into Netherlands in 1954 totaled 2,570 metric tons, valued at 7.2 million guilders (US$1.9 million), compared with 1,724 metric tons, valued at 3.8 million guilders (US$1.0 million) in 1953.

The principal raw materials for the Netherlands fish-canning industry are herring and mackerel. Of these two herring holds first place. The most important export article is herring in tomato sauce, which is manufactured in very large quantities and shipped to numerous countries. This product is in brisk demand in tropical and subtropical areas and competes well with the popular pilchards in tomato sauce.

Other products which are exported on a large scale are herring in oil, herring in natural juice, kippered herring both in oil and in tomato sauce, mackerel in oil,

mackerel fillets in oil, mackerel in tomato sauce, and sprat in oil. This latter product is better known under the Norwegian name "brisling" or "brisling sardines." Moreover, there are special delicacies like smoked salmon and haddock liver. Some factories have specialized in canned mussels which also find their way to foreign countries.

The gross quantity of sea fish and herring canned in 1954 amounted to 21,700 metric tons, in addition to 145 tons of fresh-water fish and 2,587 tons of shellfish and crustaceans.

In view of the severe competition of foreign products the Netherlands canning industry endeavors to deliver at the lowest possible price by improving efficiency in factories and at the same time by paying all possible attention to quality.

The quality control on canned fish is based on an order of the Marketing Board for Fishery Products and consists of organoleptical and chemical bacteriological examinations.

The first examination is carried out by the Committee for the Inspection of Canned Fish. This committee consists of a neutral president, two food specialists, a wholesaler, a retailer, two fish-canning manufacturers, and a few civil servants. The committee meets regularly to judge samples drawn from lots by specially appointed inspectors. The samples are tested for numerous qualities as flavor, taste, odor, consistency of sauce, cleanliness, and appearance.

The activity of this committee has led to a considerable improvement in the quality of Netherlands canned fishery products. Also there is a chemical-bacteriological examination to ascertain the keeping qualities and acidity of the canned products. This is carried out in the laboratory of the Governmental Institute for Fisheries Research at Den Helder. Here samples are examined of all lots offered for export. If they do not prove to be satisfactory, the Marketing Board for Fishery Products does not grant an export licence. Needless to say the purpose of these measures is to raise the quality to the highest possible standards.

In this connection it should be reported that in addition to the prizes for the best handling of sea fish and herring on fishing vessels, the Marketing Board for Fishery Products has also offered an annual prize for the best canned product. The winner of the prize is allowed to state this fact on the label of the cans for two years after the date the award was granted. The issue of the prize takes place at the same time as those for the best-handled sea fish and herring.

Norway

"LIGHT RAY FISHING SINKER" INVENTED: A new gear, suitable for many different methods of fish, has been invented in Sigerfjord, Norway, reports the Norwegian Fishing News (Vol. II, No. 2, 1955). It is called "Light Ray Fishing Sinker," and may be used for trolling, trawling, and net fishing. The gear consists of a container constructed by a special yellow-brass alloy able to endure sea water with a very high degree of salinity. The Norwegian Governmental Technological Institute, having tested the quality of the new equipment, declares that the gear withstands a pressure corresponding to a depth of over 8,000 feet.

From four "windows" or "eyes" located in the upper part of the container, electric light rays attract the fish. Most species are shortsighted, and the fish go to the very source of light where they remain floating and watching in the immediate vicinity of the sinker.

The lower part of the container, equipped with hooks, lies in darkness. When the gear is moved upwards, the fish are immediately hooked.

This gear is used for trolling, and is an excellent support for trawling and net fishing for cod and other fish. For trawling, several Light Ray Sinkers are used, placed on a special hoop arranged at the opening of the trawl net. The effect of this arrangement is that the fish gather in front of the trawl opening, and thus the catch is considerably increased. This method has been tried in several places and the results have proved encouraging. For net fishing a similar way of fishing has been achieved, the Light Ray Fishing Sinkers being, however, arranged in a somewhat different manner.

The new gear has been tried in the Pacific, also in the salmon fisheries, and the catches have been promising.

The inventor advises that he will be at the service of fishermen who want to make use of the new gear. The Norwegian Council of Exports is expecting an increasing demand for this new article all over the world. Production has been organized with several suppliers who may now easily produce 10,000 Light Ray Fishing Sinkers every week. Export has taken place to many countries, and the inventor is cooperating with the FAO Fishery Division for the delivery of his gear to underdeveloped countries.

The inventor has also constructed a new type of purse net, which equipment will shortly appear on the market.

Pakistan

MOTHERSHIP FLEET TO FISH FOR SHRIMP IN PAKISTAN WATERS: A freezer-trawler mothership, the Tatsuta Maru of about 550 tons, and two auxiliary otter trawlers of about five tons each, belonging to the Nippon Riza Company arrived at Karachi May 14 to fish for shrimp in waters off the West Coast of Pakistan. For the past 4 or 5 months this fleet has fished in the Persian Gulf west of Pakistan under a contract with the Iranian Government. The fleet comes to Karachi under a contract (valid until September 1955) negotiated by a United States citizen who resides in Karachi.

The agreement which has been approved by the Central Fisheries Department and the Ministries of Agriculture and Industry, stipulates that an officer of the Central Fisheries Department is to accompany the fleet as observer and have access to catch records. Catches are to be landed at Karachi and exported through regular customs channels. Not more than 60 percent of the foreign exchange earnings are to be paid to the Japanese firm for expenses and profit combined.

The Japanese manager stated that only about 8 tons of headless shrimp were frozen during the four months of operations in the Persian Gulf although a substantial number of small shrimp were discarded. The vessel is also said to have about 180 tons of frozen fish aboard. Efforts are being made to dispose of as much fish as possible locally to make room for additional catches.

Freezing on the mothership is done in pans on plate freezers. The five-pound blocks of shrimp are packed in cellophane bags and then in pasteboard cartons. The grading and packing was excellent but some blackening was noted on one sample inspected.

Panama

FISH-MEAL PRODUCTION: A Panamanian shrimp-fishing combine is reported preparing to install a reduction plant to manufacture fish meal and oil by using the finfish caught incidental to shrimp fishing operations.

Another recently-opened fish-meal plant is reported to be having operation difficulties because of handicaps in obtaining supplies of fish.

Portugal

FISH CANNING TRENDS, 1954: The Portuguese sardine canning industry had an outstanding profitable year in 1954 due largely to the fortunate coincidence of good catches in Portugal and poor catches in the important competing areas of North Africa, reports a May 6 U. S. Embassy dispatch from Lisbon. The chief problems of the Portuguese sardine canning industry are: (1) the uneconomic dispersion of the business among dozens of small canneries; (2) the lack of centralized arrangements for purchasing fresh fish at the lowest possible price; (3) primitive methods of packing and canning, even in the newer plants; and (4) poor merchandising. Efforts are being made to correct the first two of these defects, but the current prosperity has removed some of the sense of urgency.

Conditions are less favorable in the anchovy industry due to a poor catch in 1954. Supplies of fish were so short that some quantities had to be imported to keep the canneries operating. The activity is considerably less important than sardine canning, however, and the slowdown in output has had only minor local impact in a few villages on the southern coast.

Spain

VIGO FISHERIES TRENDS, APRIL 1955: Fishing: Total catches of fish entered through the port of Vigo, Spain, during April increased substantially in volume over the previous month, and were about 55 percent larger than April 1954, a May 10 U. S. consular dispatch from Vigo points out.

Abundance of "castaneta" (brama-raii), although in smaller quantites than in the previous month, and large catches of jurel or horse mackerel (Tracharus tracharus) permitted the short-range fleet to operate under relatively satisfactory conditions. Both these species are, however, declining in numbers as the season draws to a close and if sardines do not appear soon, this branch of the fishing fleet will face difficult times. The sardine fishing season was to open on May 1 and there were signs that while still scarce, sardines will be more abundant than in previous years since large schools have been seen within a short distance of the littoral.

Fish Canning: Conversations between members of the Union de Fabricantes de Conservas de Galicia (Galician Fish Canners Association) and officials of the syndical organization for the integration of the former into the SINDICATOS have reached a stalemate since neither of the parties, apparently, wishes to agree to the demands of the other.

Fish-canning operations during April improved substantially over the previous month due to the availability of "castaneta," a species of the albacore family which is packed and sold as albacore in the home market and exported to most of the

South American countries. Fish-canning establishments in the Vigo area purchased during April 2.1 million pounds of fish, or about 18.4 percent of the total catch entered through the port. This compares to 86,000 pounds or about 1 percent of the catch in the previous month, and 147,336 kilos, or about 4.5 percent of the catch in April 1954. The industry could have operated at a still higher level in view of the availability of fish, but canners continued to save their small stocks of tinplate in anticipation of the sardine and albacore tuna season.

The canning industry was again facing the problem of shortages of tinplate. Stocks on hand were reported to be sufficient to take care of canning operations for only one month should sardines and albacore tuna become abundant. The industry is pressing the government to hasten the importation of tinplate to be bought under the United States aid program and to authorize importations from France and Germany.

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CANTABRIAN FISHERIES TRENDS, APRIL 1955: Excellent Anchovy Catches Along Cantabrian Coast: After a winter of poor fishing, very good anchovy catches on the Cantabrian coast occurred in March and April. A total of 3.2 million pounds of anchovies were brought into the port of Santoña, Santander, by the local and nearby fishing fleets in the five days of April 11-15. The anchovies had first appeared this season off San Sebastian on March 13. By April 16 the second run of catches had terminated, momentarily at least. The anchovies, all destined for the local canners, sold at prices of from 2.3 pesetas to a high at the end of the week of 2.8 pesetas a kilogram (4.8-5.8 U. S. cents per pound). The fish were said to have been of excellent quality numbering from 14 to 18 fish to the pound. It is estimated that more than 9 million pesetas (US$411,000) worth of fish were sold at the port during the week.

The following week catches began at Castro Urdiales, Santander, and by April 25 anchovies were being brought into ports all along the Santander and Asturias coast, selling at around 2.7 pesetas a kilogram (5.6 U. S. cents per pound). About 2,888,000 pesetas (US$132,000) is the estimated value of the catch brought into Castro Urdiales during April. This exceeds by 0.5-million pesetas (US$23,000) the amount of the catch at this port the previous year.

The effect of these excellent catches on the people of the Cantabrian fishing ports, who have been suffering through a long winter of poor catches, is discussed in the May 1 Alerta, a Santander daily paper. The article discusses the Italian anchovy quota, which has a direct effect on the prices fishermen of this coast receive for their anchovies. It points out that even from a catch as large as the recent one at Santoña the benefit (an average of about 1,500 pesetas or US$68) to each fisherman is not great. Each fisherman must pay his debts of the past winter. The article mentions also the profit in wages which the fishermen's wives receive from the renewed activity of the canneries.

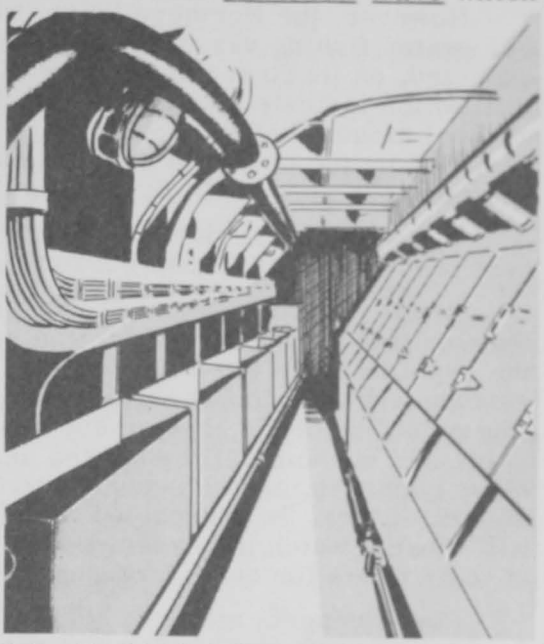
At the end of April press reports indicated that the Madrid Government and banking authorities had agreed upon loans to be made to fishing vessel owners for modernization, a May 27 U. S. Embassy dispatch from Madrid points out. The amount of the financial assistance to be offered was still under discussion.

United Kingdom

FREEZING-FISH-AT-SEA EXPERIMENT ON COMMERCIAL SCALE: Freezing-fish-at-sea experiments on a commercial scale were scheduled to be carried out in the 18-year-old German-built and Grimsby-owned trawler Northern Wave which was to sail from Hull bound for the Icelandic fishing grounds under charter by the British White Fish Authority. The experimental voyages were expected to go on for about a year under the supervision of a staff from the Department of Scientific and Industrial Research and the White Fish Authority. The management of the vessel was being undertaken by its owners on behalf of the charterers, states an April 21 U.S. consular dispatch from Manchester.

The total cost was estimated at about £105,000 (US$294,000) which was to be shared between the White Fish Authority, H. M. Government, and the Distant Water Vessel Owners' Development Committee.

Tests have been carried out for some time with North Sea fish by the Torry Research Establishment, Aberdeen, where the special freezing equipment for the Northern Wave was developed, using a small experimental trawler. The purpose of the scheduled test was to try the experiment on a commercial scale on fish caught under severe conditions in the distant-water fishing grounds to ascertain whether these fish retained their sea-fresh quality. For this commercial experiment a commercial freezer prototype was ordered from a Dartford firm who is said to have introduced some refinements into the Torry design.



On the right of the above illustration is a bank of doors enclosing some of the quick-freeze compartments on the Northern Wave. On the left are the freezing cans into which the fish are placed for transfer to the cold-storage room that is separately refrigerated by pipe grids at -20° F.

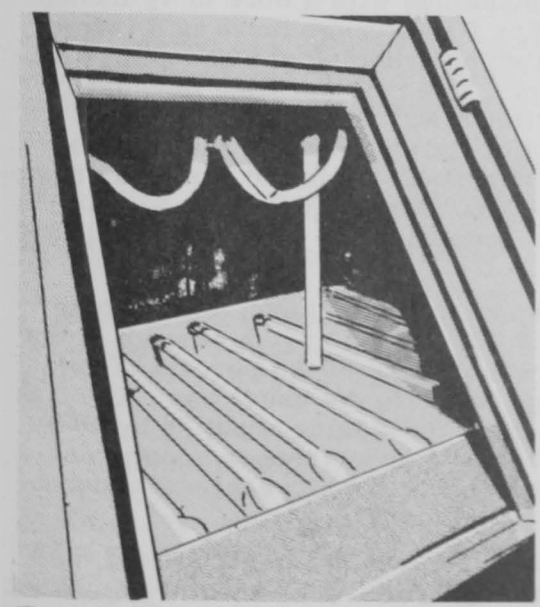


Illustration of one of the 16 compartments in the Northern Wave, measuring 36x18x4½ inches. Here the fish are quick frozen into 60-pound slabs between vertical metal plates. Each of these units produces 3 slabs at a time. From here they are removed to the cold-storage compartment.

The Northern Wave was said to be the first standard-size distant-water fishing vessel to be equipped for freezing fish at sea. The ship is 188 feet in length, with a hold capacity of about 18,000 cubic feet, thus being similar in size and capacity to the newest British deep-water trawlers.

The catch of each experimental voyage was to be landed at either Hull or Grimsby. The frozen fish was to be sold to coastal merchants and processors under arrangements agreed with the trade associations. Consignments were to be checked down the chain of distribution in order to determine whether the product is satisfactory to fish dealers, fish friers, and the public. Some of the frozen fish, however, was to be held back for long-term storage to assess its quality-keeping potentialities.

While freezing part of a trawler's catch would add to the operating costs which are said to approximate £300 (US$840) a day at present, it is reasoned that it would be possible, if it is proved practicable and efficient to install freezing equipment, to keep trawlers on the fishing

grounds for a day or two longer each voyage. Thus, it is argued, the time spent fishing would be increased and the storage capacity of the vessels would be better utilized. The quick freezing of the early part of the catch, it is also thought, would bring an improvement in the quality of the fish landed.

However, the Northern Wave, which is said to be the first standard-size distant-water fishing vessel equipped for quick freezing at sea, did not leave, as was expected, on its first trip to Icelandic fishing grounds, according to reports from Hull which indicate the vessel is still occupying a berth there and that it may be several months before the Northern Wave can put to sea. The reason given, as reported by the press, is an unexpected delay in completing the installation of the equipment, a June 15 U. S. consular dispatch from Manchester reports.

The press reports state further that how much the delay will add to the capital cost of £105,000 (US$294,000) for the conversion cannot yet be calculated.

It was explained to press representatives who recently visited the experimental trawler that during the spring and summer months when fishing was at its peak the supplies were often in excess of market requirements, and that at present the surplus was sold to fish-meal plants at prices far below the cost of production. One objective of the experiment was therefore to discover whether it was practicable and economical to hold the unsold surpluses of quick-frozen fish in first-class condition, and so secure a general improvement in quality of fish caught in distant waters. It is expected that Hull, Grimsby, and Fleetwood trawler owners will closely watch the experimental trips in order to decide whether the conversion of their fleets for quick freezing part of their catches is an economic proposition.

Press reports state that part of the Northern Wave's fish hold was converted for the experiment. The size of the freezing plant and cold-storage structure does not reduce the total capacity unnecessarily, and the hold capacity will still permit the vessel to return with a catch bigger than the fleet's average in recent years.

To freeze continuously with its rate of catching would have required, according to reports, an installation over three times the size of that adopted which is a vertical-plate freezer and is based on a plant that has for some time been used for whale meat. The refrigerating machinery consists of two 25-hp. condensing units serving the freezers. These are twin-cylinder machines with a bore of $7\frac{3}{4}$ inches and a stroke of 6 inches running at 475 r.p.m. For fish storage there is a twin-cylinder compressor of 4-inch bore and $3\frac{1}{2}$-inch stroke running at 500 r.p.m. Compressor and pump are driven from an 8 hp. motor. The refrigerating machinery is installed forward of the fish hold in a compartment which was formerly part of the net store. The increased demands for electrical power to drive the freezing installation have made it necessary to install new generators in the vessel's engine-room. Power for the freezers is supplied by a 48-kw. steam generator, and for auxiliaries and cold storage by a $17\frac{1}{2}$-kw. Diesel generator. A 48-kw. Diesel generator acts as standby for both.

The quick-freezing plant can handle 560 pounds of fish an hour, and working at full efficiency it is expected to freeze about 70,000 pounds of fish on each of the experimental voyages. This is reported to represent about 20-25 percent of the trawler's average catch. The rest will be stored in ice in the usual way. The fish will be frozen whole in slabs of about 60 pounds each measuring about 36 by 18 by $4\frac{1}{2}$ inches, which can be preserved for months if stored under proper conditions. Most of the fish caught on Arctic grounds is cod and this is therefore the main species to be frozen.

In this type of freezer, the fish are placed between vertical metal plates, refrigerated at -35° F. and are frozen into slabs about 36 in. by 18 in. by $4\frac{1}{2}$ in. When the fish has reached a temperature below 0° F., which takes between $4\frac{1}{2}$ and 5 hours, the slabs are released by moving the plates apart while simultaneously warming the metal by hot refrigerant gas. The operations of opening and closing the plates and of switching from cold to hot refrigerant are controlled by two levers. The

Northern Wave installation comprises 16 units loaded in rotation, each unit producing 3 slabs at a time. The freezers are installed in the cold storage, but are loaded and operated from fore-and-aft passages communicating with the iced fish hold; the slabs drop into the cold storage and are subsequently stacked there. The cold storage is separately refrigerated by pipe grids at -20° F.

Each freezing cabinet is divided into two sections, each with an independent cooling circuit fitted with a thermostatic expansion valve and with a hand-operated changeover valve so that there can be an immediate switch from freezing to hot-gas defrosting for freezing the blocks of fish from the evaporator plates.

Several problems arose in the design of the installation. In order to prevent drying out of the frozen fish, it is necessary to reduce the heat penetrating into the cold storage to a minimum. This is especially difficult as the space is relatively small, and is at a temperature which is very low for marine practice. Structural members pierce the insulation, and where this occurs the steel has been replaced by reinforced plastic members of lower heat conductivity. To help in handling the doors and hatches to the refrigerated space in a heavy sea, a lightweight construction of glass-fiber reinforced plastics was adopted. Special changeover valves for the refrigerant pipelines, to be used during the release of slabs, were designed and manufactured on a suggestion of the Torry Research Station.

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ELECTRICAL FISHING EXPERIMENTS: A further advance in methods of locating fish shoals is envisaged by experiments carried out in the North Sea by the Scottish Home Department's marine laboratory at Torry in cooperation with the Herring Industry Board, reports the May 27 issue of The Fishing News, a British fishing periodical. The experiments are in the earliest stages, but should they lead to commercial practicability, the harvests from the sea are incalculable.

A long-term view of these experiments pictures a fishing fleet whose personnel will be largely electricians making their catches almost automatically at the throw of a switch.

Research was carried out over the past year by the Herring Industry Board's vessel Silver Scout, and the recent sale of the boat to Ireland has brought its purpose to the limelight. The vessel could be the prototype of the fishing boat of the future.

An official of the Torry Marine Laboratory told the Highland News, a Scottish paper, that the experiments were only temporarily suspended by the sale of the Silver Scout. While advising caution as to the near-future possibilities of electric fishing at sea, he added that "the possibilities seem to be worth exploring."

The latest experiments have been conducted to obtain precise evidence of the reactions of fish to a range of electrical stimuli and to test the efficiency of small-scale electrical fishing gear at sea.

One of the experts concerned said that since before the war considerable success had been obtained in fresh water, but the higher conductivity of sea water presented more engineering problems. He pointed out that there was a limit to the size of generating plant which could be carried by a boat. A generating plant about half the rating of the main engines would seem, he said, to be about the limit at least for the moment.

"If fish cannot be caught in economic quantities with this power then it becomes difficult to see any commercial prospects for marine electrical fishing in the near future," he added, but he suggested that results could be anticipated using electrical fishing apparatus in conjunction with a trawl or other gear.

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ECHO-SOUNDING EXPERIMENTS ON FISH: Fish of different sizes may be identified eventually with one sounding, and it may then be possible to estimate the number of identified fish within one sounding. This is one of the conclusions reached by scientific officers of the British Ministry of Agriculture and Fisheries, in a report on "Echo Sounding Experiments on Fish."

The experiments took place on Lake Windermere at a depth of 35 fathoms to discover new methods of echo-sounder identification used to trace shoals of fish, reports The Fishing News (May 20, 1955), a British fishery periodical.

Fifty dead cod and a half cran of herring were hung in their swimming positions from netting stretched across a frame, which in its turn was suspended beneath an echo sounder. Artificial rubber balloons, which simulated the air bladders of fish (which provide most of the signals showing the whereabouts of large shoals of fish) were hung alongside. Observations were made on different numbers of cod, herring, and air bladders at different depths, and it was found that the duration of the signal increased with increasing numbers of fish.

The scientists were able to reach two conclusions: (1) That it is possible that fish of different sizes may be identified eventually with one sounding; if so, it may be then possible to estimate the number of identified fish within one sounding. (2) That the air bladder taking up 5 percent of the volume of a fish is probably responsible for 40-80 percent of the returned signal.

Venezuela

CANNED FISH EXPORT SUBSIDY PROPOSED: The Venezuelan Ministries of Development and Agriculture now have under study a proposal made by the Economic Section of the Foreign Office to grant an export subsidy on canned fish. The Foreign Office points out that a differential exchange rate may not be granted under present agreements with the International Monetary Fund, but it advocates a direct export subsidy or premium on the surplus part of the fish pack that can be sold abroad if the price is satisfactory.

In making this recommendation the Foreign Office calls attention to the fact that other countries have adopted a similar method to move surpluses.

Yugoslavia

CANNED FISH PRODUCTION: Yugoslavia's pack of canned fish has climbed steadily from 1,745 metric tons in 1939, to 1,055 tons in 1946 and 2,764 tons in 1950. In 1951 it dropped back to 1,756 tons, but started climbing again in 1952 to 2,663 tons, and rose still higher in 1953 to 3,173 tons and in 1954 to 3,403 tons. Although fish is canned all year, May through November seem to be the months when the bulk of the pack is produced, according to a Foreign Operations Administration report (April 1955) from Belgrade.