
## International

### INTER-AMERICAN SPECIALIZED CONFERENCE ON CONSERVATION OF NATURAL RESOURCES

MEETING ON THE CONTINENTAL SHELF AND MARINE WATERS: The Inter-American Specialized Conference on Conservation of Natural Resources: The Continental Shelf and Marine Waters, opened in Ciudad Trujillo, Dominican Republic, on March 15. The meeting was called pursuant to a resolution of the Tenth Inter-American Conference at Caracas in March 1954, for the purpose of studying various juridical, economic, and scientific problems related to the continental shelf and ocean waters of the western hemisphere.

Assistant Secretary of State for Inter-American Affairs Henry F. Holland was designated Chairman of the United States delegation to the Conference, the Department of State announced March 9. Ambassador John C. Dreier, U. S. Representative on the Council of the Organization of American States, was designated Vice Chairman of the delegation.

Other United States delegates were: William C. Herrington, Special Assistant for Fisheries and Wildlife, Department of State; Ralph L. Miller, Chief of the Fuels Division, U. S. Geological Survey, Department of the Interior; and William Sanders, U. S. Representative on the Inter-American Council of Jurists.

The following were appointed United States Advisers to the delegation: James E. Barr, Executive Secretary, Shrimp Association of America, Brownsville, Tex.; Stanley L. Beck, Lt. j.g., Office of the Judge Advocate General, Department of the Navy; Wilbert McL. Chapman, Director of Research, American Tuna Boat Association, San Diego, Calif.; Robert E. Hardicke, American Petroleum Institute, New York City; Rear Admiral Harold A. Houser, USN, Office of the Judge Advocate General, Department of the Navy; Milton J. Lindner, Fish and Wildlife Service, Department of the Interior, Mexico, D. F.; John Lyman, Chief, Division of Oceanography, Hydrographic Office, Department of the Navy; Oscar E. Sette, Office of Oceanic Research, Fish and Wildlife Service, Department of the Interior; Arnie J. Suomela, Assistant Director, Fish and Wildlife Service, Department of the Interior; Fred E. Taylor, Office of Special Assistant for Fisheries and Wildlife, Department of State; Edwin Thomasson, Geological Survey, Department of the Interior; Marjorie M. Whiteman, Assistant Legal Adviser for Inter-American Affairs, Department of State.

Henry Allen of the Office of International Conferences, Department of State, was secretary of the delegation, and William G. Bowdler of the Bureau of Inter-American Affairs, Department of State, was technical secretary.

### FOOD AND AGRICULTURE ORGANIZATION

DESTROYING A MYTH ABOUT TILAPIA: Since the end of the war the world has become conscious of the "wonder fish"--tilapia (Tilapia mossambica). It has recently been talked about so much that some people are beginning to believe that if there is anything a fish can do the Tilapia mossambica can do it too, says the Food and Agriculture Organization.

Tilapia mossambica, which only breeds and can only live in tropical and semi-tropical areas, starts off with a lot of unusual qualities. It is

monogamous and it will breed in fresh, salt, or brackish water whether running or still. On top of that it is a mouth breeder; when the eggs have been laid and fertilized the mother fish takes them into her mouth and holds them there until they have hatched and gained some degree of independence more than a week later. Then for maybe another week the young fish continue to stay near the mother

Tilapia (Tilapia mossambica)

and at moments of danger will return to take cover in her mouth. Tilapia mossambica is omnivorous. It feeds especially on plankton and vegetation, but it will also thrive on artificial foods such as the waste of rice, soya, and cocoa and various flours and oil cakes, reaching a weight of 4.6 to 5.3 ounces at about 10 months and sometimes going on to grow up to a weight of about two pounds in a period of years.

Its ready breeding in unfavorable situations and its rapid growth to edible size in the early part of its life give the Tilapia mossambica the appearance of being ideally suited to fish farming and the apparent advantage given to the young fish by their unusual incubation, their habit of taking refuge in their mother's mouth in moments of danger are the foundations of the "wonder fish" legend.

Until 1939 the Tilapia mossambica was only known to exist in Mozambique and down part of the east coast of Africa. Then one day in 1939 five lone Tilapia were found swimming in a lagoon in Java. No other Tilapia mossambica had ever been reported in this area and none had ever been caught in the thousands of miles of ocean lying between Indonesia and Africa, the land of their origin. But there they were and while the ichthyologists were still puzzling over the manner of their arrival, the Japanese invasion of the East Indies in 1940 seriously interfered with trade in the milkfish or Chanos fry, which had been the backbone of the thriving fish culture industry of the area. The Tilapia mossambica had arrived mysteriously but very opportunely.

During the war the descendants of the five original immigrant Tilapia mossambica, and possibly of other Tilapia which had arrived just as mysteriously but which had not been discovered, spread out across the islands of Indonesia, Malaya, and up as far as Taiwan.

After the end of the war the Tilapia continued its travels with the assistance of the Food and Agriculture Organization of the United Nations. In quick succession it was taken to Borneo, the Philippines, Jamaica, Thailand, the Dominican Republic, India, and Haiti, to name only a few of the countries.

As a populator of areas where few fishes had been known before, Tilapia mossambica was a resounding success. In Taiwan since 1946 it has become a common fish in open waters throughout the Island. By 1953, only a year after it was introduced to the Island, it made up 80 percent of the catch from certain lakes in Ceylon. Introduced into Haiti in 1951, it now makes up 90 percent of the catch from the open water of the Artibonite Valley.

Then it was discovered that the Tilapia mossambica would flourish in flooded rice fields and some observers found that in the presence of the fish the rice yields were increased--although other observers said the yield was unchanged and a third group said the yield was decreased.

With its unusual qualities, its mysterious arrival in Indonesia, and a few impressive figures like these, it is easy to understand how the inflation of the Tilapia mossambica's reputation started and why it is still going on.

But unfortunately, say serious workers in the field of fish culture, the Tilapia cannot support its reputation and is quite unsuitable as the mainstay of a serious fish-culture industry. It is a useful odd-job fish, a pleasant and dramatic introduction to fish farming for the inexperienced worker; it is more of a "toy fish" than a "wonder fish."

So as gently as possible they are trying to tear down the impressive structure of myth which this little fish is carrying.

They are being gentle because although not an adequate basis for a fish culture industry, the Tilapia mossambica can be quite valuable as a part of some fish culture industries and is often suitable for release in inland water areas. In the fish-culture industry it is an excellent fish to raise the interest of new fish farmers. These people are often not very enthusiastic about the industry and do not manage their water areas very seriously; but even though neglected the Tilapia will give quite good production and raise the fish culturist's enthusiasm for more serious farming. In certain countries they can be of value as a fill-in where the varieties of fish already in the streams and lakes are not exploiting all the food potential of the water areas. They are useful in the small ponds attached to individual farms where addition of nutrients to the ponds is haphazard and spasmodic. It is a good "forage" fish for larger fish which cannot make direct use of such foods as pond weeds on which Tilapia mossambica will thrive.

One of the main disabilities of Tilapia mossambica is low yields as compared with most other fish used in fish-culture industries. Certainly it grows very quickly to an edible size, but then its growth slows down very much. A good yield can be obtained only after very heavy stocking of a pond. Since Tilapia begins to reproduce at an early age, and then breeds prolifically, there is a possibility that, in the absence of careful control, a pond may become overstocked with young fish which will too vigorously compete for available foods for any of them to reach marketable size.

And the mother Tilapia mossambica's protection of her infants by taking them in her mouth is not very effective in practice. Where predatory fish are present, the Tilapia mossambica are among the first fish they eat, whether swimming on their own or sheltering in their mother's mouth.

Another reason for the gentleness with which FAO wishes to deflate the Tilapia mossambica's reputation is that while this species may have no great future in fish culture, some of the other species of Tilapia, and nearly 100 are known, may have much more future.

Two other species in which FAO is particularly interested are Tilapia melanopleura and Tilapia macrochir which at present are cultivated in the Belgian Congo, French Equatorial Africa, the Cameroons, and in certain ponds in East and South Africa. The two species have different feeding habits and are raised together in various proportions according to the abundance of the vegetation which is eaten by T. melanopleura. Under this system of culture, annual yields exceeding about 5 metric tons per acre have been reported.

The writer of an outline survey of the Tilapia family has this to say: " ... the great qualities of Tilapia .... should not cause it to be regarded as a miraculous fish whose introduction everywhere could only be beneficial and represent the ultimate in hydrobiology and fish culture. Although the enthusiasm for this species must be brought into more normal proportions, the species will, nevertheless, still be of great importance because the rearing of Tilapia affords an important source of protein food which can have great extension in tropical countries, by cultivation as well as in open waters, in fresh waters as well as brackish, and in contributing to the struggle against mosquitoes.

"There are numerous species of Tilapia whose qualities, however, are widely different; according to Bonlenger (1909-16), there are 94 species and others have since been found. While a good understanding of the biology, ecology, and cultivation of three species of the genus Tilapia (T. mossambica, T. melanopleura, and T. macrochir) has been gained, practically all the other species are as yet insufficiently known, notably in respect of their ecology and the possibility of cultivation. It is, therefore, uncertain that these species are the best in all circumstances. Moreover, the techniques of cultivation of Tilapia, dating from World War II, are too recent to be established.

"There is here a great field of research for biologists and fish culturists who in recent years and in many countries have directed their attention to this completely new problem of Tilapia."

## Angola

FISHERY PRODUCTS AND BYPRODUCTS MANUFACTURE AND EXPORTS: The manufacture or production of finished fishery products and byproducts in Angola has climbed from 41,959 metric tons in 1949 to 85,349 tons in 1953 and 93,647 tons in 1954. For the first six months of 1955 it amounted to 41,220 tons.

Angolan exports of fishery products and byproducts in 1954 placed third, after coffee and diamonds, in value; and there are indications that further substantial increases may occur during the next decade, reports the United States Consulate at Luanda in a February 22 dispatch. Exports in 1954 included 52,690 metric tons of fish meal (valued at US$6.9 million); 15,074 tons of dried fish (valued at US$2.5 million); 11,416 tons of fish oil (valued at US$1.8 million); and 1,828 tons of canned fish (valued at US$1.0 million). The combined value of these fishery products and byproducts exports amounted to US$12.2 million in 1954 as compared to US$5.6 million in 1950 and US$2.6 million in 1946.

The United States is Angola's best customer, taking a large portion of the fish meal exports.

## Australia

SHORE-BASED WHALING, 1955: The Australian whaling season, which started on June 3 and ended on September 19, 1955, was one of the most successful to date. The average oil yield per whale was a record one at 51.77 barrels (48 U. S. gallons per barrel), and consequently the total oil production did not fall in proportion to the

reduction in quota of 100 whales each for the Point Cloates and Carnarvon stations. Total oil production reached 4,575,966 U. S. gallons, compared with 4,807,027 gallons in 1954, while the total Australian quota was reduced from 2,040 humpback whales in 1954 to 1,840 in 1955.

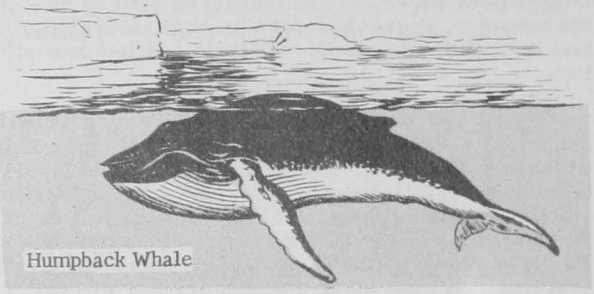

Humpback Whale

Table 1 - Whaling Results for Australian Shore-Based Stations, 1954-55

| Item | 1955 | 1954 |
|---|---|---|
| Number of stations operating | 5 | 5 |
| Whales taken (number). . . | 2/ 1,840 | 1/ 2,039 |
| Average length (feet) . . . . | 40.8 | 39.8 |
| Oil production (barrels) . . | 95,258 | 100,068 |
| Yield/Whale (barrels) . . . | 51.77 | 49.1 |

1/ Includes 1 blue whale, others all humpback.
2/ Excludes 1 minke whale and 6 humpback taken for scientific purposes; all humpback.

Gross value of the 1955 season's catch was estimated at US$4.4 million, comprising US$3.7 million for oil and US$0.7 million for the 6,358.7 long tons of meat meal and dried solubles produced during the season.

## Belgium

SHRIMP FISHERIES: The shrimp catch by Belgian fishermen averaged about 4,470,000 pounds yearly during the 1952-54 period (table 1). The catch consists of the small size shrimp (250-350 heads-on to the pound) common along the shores of Western Europe. The ex-vessel value during the same three years averaged about US$1,000,000 yearly, a February 14 dispatch from the United States Embassy in Brussels reports. The species caught is the one known as gray shrimp (Crangon crangon L.).

Table 1 - Belgian Shrimp Catch, 1952-55

| Year | Quantity | Value |
|---|---|---|
| | 1,000 Lbs. | 1,000US$ |
| 1955..... | 4,147 | 950 |
| 1954..... | 3,337 | 848 |
| 1953..... | 4,324 | 1,040 |
| 1952..... | 5,748 | 1,043 |

The areas fished are located some 8 to 10 miles off Belgium and in the open sea off the Netherlands coast. Shrimp fishing is engaged in throughout the year, but the size of the catch is more important between the months of April to October (67 percent of the catch is made during that period). The principal shrimp fishing ports for the years 1952-54 were: Zeebrugge reported 65 percent of the annual landings; Ostend, 26 percent; Nieuport, 8 percent; and Blankenberghe, 1 percent.

At the end of 1954 the shrimp fishing fleet comprised some 151 coastal motor cutters having from 20 to 100 horsepower and a gross tonnage of 10 to 35 tons. The total tonnage of the shrimp fishing fleet at the end of 1954 amounted to 2,532 gross tons. The boats are owned primarily by individuals or partnerships, although some are the property of fishing companies. The crews total from 2 to 4 fishermen per boat. The size of the shrimp fishing fleet has declined continuously in recent years.

This decline in the shrimp fishing fleet is attributed, in part, to the high operating cost of the boats, which are from 10 to 30 years old. The catch is reported to be declining as a result of intensive fishing which has been carried on during recent years. Lack of working capital available to a large number of individuals or small groups of fishermen has handicapped, to a degree, replacement or rehabilitation of a number of the boats.

The gear used for shrimp fishing consists of floating trawler nets ("petit chalut a plateaux") with an average length of approximately 39 feet and a mesh stretched lengthwise of about 0.9 inches.

Practically all of the shrimp catch is marketed as boiled shrimp. The shrimp are boiled in salt water on the boats. The amount canned or frozen is reported to be negligible and the little preserving that is done is carried out at general fish-processing plants. Practically all shrimp are retailed unpeeled at approximately US$0.54 a pound. Some are peeled by the retailers and are sold at US$1.82 a pound.

Exports of shrimp (262,276 pounds, valued at US$85,720 in 1954) represent only a small fraction of the catch and for the years 1952-54 amounted, on an average, to approximately 5.6 percent by volume and 7.6 percent by value. The principal country of destination was France and very small amounts went to other countries. No exports to the United States were reported.

The only assistance granted by the Belgian Government is that provided for by the law of August 23, 1948. This assistance is applicable to the fishing industry in general. According to this law the reimbursement of a loan advanced by an authorized bank may be guaranteed by the Government. The same guarantee may be extended for the purchase in Belgium or abroad of new fishing boats or for the placing of a new motor in existing hulls. In addition, the Government may pay for a portion of the interest due on loans up to a maximum of 50 percent of the interest rate. If the commercial banks are not desirous of concluding a loan, the Government may advance the loan under the conditions described above. There is a strict prohibition against foreign vessels engaging in shrimp fishing in Belgian ports and no foreign capital is invested in the industry.

Increasing costs of operation and declining catches have created a situation which is not particularly favorable for the expansion of Belgium's shrimp fishery. There is considerable resistance to modernization of existing equipment, although it is generally recognized that the present fleet is too old. Partly as a result of Netherlands price competition, the shrimp fishing industry claims that it does not make a sufficient profit at the present time to warrant an increase in its debt in order to purchase new equipment or rehabilitate old equipment. This situation has created somewhat of a dilemma and one which will result in a continuing decrease in the size of the shrimp fishing industry or the adoption of steps toward rationalizing the industry. It is reported, for example, that studies are being made to ascertain the possibilities of adopting shrimp boats for increasing other types of fishing during the off-season.

Note: Values converted to US$equivalents on the basis of 50 Belgium francs equal US$1.

## Canada

BRITISH COLUMBIA SALMON FISHERMEN'S INCOME: Salmon purse-seiners and gill-netters earned more for their fishing efforts in 1954 than in 1953, but salmon troll fishermen made less money in the same period, according to a progress report on the economic survey of the salmon fishermen of British Columbia in 1953 and 1954.

The report covers a two-year investigation of changes in salmon fishermen's incomes from one year to the next, and factors affecting them. It was initiated at the request of fishermen and fish processing associations. It was begun in 1953 by the Fisheries Prices Support Board. Research was continued in 1954 by the Markets and Economics Service of the Department of Fisheries, that agency's Trade News (January 1956) states.

Pointing out that nearly 12,000 fishermen depend on salmon fisheries, which account for two-thirds of the landed value of all fish on the Canadian west coast, and, in finished form, provide between 2 and 3 percent of the total income of British Columbia, the report covers a survey of the three chief methods of salmon fishing: Purse-seining, gill-netting, and trolling. In making the survey fisheries economists matched 172 questionnaires covering 1954 salmon fisheries against those of the same fishermen completed for the 1953 season.

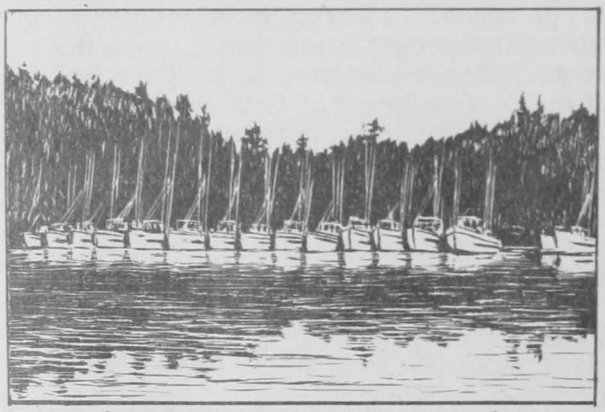
As the result of an increase in the proportion of the sockeye salmon catch, and a somewhat higher price for certain species, the 1954 salmon catch, although smaller in volume than 1953, yielded more income to salmon fishermen and brought the total salmon catch value to its third highest level in history.

Salmon gill-netters in 1954 shared a total of C$10,600,000, of which nearly 60 percent was for sockeye. According to the report, gill-netters included in the survey showed an average gain of C$152 in net cash income after deducting expenses, when compared with that of 1953. Purse-seine fishermen in 1954 divided C$9,100,000, of which sockeye salmon contributed 45 percent. The average increase in net income to purse-seine captains reporting was C$866, or 13 percent over the 1953 figures. Assistants in purse-seines showed an increase of C$326.

Troll fishermen, relying chiefly on coho and spring salmon, which provide 98 percent of their total catch, received about C$2,500,000 from the 1954 fishing, in which the catch of these species was considerably lower than that of the previous year. The survey showed that the net income for trollers declined by an average of $96 or 4 percent less than the 1953 figures.

* * * * *

FISHERY COURSES FOR BRITISH COLUMBIA FISHERMEN: Thirty British Columbia fishermen went back to school for a two-week period, March 13 to 25, when the second fisheries short course was held at the University of British Columbia in Vancouver, the January 1956 Canadian Trade News reports.



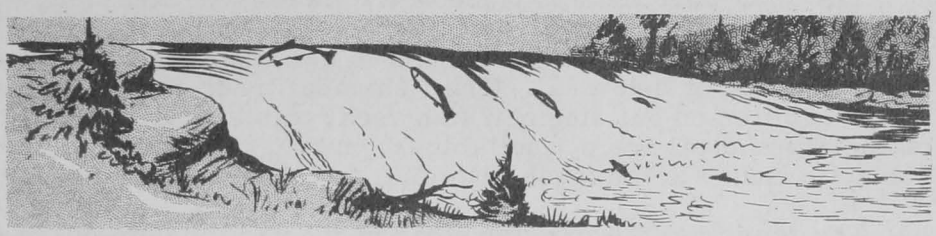
Part of the British Columbia salmon trolling fleet.

The course, which was initiated last year under a grant from the Canadian Department of Fisheries, aims to broaden the knowledge of practising fishermen beyond their specialized branch. Fishermen are brought up to date on latest fisheries information and fishing methods, and listen to lectures on fisheries biology, legal problems of the fishing industry, and fisheries conservation. Cooperation between fishermen and government investigators in research and conservation programs is a major objective. Graduates from the school are expected to be able and willing to pass on to other fishermen in their areas any information gained from the course.

Lectures and demonstrations were given by instructors from the University faculty, Fisheries Research Board of Canada, the federal Department of Fisheries, and by individual specialists. Group discussions formed a considerable part of the course, and the class was scheduled to be conducted on various field trips, including a sea trip on a federal fisheries protection cruiser for demonstration of radar and other special equipment.

* * * * *

SALMON RIVERS PROTECTED BY LAW: The British Columbia Government has provided for close control of any project which might interfere with the free passage of fish in rivers of the Province, by amendment to the Fisheries Act in 1954. Prior approval by the Minister of Fisheries must be obtained before construction of any change or utilization of the waters. Guarantees of protection of fish are required, states a February 24 dispatch from the United States Consul in Vancouver.



By Provincial Order-in-Council, such protection was extended to all salmon and steelhead trout streams, and their tributaries, flowing into the Pacific Ocean, with the exceptions of the rivers listed below. Among the exceptions, are the Columbia and its tributaries, the Kootenay, Okanagan in part, and the Pend d'Oreille; the streams named are in general those where hydroworks already are constructed, or where salmon do not prevail, because of some natural barrier to their progress. Additions or exceptions may be made at any time by a new Order-in-Council.

Rivers Excepted From the Law: Stave River system above Ruskin, Allouette River system above the outlet of Allouette Lake, Jones Creek above the Trans-Canada Highway Bridge, Benaparts River above the Power Commission Dam, Bridge River above the confluence with the Yalakom River, Clearwater River above the falls 35 miles from the mouth, North Fork of the Quesnal River, West Road River, Nechako River above Grand Canyon, Willow River, Chilako River, Campbell River above Elk Falls, Cheakanns River above Garibaldi Station, Clowhon River system, including tributaries, Powell River system, including tributaries, Columbia River, Kootenay River, Pend d'Oreille River, Okanagan River above the S.O.L.P. Dam, and Kloiyah River.

Provided further, that unless the tributaries to the rivers and streams excepted above are specifically mentioned, such tributaries are not excepted.

## Chile

FISHERIES TRENDS AND FISH MEAL PRODUCTION, JANUARY-NOVEMBER 1955: The Chilean Ministry of Agriculture reports that in the first 11 months of 1955 the 28 fish meal plants produced 30.1 million pounds of fish meal, utilizing 161.1 million pounds of fish. The Chilean whiting (Merluccius gayi) was the principal species used in the manufacture of fish meal. This species contributed 114.3 million pounds to the total quantity of fish utilized for fish meal.

The report also stated that the total fish catch for the 11 months was 336.2 million pounds with about 53 percent of this total used for human consumption.

During the first 11 months of 1955 the domestic over-all ex-vessel fish price for fresh consumption averaged about 3.75 U. S. cents a pound and the ex-vessel price for fish used for fish meal ranged from 1.0 to 1.7 cents a pound, according to a January 24 report of the United States Foreign Agricultural Service.

In order to prevent the extinction of whiting, the Government has prohibited the installation of new fish-meal plants from Coquimbo to Arauco, but permitting to the

north of Acoquimbo the use of sardines as raw material for meal. Some effort is being made to stimulate the plants to prepare fish for human consumption.

The 1955 international price of fish meal was excellent, resulting in a good income to exporters, but the price of other fish products, such as canned, smoked, salted, or frozen fish was low. This is one of the principal reasons for the increasing production of fish meal. The fish-meal trade complains against controls and the prohibition on building new fish-meal plants, stating that the fish used as raw material for meal are not suitable for human consumption, and further that the domestic channels for fresh-fish distribution are sufficient for normal demand.

The Ministry of Agriculture has requested the help of the Food and Agriculture Organization of the United Nations in order to obtain the service of an expert in market development and fish trade, and also is planning the organization of distribution cooperatives.

## Ecuador

RECOMMENDATIONS OF FIRST NATIONAL FISHING CONGRESS: A preliminary report on the First National Fishing Congress held in Quito February 21-23 indicates that among the recommendations made were the following:

That operation of factory boats and mother boats in Ecuadoran waters be prohibited;

That bait fishing by groups of boats be prohibited unless the boats are at least a half a mile apart;

That domestic fishing companies be prohibited (beginning two years after passage of the proposed decree incorporating this recommendation) from chartering foreign flag vessels unless they own at least one Ecuadoran flag vessel for each foreign vessel chartered;

That measures be taken to restrict imports of foreign processed fish products, provided the domestic fishing industry adopts a production and price policy justifying such protection;

That no new shrimp concession be granted, that foreign flag shrimp fishing vessels now chartered by domestic companies be naturalized within six months, and that the Fishing and Hunting Department be empowered to regulate the number of shrimp vessels in use according to the amount of investment made by each company;

That a new General Fishing and Maritime Hunting Law be adopted, the administration of which would be centralized in a single government department;

That the funds allocated to the present Fishing and Hunting Department in the Ministry of Economy be substantially increased;

That a new commission to be called Comision Ecuatoriana de Fomento Pesquero (Ecuadoran Commission on Fisheries Development) be established, on which government, industry, and labor would be represented.

Resolutions were also passed endorsing the policy on territorial waters pursued by the Ecuadoran Government under the administration of President Velasco Ibarra, and the declaration issued by the Latin American delegates to the Inter-American Juridical Conference recently held in Mexico City.

Note: Also see Commercial Fisheries Review, April 1956, p. 31.

## Egypt

SHRIMP FISHERIES: Official data on the production of shrimp in Egypt are unavailable, but an estimate obtained from trade sources places the annual catch at about 3,000 metric tons (6.6 million pounds), with an ex-vessel value of about US$600,000. The only firm exporting shrimp in 1955 reported that about 1.1 million pounds were exported (nearly all to France) in that year. Some sample shipments have been made to the United States. There is only one freezing plant in Egypt engaged in freezing shrimp. This plant has a capacity of about 4 metric tons a day. France purchases chiefly boiled whole shrimp packed in 2-pound and 5-pound cartons, and small quantities of shelled frozen cooked shrimp.

The fishery for shrimp is incidental to fishing for other varieties and is carried on throughout the year. The best seasons are reported to be from November to March, according to a February 6 dispatch from the United States Consul in Alexandria. Although there are shrimp found along the entire Egyptian coast, the best areas are near Rosetta and Damietta where the shore is quite sandy. It is possible that Red Sea areas are productive, but due to distances from large cities and the lack of refrigeration facilities, this source has not been exploited.

There are three types of shrimp found in Egyptian waters: "greys," 16 to 30 to the pound; "pinks," 21 to 50 to the pound; and "browns," 15 to 25 to the pound. (The count is probably based on heads-on weight.)

Reports from trade sources indicate that with modern vessels and processing facilities the catch could be increased to about 33 million pounds annually. Earlier reports from Egypt 1/ have indicated that one United States firm will or has invested in a firm that expects to catch and pack shrimp and spiny lobster tails for export.

1/ Commercial Fisheries Review, November 1955, p. 50.

## France

SHRIMP FISHERY: The shrimp fishery of France is relatively small, with the average annual catch for the three years 1952-54 only 2,220 metric tons. There is no fishery exclusively for shrimp, and the catch is incidental to other fisheries. The sizes are reported to be small and consist of shrimp ("crevette grise") and prawn ("bouquet"). Practically all the catch is consumed fresh, the price is high, and the sizes smaller on the average than the shrimp caught by United States South Atlantic and Gulf fishermen.

The principal ports where shrimp are landed are Dunkirk and Boulogne in the North; Honfleur and Caen in the Seine region; and St. Nazaire, Le Croisic, La Truballe Marenne, and Ile d'Oleron in the Atlantic region. Shrimp fishing takes place all through the year, but catches are generally better in the summer months (May-October).

The export trade in shrimp is negligible with only 17 metric tons exported to England and Switzerland in 1954. There is little possibility of any future expansion of the industry, reports a January 26 United States Embassy dispatch from Paris.

## Finland

REVIEW OF THE FISHERIES, 1955: The catch of fish in Finland during 1955 was close to 65,000 metric tons of which slightly over 50 percent consisted of the small low-priced Baltic herring. There is usually a large surplus of the Baltic herring in the spring months, when the quality of the herring is poor. At this period of the year part of the herring catch is dried for animal food, chiefly by simple open-air methods and assisted by a Government subsidy to aid fishermen, states a December 22, 1955, report from the United States Embassy at Helsinki.

The catch of fishery products in Finland consists of about 33 percent fresh-water varieties, but the fresh-water catch is about equal to the much larger salt-water catch due to the heavy catch of low-priced Baltic herring.

In 1955 Finnish fishing companies sent 4 vessels to Iceland to fish for herring in Icelandic waters. The total catch from this fishing was about 600 metric tons.

To promote the marketing of fish and to stabilize the seasonal fluctuations in price, the fishermen are planning the formation of marketing cooperatives in the principal coastal towns to operate freezing plants and selling rooms.

Exports of fish from Finland are insignificant. Imports consist chiefly of salt or sugar-cured herring from Iceland, canned sardines from southwest Europe and North Africa, and canned lobster meat from Soviet countries. Canned salmon, a new product on the Finnish market, is purchased from the Soviet Union.

## Iceland

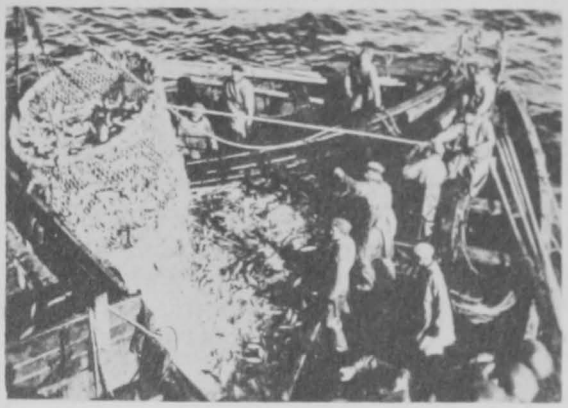
FISHERIES TRENDS, JANUARY-SEPTEMBER 1955: The 1955 catch through September continued to top 1954's bumper summer fish catch by a small margin. The haul of herring and ocean perch was equal to or better than that of the previous year. The market continued slow for frozen fish and stockfish, but very good for salted fish. The herring catch in quantity was the same but its value was better than the previous year.

Fresh Fish on Ice: Eleven of Iceland's 42 trawlers fished for the German fresh fish market in 1955, but it was generally unsatisfactory for the Icelanders. German trawlers caught so much ocean perch themselves that the prices were low. On several occasions Icelandic trawlers delivered their catches to Icelandic reduction plants rather than make the trip to Germany.

Frozen Fish: Although 10,000 metric tons less fish were diverted for freezing in 1955 than in 1954, the total for the first nine months of 1955 was still almost double that for the same period of 1953. Exports through September were lower than in 1954. As a result, the problem of frozen storage space became acute during the summer. It still was in November 1955, even though November was developing into a banner month with anticipated shipments of about 7,000 tons. The Soviet Union agreed to accept 8,000 over the minimum set by the USSR-Icelandic

Agreement and shipments to Czechoslovakia were going forward. Those to the United States continued markedly lower than a year earlier.

As a result of the excess stocks, some plants ceased to accept fish for freezing and in such cases boats had to divert their catches of ocean perch to the reduction plants. Lively discussion has resulted regarding ways and means of increasing storage capacity of present plants and building new ones. Although some concrete steps may result, they are not likely to be far-reaching, the general opinion being that the real problem lies more in increasing sales and making Icelandic fish competitive in price.



Brailing a good catch of herring.

The production of frozen fish for the first nine months of 1955 totaled 43,721 metric tons as compared with 41,976 tons for the same period in 1954.

Stocks were high in the third quarter of 1955, but that situation was expected to be relieved later in the year. To all intents and purposes the frozen fish market means the United States, Soviet Russia, and Czechoslovakia, who together account for over 90 percent of total frozen fish exports. Eastern Germany takes 5 percent.

Stockfish: Following the previous year's excellent sales of stockfish, there was a 16-percent increase in the total white fish processed in this manner in the spring of 1955. Through September 30, 1955, however, shipments were running well under half of the 1954 level, both in quantity and value. Over two-thirds of this went either to Africa direct or the United Kingdom for reshipment to Africa.

Salted Fish: The year 1955 has been a banner one for salted fish with prices good and a strong demand for all that Iceland produced or had in stock. This was to some extent foreseen, because the amount diverted to salting was increased from 81,000 tons as of October 1, 1954 to 97,000 tons as of October 1, 1955. The net weight of this fish after processing was 42,349 tons in comparison with 36,571 tons in 1954. Of the 1955 total, 26,629 tons was motorboat-caught; 15,720 trawler-caught.

1955 Herring Season: Although the total herring catch through September 1955 was almost precisely the same as in 1954 in weight (45,000 tons), the amount salted was almost double (32,000 tons in comparison with 17,000 tons). The income from the catch was expected to be correspondingly larger.

Fish Meal: Iceland's largest fish-meal sales are to the United Kingdom and West Germany, which together take almost 50 percent of the total. The rest is scattered to many customers. None is listed as going to the United States. There was less herring meal produced in 1955 than the previous year because much less north-coast herring was diverted to the reduction plants.

WHALING SEASON, 1955: The whaling season began May 29 and closed September 21. It was the best experience since the company conducting the whaling started operation.

Practically all of the meat has been sold frozen to the United Kingdom. Sweden is the best customer for whale oil, and Iceland for whale meal.

The good whaling results were obtained in spite of unfavorable weather during most of the season.

Table 1 - Icelandic Whale Catch, 1954-55

| Type | 1955 | 1954 |
|---|---|---|
| | ... (No.) ... | |
| Blue | 10 | 9 |
| Fin | 236 | 177 |
| Sei | 134 | 92 |
| Sperm | 20 | 54 |
| Other | - | 1 |
| Total | 400 | 333 |

Table 2 - Icelandic Production of Whale Products, 1954-55

| Product | 1955 | 1954 |
|---|---|---|
| | (Metric Tons) | |
| Oil | 2,062 | 1,294 |
| Sperm oil | 187 | 492 |
| Meat | 1,899 | 1,438 |
| Meal | 1,281 | 853 |
| Other 1/ | 128 | 123 |
| Total | 5,557 | 4,200 |

1/ Edible fibrous substance from the plaited undersurface of the rorqual (fin).

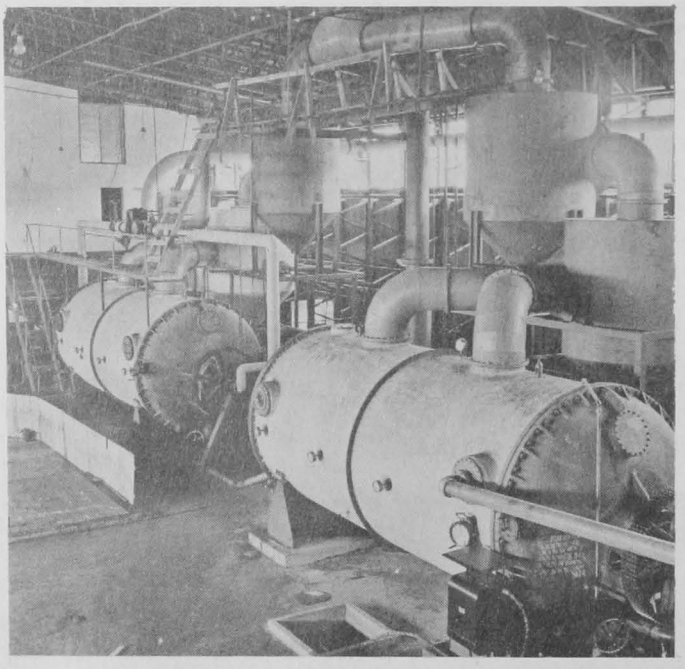
The company is permitted to engage in whale fishing for six months of the year but has thus far very seldom exceeded four months. Furthermore, the company has only 4 whalers, none of which are of the latest type, but its total possible catch is not limited.

* * * * *

MARINE OIL PRODUCTION, 1955: Whale oil production in Iceland was up in 1955, due largely to one of the largest whale catches in the last decade (400 whales were killed as compared with 333 in 1954). Whale oil production in 1955 was 2,273 short tons as compared with the 1,426 tons produced in 1954. Sperm oil production was down from 542 tons in 1954 to 206 tons in 1955. Total whale and sperm oil production in 1955 was 2,479 tons, or an increase of 26 percent from the 1,968 tons produced in 1954, a December 5 dispatch from the United States Embassy at Reykjavik states.

Exports of whale oil through the end of September 1955 were 1,120 tons, all of which went to Sweden. The remaining stock was expected to be shipped by early in 1956.

Current prices for whale oil are from £85 to £87 a metric ton (US$216 to $221 per short ton) c.i.f. Those for sperm oil are about £70 pounds (US$178 per short ton) c.i.f. Prices fluctuated very little during the year and were about the same as the previous year.



A large and completely modern herring- and fish-processing plant in Faxa Bay, southwestern Iceland.

Although the herring catch to September 30 was almost exactly the same as in the same period in 1954, production of herring oil was expected to be smaller because a considerably larger proportion of the catch was salted. Herring oil production through the first 9 months of 1955 was 1,433 tons. Total production for all of 1954 was 4,178 tons; and for 1953, 5,467 tons.

As of December 5 no commitments had been made for large-scale exports of the 1955 herring oil production. In 1954 exports went largely to the Republic of Germany and Norway. Herring oil was currently selling at from £70 to £76 per metric tons (US$178 to $193 per short ton) c.i.f.

Production of cod-liver oil was reported at 10,031 short tons for the first 9 months of 1955 as compared with 11,303 tons during the entire year of 1954. Exports through September totaled 9,041 tons as compared with 9,436 tons during the same period in 1954. Almost a quarter of the 1955 exports went to Norway, with the remainder largely to the Netherlands, the United States, and the United Kingdom. The present December 5 price of bulk oil was about £82 per metric ton (US$230 per short ton) c.i.f. That for medicinal oil was around £113 per metric tons (US$287 per short ton) c.i.f., including the drums.

Ocean perch oil production through the first 9 months of 1955 was 3,086 tons as compared with 3,034 tons during the entire year of 1954. Practically all of the 1,667 tons of this oil exported through the first 9 months of 1955 went to Norway. The price of ocean perch oil December 5 was about £77 to £78 per metric ton (US$196 to $198 per short ton) c.i.f.

It is reported that the present marketing outlook for whale, herring, and other fish oils is good. There is a ready demand, and no drastic changes either in demand or prices are anticipated in the near future.

## Israel

REVIEW OF THE FISHERIES, 1954: Israel's fishing industry was beset by a number of difficulties during 1953 which were reflected in a slight decline in the fish haul from 7,493 metric tons in 1952 to 7,458 tons in 1953. During 1954, however, output rose steeply by 21 percent to 9,000 tons, following the restriction of imports and other measures implemented by the Government.

Table 1 - Israel's Fishery Landings, 1950-54

| Type | 1954 | 1953 | 1952 | 1951 | 1950 |
|---|---|---|---|---|---|
| | (Metric Tons) | | | | |
| Lake fishing | 989 | 781 | 1,046 | 927 | 707 |
| Inshore fishing | 610 | 599 | 585 | 625 | 788 |
| Pelagic fishing | 385 | 337 | 460 | 446 | |
| Deep-sea fishing | 1,413 | 1,226 | 953 | 884 | 1,040 |
| Fish ponds | 5,605 | 4,515 | 4,449 | 3,847 | 3,897 |
| Distant-waters fishing by Israeli ships | - | - | 333 | 1,397 | 487 |
| Total | 9,002 | 7,458 | 7,493 | 6,730 | 6,432 |

In view of the restricted supply of meat in Israel, fish constitutes one of the chief sources of animal protein. Local production during 1950 covered some 38 percent of total consumption, as compared with 30 percent in 1953. Much remains to be done, therefore, before self-sufficiency is achieved in this field, states the publication Israel Economic Survey, 1953-54, issued by The Economics Department of the Jewish Agency.

Current plans provide for a large expansion of production during the coming year. Eight new fishing trawlers ordered within the framework of the Reparations Agreement have already arrived and others are at present under construction. Each trawler is equipped with electronic devices for locating schools of fish. Fishing in distant waters, which was discontinued in 1953, is to be renewed on an increased scale. Large ocean-going boats, capable of remaining at sea for three months at a time, have been ordered for service in the Atlantic.

Particular importance is attached to the development of inshore fishing, which could provide several times the present haul. The decline in this area of fishing

was mainly responsible for the contraction of total output in 1953. Deep-sea fishing is also developing rapidly.

The expansion of the fishing fleet has also raised the question of establishing additional dock and service facilities. New space is to be provided, among other places, in the Kishon Harbour, together with a refrigeration plant, workshops, stores, and a slipway.

Table 2 - Israeli Fish Consumption and Imports

| | 1954 | 1953 |
|---|---|---|
| | ..(Metric Tons).. | |
| Total Consumption: | 23,900 | 24,990 |
| Domestic Production | 9,000 | 7,460 |
| Imports | 14,900 | 17,530 |
| Percentage of Domestic Production to Total Consumption | 38% | 30% |

Carp breeding in ponds has increased steadily during years and accounted for some 62 percent of domestic fish production in 1954. A trial shipment of tinned carp was dispatched to the United States at the end of 1954 and plans are advanced for exporting small breeding carp to Europe. Prospects in both markets are considered promising.

## Japan

NORTH PACIFIC LONG-LINE SALMON FISHING: Since the published results of the experimental salmon long-lining by the Tenyo Maru had aroused extraordinary interest, the attitude of the Fisheries Agency on this question was being closely watched, the Japanese newspaper Nippon Suisan Shimbun (February 27) points out. The salmon long-line fishery, which had been a free fishery, was made subject to licensing by the Minister of Agriculture and Forestry by executive order, and it was made clear that, while vessels which had taken part in the fishery in 1955 would be licensed, those wishing to enter the fishery for the first time in 1956 would not.

According to the same newspaper for March 1, the authorities estimate that there are about 200 vessels that would qualify for licenses to long-line for salmon. Their operations would be limited to waters south of 48° N.

On February 21 the Japanese Fisheries Agency called a conference of cognizant department heads from Hokkaido and 14 prefectures on the following problems of the North Pacific salmon fisheries: (1) salmon long-lining; (2) salmon drift-netting south of 48° N., (3) penalties for vessels disregarding the regulations of the salmon drift-net fishery, and (4) the schedule for inspection of vessels taking part in mothership-based salmon fishing.

* * * * *

TRAINING SHIP CATCHES TUNA IN HAWAIIAN WATERS: The Shimane Prefecture fishery training ship Shimane Maru, after carrying out its third cruise in Hawaiian waters, returned safely to its base at Miaki in Kanagawa Prefecture on February 7 with a full load of over 180 tons of tuna. The catch was in good condition and brought US$45,000, states Nippon Suisan Shimbun (February 27), a Japanese newspaper.

The ship sailed again from Misaki on February 18 to make its fourth cruise in the Indian Ocean. There are 13 students aboard from the industrial and fishery high schools of Shimane Prefecture. The Shimane Maru is expected to return to port late in April.

## Kenya

SOUTH AFRICANS MAY ESTABLISH FISHING INDUSTRY OFF KENYA: The Kenya Government signed an agreement with South African businessmen in October 1955 to explore the Indian Ocean waters off Kenya for commercially-valuable fish. A small pilot company has been formed to explore Indian Ocean waters. The company is backed by considerable resources in money and equipment. Should the pilot scheme prove that there are sufficient fish to warrant the erection of freezing plants, the South Africans are prepared to invest about US$560,000 for fishing boats, processing plant, and distribution facilities.

Preliminary to the present project, the East African Research Organization founded in 1949 has made extensive studies of the movements, migratory habits, and other factors that may be valuable to the commercial interests. The Research Organization has found schools of bonito, yellowfin tuna, and skipjack.

At the present time Kenya's fishing industry is confined to coastal inshore waters and the catch from this source is estimated to be about 5,000 metric tons a year. In addition, the colony produces about 11,000 tons of fresh-water species from Lake Victoria. The catch of fresh-water fish includes 3,500 tons of tilapia. Although the demand for fish is good, the colony suffers from lack of modern distribution and freezing facilities, reports the South African Shipping News and Fishing Industry Review for November 1955.

The pilot scheme is to determine whether the ocean fish off Kenya's coast are commercially exploitable in sufficient quantities to justify a fish processing industry in the Colony. Kenya fishery experts are convinced, by their own experiments, that year-round open-sea commercial fishing is possible and that it can become a major economic factor and food source in the territories.

A report from Nairobi (Kenya) states that the Kenya Government is giving South Africans--who represent some of the largest fishing concerns in the Union--its full support and will lend them the research vessel Meniha for the pilot scheme, which is expected to cost about US$9,800. The South Africans will send their own crew and equipment to Kenya, including nets which are not imported into the Territory.

If the results are favorable when the scheme ends April 1956, the group will hold discussions with the Government regarding the formation of a company. Meanwhile, preparations are being made to schedule the fish-processing industry under the East African Industrial Licensing Ordinance.

It is impossible to calculate how much return the South African financiers will receive on their capital if they start in East Africa, but they will have an immediate market once marketing and distribution problems have been overcome, and will almost certainly be able to export later.

Many of the necessities for a commercial, open-sea fishing industry already exist. There are adequate landing facilities at Lamu, Malindi, and Mombasa; there is plenty of space on the coast for the erection of processing factories; electricity is fairly easily available around Mombasa and at other East African ports; the thousands of fishermen on the coast are a good source of labor and the registration fee for a trawler or motor vessel is only US$0.42.

## Republic of Korea

ICE-MAKING MACHINERY TO AID FISHERIES ARRIVES: Machinery for ice-making plants to benefit the fisheries industry in a dozen communities of the Republic of Korea has arrived in that country under the aid program of the United Nations Korean Reconstruction Agency (UNKRA).

The equipment includes 20 ammonia compressors with a total capacity of about 1,000 tons of ice per day. Individual compressors range in capacity from 20 tons to 120 tons per day, a March 6 news release from the United Nations points out.

They will be sold to fisheries associations or private plants, most of them in ports. Among the communities scheduled to receive them are Pusan, Kunsan, Yosu, the island of Huksan-Do off the southwestern coast, the island of Yokchi-Do off the southern coast and the east coast towns of Kampo, Kanggu, Pyonghae, and Pango Jin.

They were brought to Korea as part of a $232,000 UNKRA project for importation of equipment to improve the handling of fish and prevent waste caused by spoilage. With the arrival of the recent shipments, procurement of ammonia compressors called for by the project has been completed.

## Mexico

COAST GUARD TO ACQUIRE SEAPLANES FOR COASTAL PATROLS: The Mexican Coast Guard, according to the newspaper Excelsior, is intensifying its campaign against foreign fishing fleets in Mexican coastal waters. According to reports, the Coast Guard intends to acquire seaplanes for patrolling the Mexican coasts, a February 28 United States Embassy dispatch from Mexico points out.

* * * * *

EXPORT DUTIES FOR SKINS, FINS, AND LIVERS OF SHARKS REDUCED: Effective December 1, 1955, the Mexican export duties for shark skins, shark fins, and shark livers were greatly reduced. The following ad valorem rates are now in effect with the former rates shown in parentheses:

15-13. Untanned shark skins, fresh, dry, or salted, 5 percent (15 percent)

15-30. Liver and liver scraps of shark and other kinds of fish, 3 percent (10 percent)

15-91. Shark fins, 5 percent (10 percent)

CORRECTION

In the January 1956 issue of Commercial Fisheries Review, page 53, under Mexico, the statement "Canned spiny lobster" is incorrect according to advice received from a Mexican authority. This authority states that spiny lobsters are not canned at Ensenada or elsewhere in Mexico. All the production is exported frozen. In table 4 the "Lobster, spiny" under "Canned" should be added to "lobster, spiny, cooked" under "Processed."

## Netherlands

SHRIMP FISHERIES: Production of shrimp in 1955 amounted to 19,358 metric tons of which an estimated 275 metric tons was not marketed for failing to reach the minimum price. However, 1955 results were considerably better than in the immediate preceding years and the 1954 catch of 14,291 metric tons may be more representative of the period 1952-1955, a United States Embassy dispatch (February 7) from The Hague points out.

Exports of shrimp in 1955 totaled 2,207 tons (quantity landed in Dutch ports and destined for export), compared with 1954 exports of 1,516 tons.

The total catch of shrimp for the three-year period 1953-1955 was 50,241 tons. Of this amount, approximately 35,000 metric tons of small immature shrimp were used for the production of fish meal for poultry feed. The size of the whole shrimp ran between 275-315 per pound for export and 360-410 per pound for home consumpton. The local catch consists of "baby shrimp" as they are termed in world trade.

Shrimp exports during 1953-55 totaled 6,080 metric tons, valued at Fl. 12,956,000 (US$3.4 million), of which quantity almost 95 percent was exported to Belgium and France with each country taking almost equal amounts although the French preference was for unpeeled and the Belgian for peeled shrimp. The remainder went to West Germany and Great Britain for the most part. There were no more than relatively insignificant shipments to the United States in 1953 and 1954 (three tons each year) because the Netherlands shrimp are considered too small, soft, and tasteless for the American market. Exports were confined to peeled or unpeeled shrimp (fresh) with the latter accounting for between 70-85 percent of exports, depending on the selected year. There are insignificant exports of frozen shrimp during the hot months. Shrimp destined for export are cooked in heavily-salted water while those for domestic consumption are only slightly salted for reasons of taste preference.

The principal fishing areas are: (1) the Ems Estuary, (2) the coasts of the Provinces of North and South Holland, (3) the estuaries around the Province of Zeeland, and (4) the Waddenzee. The best catches are made from March through June and from August through November. The shrimp fishing fleet consists of very small cutters of about 26 feet in length and a tonnage of about 10.2. The annual number of vessels engaged in shrimping is about 350, the number being controlled by the Government through the issuance of licenses. The vessels usually have a keel but flat-bottomed craft are also in operation. The usual equipment is the otter-trawl or the beam trawl, depending on the composition of the sea floor. In the Ems Estuary, shrimpers also use special shrimp nets, the hose net. The vessels may or may not be equipped with engines, but the motors may not exceed 80 hp.

The catch is cooked on board the fishing craft immediately after being caught.

There are no factories engaged solely in the canning or freezing of shrimp and the little that is done is usually carried out at factories of the general fish-processing industry. A few individual shrimp wholesalers have freezing facilities of their own which are used only for that dealer's export stock and only during the hot months of the year. There is not, therefore, any systematic freezing of shrimp for export.

The processing of the smaller shrimp into fish meal is carried out by the regular fish-meal factories and also by small operators who undertake the drying before passing on the shrimp to the next stage. The fish-meal industry is situated in the Provinces of Friesland, Groningen, North Holland, and South Holland.

Under the supervision of the Marketing Board for Fisheries Products (a semi-official body representing all sectors of the fishing industry from production through sales), shrimp fishers pay a levy to a fund from which fund payments are made to fishermen for shrimp which do not reach a minimum price fixed by the Board. The Board's agents control the size and quality of landed shrimp while peeled shrimp are controlled by the Commodities Inspection Service. The Marketing Board also issues the required license to individual fishermen, a license valid for one calendar year. The licensing is primarily intended to keep a balance between production and consumption in order that the established minimum price policy will not be undermined. The Board may also indicate the ports at which shrimp must be landed and it may fix the quantities and varieties to be landed. The minimum size set for export has been $6\frac{1}{2}$ centimeters and that for domestic consumption has varied between $5\frac{1}{2}$ and $6\frac{1}{2}$ centimeters.

The potentialities for expansion of the shrimp industry as a whole are not believed to be favorable since the Government is interested in keeping the balance between present consumption and production. Since a great increase in consumption or exports is unlikely, it is not probable that production will be greatly expanded. This in turn creates little incentive for the development of a sizable canning or freezing industry. The labor supply (now short) also is a limiting factor in achieving a greater production and is especially noticeable in the peeling sector.

## New Zealand

FISH SURPLUS: The New Zealand Fishing Industry's dilemma early in 1956, namely a serious glut of fish on the market, with frozen stocks up to capacity, and a generally inactive market, has been attributed to many factors. The industry largely blames the recent cut in the Australian import quota for New Zealand fish (which it states is even further aggravated by the current Australian wharf strike) together with the normal seasonal drop in local consumption in the face of this year's peak catch, while the public, although in agreement with the industry so far as the Australian import situation is concerned, claims on the other hand that the local situation of inadequate sales is a sign of successful consumer resistance against the needlessly high prices imposed by the industry.

The latest official published figures on New Zealand fish catches and exports are for the calendar year 1954. These indicate that on the basis of value 62 percent of the principal classes of fishery products marketed that year were exported. Spiny lobster or crayfish accounted for about 75 percent of the value of all exports and the majority of these went to the United States. Australia is the next importer of New Zealand fish products, but only absorbs by value about 12 percent of the total exports.

Recently, the Australian Government announced that its import quota of New Zealand fish would be reduced. This reduction in Australian import licenses has, according to the Secretary of the New Zealand Wholesale Fish Merchants' Association, "required New Zealand fishermen to reduce their catches for some weeks past," and indications by other members of the industry have been that in parts of the country where stringent catch limits have been imposed, in the absence of relief from the Australian quota, prices will have to be raised in order to give a fair return to the fishing industry.

According to New Zealand Government sources, some relaxation of the Australian import restrictions on New Zealand fish is expected soon.

The Fishing Industry states that "the first requirement for making fish available to the public is to provide a reasonable return to the fisherman whose costs of catching have soared in recent years." The policy of the industry is to make available to the New Zealand public all the fish that can be consumed in those areas to which it can be safely transported, and the industry emphasizes that only the surplus is exported. Lack of inland transport facilities is given as a major stumbling block to expanded domestic markets.

The industry further explains that the method of marketing, namely purchase by the wholesalers of practically all the fish landed by the fishermen, keeps the prices down because the fish is bought in large lots and what cannot be sold on the local market is frozen and stored for export. Included in the fish prepared for export, according to the trade, are a number of varieties which are not acceptable to the New Zealand public but for which there is a satisfactory demand abroad, especially in Australia.

Regarding the industry's obligation to the public, industry spokesmen complain that unfortunately the New Zealand public has a most marked preference for fresh fish and does not willingly purchase the frozen product. During the hot weather local consumption of fish in New Zealand is considerably lower than normal; and because this period is the heaviest catching season, if the fishing industry is to operate economically, a considerable portion of the catch must be frozen (and subsequently exported), states a January 30 dispatch from the United States Embassy at Wellington.

The Secretary of the Wellington Retailers' Association stated that New Zealanders were just not fish eaters and blamed the high fish prices on the public. "We have tried putting cheap fish on the market but the public just won't buy it. If they see fish cheap they think something is wrong with it. And they won't take the whole fish. They want them boneless and skinless. Retailers have to buy three pounds of fish for one pound for the public."

The public, faced with the fact of Australian restrictions, has considered the attitude of the New Zealand fish industry as negative in the extreme, especially the indications that the catches will be severely reduced and the standing overhead costs covered by higher local prices. The critics of the industry's policy state that there is great scope for increased sales locally and that the block to increased sales is the high retail price, not New Zealand eating preferences.

In the opinion of some wholesalers and retailers, the present overstocked conditions will inevitably force the price of fish down and there are already evidences of slight undercutting of wholesale prices.

* * * * *

FISHERIES TRENDS: Most fishery products in New Zealand are produced for domestic consumption. However, exports of frozen spiny lobster (crayfish) tails to the United States have mushroomed with shipments amounting to almost US$3 million in 1955 as compared with none several years ago. There has been considerable interest by United States and New Zealand firms in this development and exports may increase further, states a United States Embassy dispatch (February 23) from Wellington. At the same time questions have been raised in Parliament as to possible overfishing of spiny lobsters and there has been some grumbling that exports to the United States have caused prices to rise in the domestic market.

The export market in Australia for New Zealand frozen fish was adversely affected by the imposition of reduced import quotas by Australia and has caused difficulty for the New Zealand trade. Stocks accumulated at the end of the year, and representations will probably be made to Australia to liberalize quotas. At the same time dissatisfaction has been voiced at the high retail prices and the poor quality of fish sold domestically; compared with meat prices, some fish is relatively expensive.

The waters around New Zealand abound in fish and prospects for exploiting this resource are being explored.

## Norway

WINTER HERRING CATCH NEAR RECORD: The first phase of the Norwegian fat or winter herring fisheries off western Norway ended at midnight, February 14. The total catch of fat herring was estimated to be 865,800 metric tons, only 1,800 tons less than the record year of 1954. It is possible that the 1954 record will be exceeded when the final figures have been compiled. The ex-vessel value of the 1956 winter herring catch was close to US$28.3 million as compared with US$21.0 million in 1955. The sales value of the 1956 catch is close to US$56.0 million. About 80 percent of the fat herring catch was taken by purse-seiners.

Two of the purse-seiners landed almost 3,000 tons each, and 22 reported about 2,000 tons each, and 58 caught 1,500 tons each.

More of the catch this year than in 1955 will be utilized for fish meal and oil because of the strong market for these byproducts as opposed to only a fair market for salted herring.

The fishery for spring herring, which usually lasts until the end of March, was off to a good start. At the end of the first day of the season, February 15, the fishermen had landed nearly 30,000 tons, states the February 23, News of Norway, a publication of the Norwegian Information Service.

## Pakistan

POTENTIAL MARKET FOR FISHING BOAT ENGINES: More than 1,000 fishing boats in the Karachi administration area and some hundreds on the Makran and Sind coasts of Pakistan may provide a lucrative market for manufacturers of fishing boat engines, if plans develop for the mechanization of the Pakistan fishing fleets, a February 17 news release from the Food and Agriculture Organization points out.

Most of the existing boats, which range from small craft to vessels of 60 feet over-all, are suitable for mechanization, according to a report on the "Mechanization of West Pakistan Fishing Boats," submitted by FAO to the Government of Pakistan.

The Report was written by four naval architects of the FAO Fisheries Division and is based on work carried out by them between 1953 and 1955, after FAO was requested by the Pakistan Government to make a study of "certain local types of fishing vessels used on the West Pakistan coast," with the object of improving the design of the boats so that they could be mechanized.

After extensive investigations and model tests, the naval architects found that most Pakistan fishing boats were comparable and, in many cases, superior--so far as resistance is concerned--to the design of fishing boats in Europe and North America. As a result, the architects found that the resistance of West Pakistan boats could be decreased by only 10-20 percent by means of improved hull design, compared with a decrease of 30-40 percent which they had usually found feasible in the ordinary fishing boats of western countries. The practical effect of such improvement is to increase the speed of the boat without adding to the power of the engine. Considerable savings can also be made in fuel consumption, sometimes as much as 30 percent if the speed is kept constant.

Most of the Pakistan fishing boats can be fairly quickly and easily mechanized. The naval architects have recommended that the small boats, such as the "tony," "dhatti hora," and the "ekdar," should be equipped with heavy-duty low-speed outboard motors of about 4 hp., with 12-in. extended shafts and bronze underwater parts. In the case of the bigger boats, especially the excellent "bedi" types which range from about 44 to 60 feet, it is recommended that inboard motors of about 20 hp. should be installed, preferably semi-Diesels or Diesels. Such engines would enable the boats to sail at about $7\frac{1}{2}$ knots.

The main suggestions made by the naval architects concerning structural modifications to boats are to strengthen them and introduce fixed decks, which would enable the boats to fish in rougher weather.

As so many of the fishermen themselves have become aware of the advantages of mechanization of their boats, and the policy of the Government of Pakistan is aimed at mechanization of the fishing fleets, conditions are favorable for the development of this market, if manufacturers are able to organize training in the operation, care, and maintenance of engines, and provide an adequate spare parts service.

The FAO report provides a valuable guide to the conditions and problems which exist in this potential market. It is a comprehensive document which deals in detail with the construction of new boats, mechanization of available boats, and technical and financial aid. It contains a wealth of technical detail in tabulated form as well as more than 30 diagrams on various aspects of boat construction, design, and mechanization proposals.

* * * * *

SHRIMP FISHERY: Shrimp are found in commercial quantities on both the east and west coasts of Pakistan. The fishery for shrimp is being developed with the aid of a United States International Cooperation Administration technical advisor and the prospect for increased production is good. Prior to 1955 shrimp were taken in commercial quantities in the delta of the Indus River of West Pakistan and in the Brahmo-Ganges delta in East Pakistan. Smaller catches are taken along the coasts of both East and West Pakistan and also by damming tidal creeks in the eastern area.

The shrimp fishery is carried on throughout the year but the bulk of the catch is taken in the West Pakistan area during the months November to March. The east coast fishery is best from October to April and year-round from the dammed tidal creeks (called "besha badha" fisheries).

The fleet of shrimp boats consists of 150-200 small sail and nonmechanized craft. About 80 percent of the catch is taken by beach seines; 12 to 14 percent by tidal-operated barriers; and 6 to 8 percent by cast nets.

In 1953/54 a shrimp freezing firm owned jointly by a United States firm and Pakistan nationals was started. This firm exported 5,000 pounds of frozen shrimp to the United States in 1955. The machinery for a second plant has arrived and will be set up on the new fish harbor now under construction. In addition a small canning plant was established in 1954 and it is now canning about 200 to 500 pounds a day. Efforts are being made to expand the output of canned shrimp.

No taxes are levied on foreign firms and foreign investors are allowed to invest as much as 60 percent of the total investment.

The estimated Pakistan shrimp catch was 10,930 metric tons in 1954, 13,925 in 1953, and 15,479 tons in 1952. The catch is made up of the species indicated in table.

| Species | Percent of Catch |
|---|---|
| Peneus indicus ..... | 50-55 |
| Metapeneus sp. ..... | 15-20 |
| Peneus marguensis .... | 10-15 |
| Peneus semisulcatus ... | 10-15 |
| Perapeneopsis sp. ..... | 5 |

The present trend of the shrimp fishery in Pakistan is that the abundance is much larger than present catches would indicate, according to a January 18 dispatch from the United States Embassy in Karachi.

* * * * *

SECOND SHIPMENT OF SHRIMP TO UNITED STATES: It was announced the latter part of February 1956 that a shipment of frozen shrimp totaling 20,000 pounds left Karachi, Pakistan, for the United States. This is the second shipment to the United States made by a company which started operations last year with United States capital participation, a February 24 United States Embassy dispatch from Karachi announces.

Note: Also see Commercial Fisheries Review, September 1955, p. 107.

## Republic of the Philippines

SHRIMP FISHERIES: The catch of shrimp in the Philippines amounted to 2,641 metric tons (valued at US$2.0 million) in 1954, compared with 1,618 tons in 1953, and 1,311 tons in 1952. Exports are confined to small salted shrimp ("bangoong alamang") and varied in quantity between 1,300 pounds in 1952 and 16,700 pounds in 1954; in 1955 exports totaled 13,100 pounds. Salted shrimp are considered a delicacy by the Filipino residents in Guam and Hawaii.

The shrimp fishery in the Philippines is not specialized as in the United States. Shrimp are caught along with other varieties of fish by beam or otter trawls fished by motorized sampan-type wooden vessels, a United States dispatch dated January 11 from Manila states. The principal fishing grounds, with yields of 50 metric tons or over, are located in Carigara Bay, Guimaras Strait, Manila Bay, Magueda Bay, Samar Sea, San Miguel Bay, Sulu Sea, and Visayan Sea. There are no shrimp canneries and there is only one commercial freezer, located in Manila.

The principal species of shrimp are as follows: Peneaus indicus (Milne-Edwards); P. canaliculatus (Olivier); P. affinis (Milne-Edwards); P. incisipes (Spence-Bate); and P. monodon (Fabricius). The sizes (heads-on) vary between 4 and over 100 to the pound.

The shrimp fisheries do not receive governmental assistance and there are no foreign vessels engaged in this fishery. Licenses to operate fishing vessels, subject to taxation, are issued to United States citizens on the same basis as to citizens of the Philippines.

The greatest potentialities for expansion of the shrimp catch is the cultivation of shrimp in fishponds. The shrimp, P. monodon, is now being cultivated in Philippine estuarine fishponds together with small varieties of shrimp and milkfish (Chanos chanos). P. monodon is considered to be a delicacy and commands the highest prices in the markets. The abundant supply of immature P. monodon found all over the Philippines where milkfish fry are caught makes the development of pond rearing of shrimp a promising enterprise.

## Portugal

CANNED FISH PACK, JANUARY-AUGUST 1955: The pack of canned sardines in oil or sauce for January-August 1955 amounted to 13,417 metric tons (net weight). The August 1955 pack was 4,105 tons as compared with 5,592 tons in August 1954.

* * * * *

CANNED FISH EXPORTS, JANUARY-OCTOBER 1955: Portuguese canned fish exports totaled 7,931 metric tons (417,400 cases), valued at US$3.6 million, during October 1955; and 50,702 tons, valued at US$25.3 million, during January-October 1955.

Portuguese Canned Fish Pack, Jan.-Aug. 1955

| Product | Net Weight | Canner's Value |
|---|---|---|
| | Metric Tons | 1,000 US$ |
| Sardines in brine | 633 | 96 |
| Sardines in olive oil or sauce | 13,417 | 7,453 |
| Sardinelike fish in brine | 1,605 | 482 |
| Sardinelike fish in oil | 2,552 | 1,404 |
| Anchovies, rolled & fillets | 924 | 982 |
| Tuna in brine | 69 | 33 |
| Tuna in olive oil | 796 | 653 |
| Tunalike fish in olive oil | 83 | 52 |
| Other species (including shellfish) | 522 | 276 |
| Total | 20,601 | 11,431 |

Note: Values converted to US$ equivalent on the basis of 28.75 escudos equal US$1.

Portugal's export of canned fish in October 1955 maintained the high level of previous months, according to Conservas de Peixe, January 1955. During January-October 1955 Germany continued as the leading receiver with US$4.5 million of canned fish (about all sardines in oil), followed by Italy with US$4.1 million (principally sardines and tuna), Great Britain with US$3.5 million, and the United States with US$3.0 million (principally 2,692 tons of sardines in oil or sauce, 15 tons of tuna and tunalike fish in oil, and 1,469 tons of anchovies). Exports of canned fish to these 4 countries amounted to 57.1 percent of the total exports.

Portuguese Canned Fish Exports, October 1955 and Comparisons

| Species | Oct. 1955 | | Jan.-Oct.-1955 | |
|---|---|---|---|---|
| | Metric Tons | 1,000 US$ | Metric Tons | 1,000 US$ |
| Sardines in olive oil | 6,781 | 2,920 | 40,744 | 19,511 |
| Sardinelike fish in olive oil | 439 | 394 | 3,924 | 2,709 |
| Sardines & sardine-like fish in brine | 237 | 50 | 1,732 | 345 |
| Tuna & tunalike in olive oil | 118 | 82 | 1,889 | 1,387 |
| Tuna & tunalike in brine | 31 | 17 | 576 | 292 |
| Mackerel in olive oil | 263 | 153 | 1,303 | 787 |
| Other fish | 62 | 27 | 534 | 286 |
| Total | 7,931 | 3,643 | 50,702 | 25,317 |

* * * * *

FISHERIES TRENDS, OCTOBER 1955: Sardine Fishing: The catch of the Portuguese sardine fleet declined in October 1955 to 10,779 metric tons, or about 33 percent less than the September 1955 catch and only one-half of the catch of 21,965 tons reported for October 1954. The October 1955 sardine catch was valued at US$1.4 million ex-vessel as compared with US$1.7 million in September 1955.

The sardine canning industry absorbed 50 percent (5,368 tons) with the balance consumed fresh. The port of Matosinhos lead all others with a catch of 7,575 tons of sardines and contributed 4,181 tons (ex-vessel value US$587,860) to the canning trade.

Other Fishing: The landings of fish other than sardines totaled 1,924 tons, valued at US$95,500 ex-vessel. The catch of fish other than sardines was 95 percent chinchards (1,828 tons), followed by mackerel (44 tons), anchovy (30 tons), and tuna (21 tons), the January 1956 Conservas de Peixe reports.

## Spain

VIGO FISHERIES TRENDS, DECEMBER 1955: Fishing: In December the fishing industry in the Vigo area of Spain regularly enters into the dull winter season. Activities were reduced and catches were down from the preceding month. Weather was variable and part of the time the smaller boats fishing nearby waters were in port. Catches of agujas or alcriques (needlefish), used as a substitute for sardines for local consumption, were relatively good as were those of jurel (horse mackerel) and pescadilla (small hake). Sardine catches off Portugal were fair for December but other catches were small, states a January 20 dispatch from the United States Consul at Vigo. The ex-vessel price for sardines was US$0.161 a pound as compared with about US$0.097 in December 1954.

Fish Canning: The canning industry processed needlefish and available sardines and anchovies during the month, but worked at far below capacity. Since the canning industry is dependent upon the fishing industry, it is also entering on a slack period which will last until March or April. During the month the canning industry took only 1.4 million pounds or about 16 percent of the total catch, as compared with 3.7 million pounds (30 percent of the total catch) in November 1955 and 3.2 million pounds (18 percent of the total catch) in December 1954.

* * * * *

NEW TYPE COD FISHING VESSEL: A new type of Spanish fishing vessel for the cod fishery off Newfoundland is being constructed in a Portuguese shipyard, according to Dansk Fiskeritidende (February 10, 1956), a Danish trade paper. While the vessel is to be only 33 feet longer than the usual German or English distant-water trawler, it will carry a crew of 96. A 830 hp. motor will give the vessel a speed of 10.5 knots. Freezing equipment and a liver-oil plant will be installed forward. Eleven dories will be carried for line-fishing, and also two aluminum motor lifeboats. The motor lifeboats will tow the dories to the fishing grounds and transport the catch back to the mothership which, meanwhile, will be otter-trawling in suitable areas nearby.

## Union of South Africa

FISH FLOUR EXPERIMENTS COMPLETED: The experiment on the manufacture of an odorless and nonfish-tasting flour made by the Fishing Industry Research Institute, Cape Town, to be used in bread and corn meal have been finished and the product has proved excellent, according to the Director of the Institute. The Institute is now endeavoring to perfect its product and reduce the cost so that it could be made on a commercial scale, states a February 7 dispatch from the United States Consul General in Cape Town.

The Institute's Director states: "It is a simple matter to reduce the odor and taste of fish, but only extensive research has made it possible to do this as well as retaining the fish protein in a digestible form. South Africa's main food scarcity is protein, and the addition of fish flour to bread not only means an increase in protein in the bread but enhances the biological value of the protein already in it."

It was also reported that the Institute has been requested by the Department of Nutrition of the Union's Ministry of Health to produce small quantities of fish flour for commercial- or consumer-acceptability tests to be carried out by that Department. These tests will get under way in the present fishing season as soon as enough maasbankers (Trachurus trachurus) are caught to provide 50 tons for processing into flour and subsequently bread and corn meal.
Note: Also Commercial Fisheries Review, March 1956, pp. 48-49.

* * * * *

JACK MACKEREL CATCH LOW IN JANUARY-FEBRUARY 1956: Jack mackerel (maasbanker) catches in January and February 1956 off the South African west coast have been well below catches in previous years and are said to have hit a record low. It is estimated by reliable sources here that the value of these catches will be about US$168,000 and US$350,000 less than the value of catches during the same months in 1955 and 1954, respectively.

According to unofficial figures supplied the Director of Fisheries in Cape Town by fish factories on the South African west coast, only about 2,000 metric tons of fish were landed in January this year as compared to 4,700 tons in January 1955 and 25,000 tons in January 1954.

Indications are that catches in February 1956 will not be much better than those of the previous month. During February 1955 15,000 tons of jack mackerel reportedly were landed; in February two years ago, 17,500 tons.

The jack mackerel is South Africa's principal fishery at this time of the year, there has been considerable concern in the Union's fishing industry over the unexpected and rather unusual drop in catches of this fish during January and February.

The Secretary of the South African Fish Canners' Association in Cape Town considers the shortage of jack mackerel this year as "terrific" and stated that in his opinion the Union's 1956 jack mackerel catch "might just as well be written off the books." He added however, that fortunately there was an abundance in Union waters of small-size jack mackerel which would be harvested January, February, and March 1957.

It is understood also from the Secretary of the South African Fish Canners' Association that the Food Canning Workers' Union in Cape Town has requested the assistance of his organization in effecting the establishment of a provident fund for the benefit of unemployed cannery workers here in slack seasons or in times of abnormal unemployment, such as in the present case. The Union has proposed that this fund be established by joint contributions of employers and employees and that it be administered by a joint committee representing the interests of both employers and the Union. According to the Secretary of the Food Canning Workers' Union, social security benefits of some type are needed urgently by cannery workers in the Union as the fish industry, because of its very nature, cannot offer such workers full-time employment throughout the year.

* * * * *

LOW DOMESTIC FISH MEAL PRICE HURTS BYPRODUCTS INDUSTRY: One of the problems of the Union of South Africa's huge fish-meal industry has nothing to do with the availability of fish or with the demand for its products. For years a Government regulation has forced it to meet demand from South African farmers at a fixed price which today is about half the price paid for the same meal on world markets. The industry would not object to selling on the local market and to meeting local demand at a reasonable price.

The industry last year produced more than 92,000 metric tons of meal of which about 40,000 tons had to be sold in the Union and South-West Africa at only US$84 a ton. Thus a vital animal feed is made available to farmers at a price little higher than for the average fertilizer.

The fishing industry regards this price as completely unrealistic. It was bad enough when exported meal was earning about US$140 a ton. The present price overseas is high and the demand is apparently unlimited, The South African Shipping News and Fishing Industry Review of January 1956 points out.

The industry now covers local needs first, supplying all the white-fish meal and fish meal required by Union farmers for supplementing stock feeds. But this service is performed at what the industry must regard as sub-economic prices for its meal. While farmers, already heavily subsidized, are earning good prices for their produce, the fishing industry has to subsidize them further by selling them its fish meal at a price far below that obtaining on world markets, the industry members point out.

Fish meal is produced by 13 factories on the Cape west coast and by 6 factories in South-West Africa and its sale and distribution is well organized on a pool system by the South African Fish Meal Producers' Association (Pty.) Ltd.

Under this system the Association is the selling channel functioning as a manufacturers' cooperative. Producers receive the average of the home market and export prices less costs, and the flow of the meal abroad is facilitated by selling most of the output of Union factories in South Africa and exporting the meal from the Walvis Bay factories.

Unfortunately, while this simplifies the problem of distribution, it does create a shipping problem for the Association. Because of inadequate facilities at the port of Walvis Bay, ships tend to avoid it and it is difficult at times to find space for exports.

## U.S.S.R.

REGULATION OF PACIFIC SALMON FISHING PLANNED: Further measures have been taken by Soviet Russia to protect the salmon resources in certain international waters of the North Pacific. The intention to regulate and control salmon fishing was announced in a radio broadcast from Moscow on February 10, 1956. Another unofficial radio announcement on March 21 stated that salmon fishing in the area of the entire Okhotsk Sea, the western portion of the Bering Sea, and the Northwest Pacific will be restricted between May 15 and September 15, 1956.

A ruling by the Soviet Council of Ministers declares that permits from the Soviet Ministry of Fisheries will be necessary before salmon can be taken from these waters. The measures are aimed at Japanese fishermen whose netting of salmon during the spawning season has been described by the Soviet press as a threat to the economy of Soviet Siberia. The ruling makes clear that it intends to regulate salmon fishing in the open sea, as well as in Soviet territorial waters, but does not affect the freedom of navigation in the areas concerned.

The regulations will restrict the catch to 50,000 tons or about 25 million fish. In addition to issuing permits, the Soviet authorities will inspect and control fishing in the area. The ruling makes clear that the ban on fishing would apply only until an agreement with the other countries concerned is reached for the protection of the salmon resources. Since Japan is the chief country concerned with this salmon fishery, an agreement would be difficult to reach because of the lack of diplomatic relations between Japan and Soviet Russia.

The Japanese fishing industry has made plans to send 19 fishing fleets to the North Pacific this year, an increase of five over the 1955 fleet. Tentative plans have been made for a catch target of 100 million salmon and trout. The target for red salmon alone was set at 30 million fish.

The Japanese fishing industry is alarmed at the proposed regulations and it may be necessary for the Japanese Government to grant permission for the private fishing interests to negotiate with Soviet Russia.

## United Kingdom

TRAWLERS USE "GROUP-OF-THREE" SYSTEM TO IMPROVE QUALITY: Six British trawlers based at Milford Haven initiated a "shuttle" service in order that their catches will never be more than nine days old when landed. These vessels have been engaged in the normal "pair" fishing using the Spanish "pareja" system.

The "group-of-three" system has been used very successfully by Spanish fishing vessels, but the Milford Haven scheme will be the first time it has been introduced in Britain, according to the January 30 issue of The Fishing News, a British weekly periodical.

The Ministry of Agriculture and Fisheries is so impressed by the prospect of much fresher fish being landed that a special clause has been introduced into the

new White Fish Authority subsidy scheme. This will bring the "groups of three" boats into line with the bigger hake trawlers for subsidy purposes. At present they are classed under the North Sea fishing subsidy scheme.

The first two ships will go out to fish as a normal "pair." A week later, a third boat will sail to "relieve" one of the original pair, to which all the fish then caught by the "pair" will be transferred. The relieved ship will bring the total catch back to port and the other two ships will continue fishing until the second vessel is relieved a week later by the ship that originally returned to port. By this method catches which up till now have been landed after a 14- to 16-day "pair" trip will now be brought back every week by the third trawler.

In practice, as far as the crews are concerned, the "group-of-three" system will mean a minimum of three days ashore every 17-18 days. If a "pair" sail on a Thursday, fishing would normally commence on Saturday morning. The ship to be relieved leaves the grounds for home on the following Friday night to land for Monday's market. Her crew would then be ashore until Thursday morning. The third ship which has to be "on station" ready for Saturday morning's fishing operations, would have left Milford on the previous Thursday morning to rendezvous with the second ship on the fishing grounds. Thus a continuous "shuttle" service will be maintained and crews will get longer time ashore between voyages.

The main object of the "group-of-three" plan is to bring in fish, and hake in particular, in better, fresher condition and to maintain a regular fishing "cycle" and steadier supplies.

Milford Haven has led Britain's fishing industry in the introduction of the "pair" fishing system, which has in the past given the port some of its highest-yielding hake trips.

* * * * *

WHALING INDUSTRY REGULATIONS AMENDED: Recent changes in the Whaling Industry Act revoke and re-enact with amendments the 1953-55 Regulations, and give effect to certain resolutions of the International Whaling Commission. The principal changes are:

"1. Prohibiting the killing of blue whales in the Antarctic before February 1 in any year..."

"2. Reducing to 15,000 the total number of blue whale units that may be taken in any year in waters south of 40 degrees south latitude by catchers attached to factoryships of the powers bound by the resolutions of the Commission;

"3. Requiring the return of daily statistics of whales taken after the catch is deemed by the Bureau of International Whaling Statistics to have reached 13,500 whale units."

## Venezuela

TUNA SHIPPED TO THE UNITED STATES: Between 70 and 80 metric tons of frozen tuna caught in the Caribbean Sea off Venezuela by the Japanese long-liner Bozo Maru will be transshiped to New York, according to a report by the Venezuelan administrator of the Customs at Guanta. This report appeared in the February 16 issue of El Nacional.

The Japanese long-liner, said to be commissioned by the Japanese Ministry of Agriculture and Forests, is supervised by Dr. G. Shinsuke Itoh. The vessel, which has been operating off the Venezuelan island of La Blanquilla for several months, is reported owned by a Venezuelan national.

Dr. Shinsuke is reported to have stated that the size of Venezuelan tuna is equalled only by those off the North African coast. Fish of 90 pounds each are common and those of 100 to 130 pounds each are not rare. He expects a catch of 400 tons monthly.

Fresh tuna has been offered on the Caracas market but has found few buyers, a February 16 United States Embassy dispatch from Caracas states. Few in Venezuela are familiar with other than canned tuna.

* * * * *

USE OF SARDINES FOR REDUCTION PROTESTED: Recently a well-known fish canner and spokesman for the Venezuelan fishing industry protested publicly to the Venezuelan Government regarding the use of sardines for the manufacture of fish meal. He claims that the sardines that inhabit the Gulf of Cariaco are needed by the canners for human food and for employment of many Venezuelan workers, a March 1 dispatch from the United States Embassy in Caracas states.

## COOPERATIVE WILDLIFE RESEARCH UNIT SCHOOLS BESTOW 2,373 DEGREES

A total of 17 colleges affiliated with the Cooperative Wildlife Research Program have bestowed 2,373 degrees upon wildlife students since the program started in 1935, Acting Secretary of the Interior Clarence A. Davis said March 23. Compilations recently made by the Fish and Wildlife Service show that there were 186 degrees issued by these colleges and universities in the school year 1954-55. Of these, eight were doctorates, 63 master's degrees, and the rest bachelor degrees.

The Cooperative Unit Program is sponsored jointly by the Fish and Wildlife Service, the State conservation departments and land grant colleges of 15 States and Alaska, and the Wildlife Management Institute. Each unit has a minimum budget of $18,000 a year for salaries and facilities.

The primary purposes of the cooperative program are to encourage the training of personnel for wildlife management; to conduct wildlife research; and to promote wildlife education.

During the calendar year 1955 there were 275 research programs conducted, of which 48 were concerned with migratory waterfowl, 49 with fisheries, and the others with studies of wildlife species, habitat, and management problems. There were 161 articles, ranging from leaflets to books, prepared and published by unit personnel.

Of the 186 who received degrees in 1955, 82 have wildlife jobs with Federal, State and private organizations; 44 have entered the armed forces; 36 have returned to school for advanced training; and 24 are in occupations other than wildlife work.

Forty-eight of the 71 students who received advanced training last year obtained financial assistance in the form of fellowships, scholarships, or field expenses from the Cooperative Units. In addition, one-fifth of those who received bachelor degrees had financial support from the Cooperative Unit or used Unit equipment.