



International

JAPAN AND RUSSIA SIGN PACT ON PACIFIC SALMON CATCH

An agreement was signed between Japan and the Soviet Union on April 6 that fixed the 1957 salmon quota for Japan in Northwest Pacific waters this season at 120,000 metric tons or 132,276 short tons. Special limitations were put on the catch in the Sea of Okhotsk and the waters off the Soviet Union's Kamchatka Peninsula, according to press dispatches from Tokyo.

The proposal on the part of the Soviet delegates that Japan recognize the Sea of Okhotsk as part of Soviet territorial waters was withdrawn.

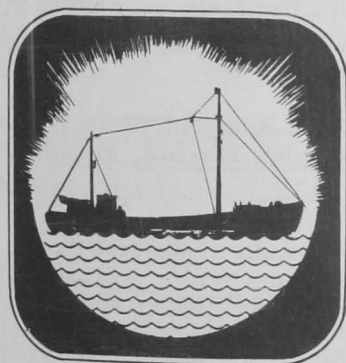
TRADE AGREEMENTS

JAPAN-UNITED KINGDOM PACT INCLUDES FISHERY PRODUCTS: Canned tuna valued at US\$1.4 million can be exported to Britain by Japan under the recently-concluded March 1957 Anglo-Japanese trade and payments agreement. Another new quota is for the import from Japan of canned pilchards, worth US\$84,000.

Certain goods from Japan placed on the open general license include frozen salmon, while imports of canned crab and whale oil will be admissible without restriction of quantity but under open individual licenses (Fishing News, April 5, 1957).

NORTHWEST ATLANTIC FISHERIES COMMISSION

GERMANY ADHERES TO CONVENTION: The proposal for the adherence of the Federal Republic of Germany to the International Convention for the Northwest Atlantic Fisheries has been ratified by the German Parliament--Bundestag. The last formalities of the procedure of the German adherence were expected to be completed in the near future, possibly before the 1957 Annual Meeting.



CHANGE OF PLACE FOR COMMISSION'S ANNUAL MEETINGS: The Commission's decision in its 1955 Annual Meeting to change the 1949 Convention in order to make possible the holding of Annual Meetings in any of the member countries was approved by all ten member governments by their signature in Washington on August 21, 1956. Up to now information has been received from the Depositary Government on the ratification by the following countries: Denmark, Iceland, Portugal, United Kingdom, and Spain.

MESH REGULATIONS FOR COD AND HADDOCK TRAWL FISHERY IN SUB-AREAS 3, 4, AND 5: Proposed by the Commission in its 1955 Annual Meeting, mesh regulations for the cod and haddock trawl fishery in Subareas 3, 4, and 5 in the Northwest Atlantic, were accepted by all countries concerned October 1955-December 1956 (by France with reservations as far as chafing gear is concerned). The amendments to these regulations proposed by the Commission in its 1956 Annual Meeting

have up to date been accepted by the following member governments: Canada, France (with the reservation that the chafing gear clause only come into effect from January 1, 1958), Norway, United Kingdom, and the United States. The Depository Government has further informed the Commission that as the regulations and their amendments have been accepted by the only two countries members of Panel 5, these regulations and their amendments will become effective for all countries concerned from March 26, 1957.

Although the regulations and amendments have not yet become effective for Sub-areas 3 and 4, a number of the member countries are already introducing and enforcing them.

1957 ANNUAL MEETING: The Commission's 1957 Annual Meeting was held in Estoril, Lisbon, Portugal, May 20-25. It was being preceded by meetings of the Committee on Research and Statistics on May 17-18. From May 27 to June 3 a Workshop on Population Dynamics and Gear Selectivity was held as a joint meeting by FAO, ICES, and ICNAF.

Delegations from the member countries participated in the Annual Meeting. Observers were present from West Germany and the U.S.S.R., as well as from various international fisheries organizations. (Commission's Newsletter No. 23, dated April 29, reporting activities during December 1956-April 1957).

Note: See Commercial Fisheries Review, January 1957, p. 56.



Australia

FREEZING FISH AND SHRIMP AT SEA PLANNED: In order to process and freeze fish and shrimp at sea in prepackaged form, a Sydney (Australia) firm has purchased the Gulf of Mexico shrimp freezer ship Rican Star. Present plans call for an investment of about US\$445,000. The Rican Star (586 tons) is 182 feet long and has a refrigerating capacity of 350 tons. In addition to the freezer ship, a steam trawler (Mary Cam) was also purchased. The Mary Cam, plus three or four seine vessels, and a number of smaller craft will make up a fleet of catcher boats which will use the Rican Star as a processing mothership.

The head of the Sydney firm stated that the fleet will fish all around the coast of Australia. Processing the fish and shrimp at sea will enable the firm to market only high quality products. It is planned to market the frozen processed fishery products in 7-pound packages and not in consumer-size packages.

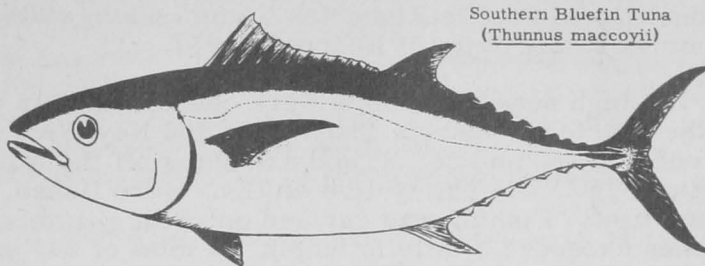
The Rican Star was especially built for freezing shrimp at sea and came to Australia from New York, states the November issue of Fish Trades Review, an Australian fishery publication.

* * * * *

1956/1957 TUNA SEASON SETS NEW RECORD: By the first week of January 1957, the southern bluefin tuna season off the south coast of Australia's New South Wales had reached the record total of 2,296,000 pounds. The commercial fishery for southern bluefin tuna began in 1949 and in the intervening years the catch has varied from 108,621 pounds in the 1951/52 season to the above total for the 1956/57 season. Final figures for the 1956/57 season, which began in September 1956, will undoubtedly be higher. The ex-vessel or landed value of the tuna catch in 1956/57 was about US\$115,840 or close to 5 U.S. cents a pound.

The record tuna catch was taken within a few miles of the New South Wales coast by a small fleet of bait boats and trollers. It is possible that large tuna re-

Australia's Tuna Landings 1950/51-1956/57 Season	
Season	1,000 Lbs.
1956/57 to 1st week in January	2,296
1955/56	655
1954/55	921
1953/54	1,053
1952/53	536
1951/52	109
1950/51	305



sources are available to larger bait boats further offshore. The southern bluefin tuna caught in 1956/57 averaged 15-17 pounds each as compared with an average of 25-30 pounds in the previous season. Live bait was reported plentiful in Twofold Bay (Eden) and in the bays near Bermagui. In the Bermagui area there was a run of 6- to 8-pound bluefin tuna and the fishermen reported that the waters "were alive" with striped tuna.

Lack of adequate freezer space at Eden forced the tuna fishing fleet to restrict their catches during the early part of December when the fish were plentiful. This lack of adequate storage space has made the tuna fishery of New South Wales a stop-and-go affair.

Two firms are processing tuna at the present time. One with canneries at Eden and Narooma received about 88 percent of the 1956/57 catch. A smaller firm at Bermagui received the balance and has had some success with smoked "tuna ham" and "tuna chicken." (Fisheries Newsletter of the Australian Commonwealth Director of Fisheries, February 1957.)



Canada

INSURABLE VALUE OF FISHING VESSELS INCREASED: According to an April 1957 announcement by Canada's Minister of Fisheries, fishermen on both coasts are now able to insure vessels up to an appraised value of \$10,000 under the Fishermen's Indemnity Plan of the Federal Department of Fisheries. The previous maximum value of craft eligible for coverage was \$7,500. The minimum remains at \$250.

The increase was approved by the Canadian Government because of the substantial increase in the cost of replacement of the classes of vessels which have been insured under the Indemnity Plan since 1953.

Provision is made for protection against total or partial loss from collision, foundering, storm and other marine perils, and from fire. The annual premium paid by the fishermen who insure their vessels under the plan is one percent of the appraised value of their craft. At the end of March 1957, some 3,900 fishing vessels valued at about \$8,600,000 were covered under the plan.

* * * * *

NORTHEAST PACIFIC SALMON STUDIES: Field studies carried out by Canada's Fisheries Research Board's Station at Nanaimo, B. C., in 1956 included (1) participation for the first time in exploratory fishing for salmon in the North Pacific to determine their distribution and to obtain samples, and (2) extension of the

work begun in 1955 on young salmon to learn more about their migration from rivers of origin and by means of tagging, their subsequent entry into high seas or coastal fishing areas. Both research projects are connected with the work of the International North Pacific Fisheries Commission, states the Canadian Department of Fisheries Trade News of February 1957.

The high seas operations were conducted from mid-May to mid-September using the chartered vessels Challenger and Key West II within an area bounded by latitudes 42° N. and 58° N. and extending off the North American coast westward to longitude 150° W. Thirty-five stations were fished, 10 of which were revisited a second time. Fishing was carried out with gill nets of varying mesh sizes which at times exceeded a mile in length. A total of 943 salmon was caught: chum salmon were most numerous (37.1 percent) and were followed in order of abundance by pink (26.5 percent), sockeye (21.2 percent), silver or coho (14.7 percent), and king or spring salmon (0.5 percent).

The work on young salmon was carried out from early July to mid-September using the chartered drum seiner Cape Blanco and the Key West II which converted from gill-netting to purse-seining. The areas of operation included Chatham Sound, Dixon Entrance, and the west coast of the Queen Charlotte Islands. Young salmon were caught in each of these general areas and many were tagged, using the "spaghetti"-type tag. The numbers of young salmon tagged according to species were: pink--6,639; chum--979; sockeye--134; and silver or coho--192.

In conjunction with both operations, bathythermograph records of water temperatures, water samples for salinity and total phosphate determinations, plankton samples, and Secchi disc readings for water transparency were also collected in an attempt to relate salmon occurrence to certain environmental factors.

* * * * *

SOCKEYE SALMON EGGS SHIPPED TO JAPAN: British Columbia sockeye salmon--about 98,000 of them--will soon be swimming in Lake Chuzenji in Japan. The Canadian Department of Fisheries was advised recently that a shipment of eyed sockeye salmon eggs, despatched in mid-January, had arrived safely at the Nikko National hatchery near Tokyo, where they will be retained until ready for planting, that Department's Trade News (February 1957) says.

The gift arose from meetings between Canadian and Japanese scientists working on fishery surveys in the North Pacific Ocean under the International North Pacific Fisheries Commission.

Japanese members had mentioned that stocks of Kokanee--a landlocked sockeye--in the lake were diminishing. The Canadians offered to send replenishments.

Eggs were procured from 75 sockeye spawners at Cultus Lake and brought to the eyed stage at the British Columbia provincial hatchery before being sent to Japan.

* * * * *

1957 PACIFIC HALIBUT REGULATIONS APPROVED: The 1957 Pacific Halibut Fishery Regulations were approved by the Canadian Government by an Order-in-Council dated March 21, 1957. The Regulations were adopted by the International Pacific Halibut Commission at its annual meeting, held in Seattle January 28-31, 1957.



Ceylon

LIST OF FISHERY PRODUCTS IMPORTS PERMITTED FROM THE U. S.: Canned fish, dried or salted fish, and fish fertilizer are included in the list of products that may be imported into Ceylon from the United States. Canned fish and fish fertilizer are allowed to enter Ceylon without restrictions as to quantity, value, or the amount of foreign exchange that can be allotted. Dried or salted fish require an individual license which is issued at the discretion of the Controller of Imports, and permits are granted only up to the value specified in the individual license.

Fish nets are also included in the list of imports that can be imported into Ceylon without restrictions.



Fiji Island

STATUS OF THE FISHERIES: Although there are plenty of fish in the waters around the Fiji Islands, the fishing industry is not organized and a part of the growing demand for fish must be met by imports. Imports of canned fish have increased in value from £F 184,886 (US\$462,000) in 1953 to £F 302,562 (US\$756,000) in 1955.

A company financed by American capital attempted fishing for tuna in Fiji after World War II. Some £F 190,000 (US\$475,000) was spent on research and initial expense and £F 168,000 (US\$420,000) on special vessels and equipment. The fish caught were to have been sent to American Samoa for canning and eventual export to the United States. The company eventually had to abandon operations due to an insufficient supply of fish. The Fijians employed by the company did not know how to fish with long lines and for that reason were unable to catch tuna.

Trocas shell exports have been comparatively high in recent years. Prices continued to rise throughout 1956 and the demand for trocas shell was strong, in spite of the increasing use of synthetics for button manufacture, points out a March 13 despatch from the United States Consul at Noumea.

Note: Values converted at the rate of one Fiji pound equals US\$2.50.



Iceland

EXPORT TRADE BILL EXPECTED TO PASS: The bill calling for reorganization of the export trade has passed Iceland's lower house and it is considered almost a foregone conclusion that it will become law during the current session. It may or may not lead to any significant change in fish marketing arrangements, however. With regard to the salt-fish trade, which is presently handled entirely by one organization and which might have been the one most affected by the bill, the Federation of Cooperative Societies has decided that its best interests lie in continuing to do its selling through the present organization rather than set up a new and competing one. At the recent meeting of the Union of Icelandic Fish Producers it voted together with all other members against the bill and against a change in the present arrangements.

The bill is primarily concerned with the question of marketing and not of production. The Union of Icelandic Fish Producers does not limit the amount of salt fish that a producer may turn out. However, members must undertake not to sell to nonmembers. Since the cooperatives have decided to remain in the organization, it is difficult to envisage any new marketing group acquiring an important role. Conservatives consider this a victory of no mean proportions (U. S. Embassy dispatch dated March 15, 1957).



India

NYLON NETS USED SUCCESSFULLY BY FISHERMEN: The excellent catches made by Indian fishermen using a mechanized boat and nylon nets, demonstrated to them by experts of the Food and Agriculture Organization, Rome, is creating a strong demand in India for modern fishing boats and gear.

An Icelandic master fisherman, who is on an assignment for FAO in Madras State, reports: "During the past month we hired out the FAO 22-foot Danish motor-boat and 14 nylon gill nets to some fishermen in Kilakarai. They have landed 7,628 pounds of fish in 12 days of fishing.

They have been so impressed by the results obtained that they have written a letter to the Fisheries Department of the Madras Government urgently requesting the Department to make available such boats and nets immediately."

The second FAO Danish boat in India, with 14 nylon nets, has similarly been hired out to fishermen at Pamban. They have landed 8,067 pounds of fish after 18 days of fishing.

Before the FAO expert trained these fishermen in the operation of the boat and gear, few of them had seen a mechanized boat. But they have been quick to learn. When they have demonstrated their skill in handling the boat and gear, the FAO expert has hired out the boat and gear to them on contract, charging a commercially-justified share of the catch and has left them to prove for themselves the value of mechanized boats and nylon nets.

"This is the most convincing and practical way to introduce modern boats, gear, equipment and techniques," states the Icelandic master fishermen.

Nylon gill nets can also be used in fishing from local log rafts and small sail or rowing boats. Thousands of such craft in India offer a very good chance of quickly increasing the Indian fish catch if nylon nets can be widely introduced, points out a March 1956 news release from FAO.



Japan

CANNED OYSTER PACK, 1954-57: The pack of Japanese oysters in 1957 will reach about 90,000 cases (vary from 6 to 100 cans to the case)--see table 1. The oyster pack data derived from the records of the Japanese Cannery Association and reported in a January 17 dispatch from the United States Embassy in Tokyo, is incomplete for 1956 and 1957, but estimates are believed to be reliable. The 1956 pack was large and due to a substantial carryover the 1957 pack will be reduced.

Table 1 - Japan's Canned Oyster Pack, 1954-1957

Type of Pack	Can's Net Weight		Cans/Cs.	1957 ^{1/}	1956 ^{1/}	1955	1954
	GRAMS	OZS.					
Boiled	187	6.6	48	2/	2/	417	9,166
	145	5.1	48	2/	2/	10,663	-
	273	9.6	48	2/	2/	96	-
Total boiled				30,000	19,000	11,176	9,166
Smoked in oil	55	1.9	50	2/	2/	443	1,070
	55	1.9	100	2/	2/	480	-
	90	3.2	6	2/	2/	2,500	2,407
	90	3.2	24	2/	2/	138	-
	90	3.2	25	2/	2/	6,084	26,643
	90	3.2	50	2/	2/	57,583	30,994
	90	3.2	100	2/	2/	564	2,755
Total smoked in oil				60,000	95,000	67,792	63,869
Broiled	2/	2/	2/	2/	2/	5,821	2,136
Other	2/	2/	2/	2/	2/	1,312	1,816
Grand total				90,000	114,000	86,101	76,987
^{1/} Estimated.	2/ Not available.						

Prices for the principal packs of canned oysters f.o.b. Japan for boiled oysters varied between US\$7.30 to 7.90 a case (48 cans of about 5.1 ozs.) from 1954-56 and smoked oysters in oil varied from US\$7.00 to 7.30 a case (50 cases of about 3.2 ozs.) during the same period.

CANNED OYSTER EXPORTS
Japanese exports of canned oysters varied from 59,130 cases

in 1954 to 88,000 cases in 1956. In 1954 the United States imported 68 percent (40,281 cases) and in 1955 about 66 percent (47,217 cases), mostly smoked oysters

Table 2 - Japan's Exports of Canned Oysters

Type of Pack	Can's Net Weight		Cans/Cs.	1957 ^{1/}	1956 ^{1/}	Total			
						1955		1954	
	GRAMS	OZS.				OTHER COUNTRIES	U. S.	OTHER COUNTRIES	U. S.
Boiled	273	9.6	48	2/	2/	1,722	1,240	1,747	1,300
	187	6.6				822	100	3,217	1,350
	145	5.1				9,233	8,643	1,477	1,310
Total boiled			23,000	18,000	11,777	9,983	6,441	3,960	
Broiled	2/	2/	2/	2/	2/	2/	25	25	
Smoked in oil	90	3.2	50			56,527	35,429	50,656	34,508
	55	1.9	50			2,436	1,635	1,908	1,788
	2/	2/	2/			600	170	100	
Total smoked in oil			55,000	70,000	59,563	37,234	52,664	32,296	
Grand total			78,000	88,000	71,340	47,217	59,130	40,281	
^{1/} Estimated.		^{2/} Unavailable.							

in oil. In 1954 smoked oysters in oil made up 90 percent of the canned oyster imports into the United States and about 79 percent in 1955.

COMBINATION LIVE-BAIT AND LONG-LINE TUNA VESSEL BUILT: The Miho Shipyard in Shimizu has launched the first of 6 combination live-bait and long-line tuna vessels ordered by the Omaezaki High-seas Fisheries Association, the No. 1 Nikko Maru (310 tons). This vessel is characterized by its suitability for both types of tuna fishing, and by its large carrying capacity. Hold space is 66 cubic meters (2,331 cubic feet) for frozen tuna, 70 cubic meters (2,472 cubic feet) for iced storage, and 8 cubic meters (283 cubic feet) reserve hold. The ship has an ammonia plant with a freezing capacity of 800 kan (6,600 pounds) a day.

The Nikko Maru has a top speed of 11.5 knots, cruising speed of 10 knots, and 65 days cruising range. Equipment is worthy of a modern fishing boat, including automatic pilot, loran, echo sounder, and a remote sea-water thermometer. Construction cost was US\$330,000. It is expected that the remaining 5 vessels will be completed by August 1957, states the Nippon Suisan Shimbun of February 18.

NEW TUNA FISHING GROUND OFF MARQUESAS ISLANDS REPORTED: The Japanese tuna vessel No. 10 Seisho Maru (720 tons), which sailed from Shimizu on December 20, 1956, has since been working actively in the Southeastern Pacific and has recently reported to Shimizu the discovery of a new tuna fishing ground on the eastern side of the Marquesas Islands. According to this report, the new ground is in the vicinity of 6° S., 126° W. Since January 26, the vessel has been making catches day after day of 4,000-5,000 kans (16-20 tons), which is 2 or 2.5 times the catches made on the Indian Ocean grounds.

The catches are composed of yellowfin and big-eyed tuna and black marlin. The fish are large, mostly 160 to 300 pounds, and it looks as if the fishing may be good there throughout the year, reports the February 18 Nippon Suisan Shimbun.

TUNA FISHING PERMITS TRADED AT HIGH PRICES: Because of the record-breaking catches made along the Japanese Pacific coast last year by tuna seiners, the shipyards of the coastal prefectures are enjoying a seiner construction boom. Because of the desire of the operators to qualify for government financing for these

new seiners, efforts are being made in various fishing ports to buy up tuna fishing permits, according to reports from Aomori Prefecture. Brokers in the neighboring prefectures have already taken a number of permits from that Prefecture, and the Aomori Prefecture Seiners' Association is trying to put a stop to the buying up of these permits, points out the Nippon Suisan Shimbun (February 20, 1957).

TUNA INDUSTRY AND LICENSING SYSTEM PROBLEMS: It is difficult at the present juncture to get an accurate grasp of the state of the tuna resources, and there is no landmark for a new direction in the production end of the industry, according to a Tuna Investigative Committee report, an article points out in the Japanese fishing industry weekly Suisan Shuho (January 25).

Table 1 - Income and Operating Costs of Japanese Tuna Boats

Year	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	
Tonnage	360	380	380	320	310	240	180	160	160	160	150	80	90	40	30	80	89	
Refrigeration	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	
Period surveyed	1/55- 3/56	1/55- 12/55	1/55- 12/55	11/54- 11/55	1/55- 12/55	1/55- 12/55	12/54- 1/56	11/54- 12/55	8/55- 8/56	9/55- 8/56	2/55- 1/56	8/55- 7/56	8/55- 6/56	8/55- 7/56	8/55- 7/56	8/55- 6/56	6/55- 5/56	10/54- 9/55
Number of trips	4	4	3	5	4	4	4	5	5	5	5	5	6	20	11	13	8	
Weight of catch (lbs.)	1,719,755	1,510,176	1,325,615	1,771,955	1,265,310	1,030,450	723,642	829,388	450,128	450,128	574,112	315,848	321,926	187,448	316,368	371,679	360,672	
Value of catch (US\$)	154,129	119,101	104,669	163,874	102,178	86,743	60,013	61,669	44,567	44,567	47,932	39,942	33,575	28,355	27,544	32,432	18,737	
Direct expenses (percent)	35.8	34.5	31.6	33.1	30.1	33.6	44.1	47.0	35.6	39.3	35.1	45.5	48.0	53.5	54.8	59.8	57.7	
Sales commissions	4.6	3.0	3.0	3.9	4.8	2.1	5.0	4.3	7.9	6.4	2.8	8.8	6.7	8.5	7.6	3.5	0.4	
Trip expenses	31.0	31.5	28.6	29.2	25.3	31.5	39.0	42.7	27.7	32.8	32.3	37.1	39.3	45.4	35.2	34.2	37.1	
Crew's share (percent)	21.4	20.0	17.8	29.8	19.7	13.0	14.2	25.2	24.9	17.7	20.8	25.5	14.3	20.4	24.4	18.6	19.5	
Indirect expenses (percent)	43.0	45.5	50.6	37.1	50.2	53.4	41.8	37.8	39.5	43.1	44.1	28.0	35.5	25.7	32.8	43.6	45.8	
Interest	5.2	6.5	10.0	2.6	9.8	11.2	8.7	1.9	11.4	8.3	7.8	4.2	-	4.8	4.1	15.3	12.9	
Amortization of ship	20.7	12.1	22.4	30.6	19.9	24.5	16.6	6.7	12.7	14.5	9.0	0	7.0	9.8	9.7	6.0	3.3	
Other expenses	17.1	17.9	18.2	13.9	20.5	17.7	16.5	19.2	15.4	22.3	27.3	24.4	32.5	11.1	18.9	22.3	24.6	
Total expenses (US\$)	150,598	117,982	114,729	133,119	120,751	108,787	75,653	83,118	96,743	52,269	62,002	36,959	39,859	25,074	27,532	42,233	23,749	
Income less expenses (US\$)	+3,531	+1,120	-10,059	+30,755	-18,574	-26,044	-15,640	-1,447	+425	-7,884	-14,071	+2,884	-5,284	+1,281	-78	-8,956	-5,009	
Month launched and material (S-steel; W-wood)	3/55 S	2/54 S	12/54 S	2/53 S	10/52 S	9/52 S	10/54 S	8/37 S	5/54 W	8/54 W	2/47 S	12/48 W	5/48 W	9/52 W	5/54 W	8/49 W	8/48 W	
Remaining fitting out capital owed (US\$)	52,782	51,689	83,340	None	36,114	1,711,117	74,108	None	51,449	41,670	23,613	None	None	None	8,195	19,140	14,133	

1/Original figure given.

However, the drying up of the tuna stocks is already regarded as an actual and growing problem, the assignment of the Japanese Fishery Agency's research ship Shoyo Maru to a survey of tuna grounds in the Atlantic appearing to be in itself an admission that the resources of the Pacific and Indian oceans are declining. Therefore it is probable that when the results of the Atlantic surveys are known, tuna boats cannot be allowed to swarm into that area and catch as much tuna as they can take out of it. The domestic demand for tuna sausage has increased strongly, and a large supply of raw material is desired, but on the other hand the medium and small vessel operators are criticizing mothership-type operations as outrageous. The tuna industry has its problems in the lack of coordination of the resource--production, distribution, and consumption relationships--and unlike other fisheries, these problems are too difficult to be handled simply by a shift of fishing grounds. Therefore, before trying to take a new, over-all view of the "tuna industry," let us first attempt to look at the problems of the present licensing system, while keeping in direct view the actual state of tuna business operations.

From the Operational Point of View the Resources are Declining: It is said that when conservation scientists are listened to, it is generally too late. The time of seeking their opinions has come, and these good people have been dragged into the limelight by the Tuna Investigative Committee. The idea was to get the opinions of the experts, and then to determine the degree of regulation of production. However, the scientists were of two opposite opinions. One is the theory that there is no decline in the tuna resources, and that changes in the fishing conditions are controlled to a greater extent by natural causes than by man's fishing activity. The other opinion holds that changes in catch rates are to be regarded as changes in the resources, and that among the individual tuna species, yellowfin are just holding their own, albacore still offer room for expansion, there is no need to worry about black tuna and big-eyed, but the spearfishes should be watched carefully.

For both of these theories, data with which to elucidate the state of the tuna resources are lacking, and they both lead to the conclusion that "We have not yet reached a stage where we can determine the causes of fluctuations in fishing conditions or

estimate the catch accurately, so at present we should pay very close attention to the trends of the tuna resources," which is no conclusion at all.

However, an entirely different and powerful claim has been put forth. It says that "The tuna resources, from the point of view of fishery operations, are declining. This can be seen by looking at the drop in the average catch rates and the decrease in catch per vessel-ton. The shifts year by year to more distant grounds are also an indication of the decline of the resources in home waters. Even though it be said that biologically the resources are not being depleted, from the standpoint of the operators the falling catch rates, the increasing trip time, and the changes in the value of fishing grounds have to be considered indicative of a decline in the fishery resource."

In short, this is an expression of the thinking on the subject of resources from the point of view of actual fishing operations, as opposed to that of purely scientific study. The same disparity is seen in the views of Japan on the one hand and of the United States and Canada on the other with regard to the investigations of salmon resources under the tripartite treaty, and it is also like the opposition of the views of the Soviet scientists Baranov and Moiseev concerning the North Pacific salmon resources.

Increasing Distance of the Fishing Grounds and the Actualities of Operation: Leaving aside this problem of declining resources, the Japanese tuna fleet, under the encouragement of special legislation (repealed June 8, 1955), has increased in number and size of vessels until the 1955 catch of 361,410 tons was 1.6 times that of the highest prewar year, 1940. Since the repeal of the special legislation, the trend has been toward stricter regulation, but if we look at the cases of individual vessels of the existing fleet, there has been a conspicuous tendency for the rising costs accompanying the fall in catch rates and the increasing distance to the fishing grounds to greatly hinder tuna fishing operations.

At present the tuna fishing grounds can be broadly divided into three--the Pacific, the Indian Ocean, and the Atlantic. Japanese tuna boats are actually working in two of these, the Pacific and the Indian Ocean, and according to operational statistics of vessels fishing in these areas, the catch rates in both are falling year by year. In pursuing the tuna, there is a natural competition to build bigger boats, but the result has been to bring about a vicious circle in which there is not much difference between a 600-ton boat and a 1,000-ton boat. Table 1 gives examples of tuna-boat operations compiled from data gathered during the past year by the Tuna Fishermen's Association on the income and expenditures of 24 tuna boats ranging in size from 30 to 360 tons. From this table it can be seen that about 30 percent of the boats are operating in the red. And leaving out of consideration the cases where boats came into port at a time when fish prices were high, it is indicated that the cause of these unprofitable operations was the trip expenses, that is, the cost of directly consumed material such as fuel. It is shown that among vessels of the same size class, those that made a smaller number of trips went in the hole just that much deeper, and it is clear that in the case of both distant-water and medium-size boats income and outgo were only balanced by making a large number of trips.

Problems of the Present Licensing System: If we look at the problem of the increase in tuna boat size, we can immediately see the contradictions which actually exist in the tuna fishery. And if we dig deeper into the crisis of the tuna fishing industry, it appears--as long as the problem of the resource is not understood--that the root of the trouble is in the present licensing system.

The tuna fishery licensing system in force at present distinguishes four groups: small, medium, distant-water, and mothership-type operations. The fact that there is no consistent policy applied vertically through these four groups gives rise to problems of various kinds. Even the Investigative Committee's report recognized

that "in the regulation of the tuna fisheries, with due regard to the business operations of the industry and to international factors, the system under which the operations of medium-size, distant-water, and mothership-fleet vessels are separated should be reorganized into a coordinated system." This could even mean a departure from present fisheries legislation and the establishment of a distant-water fishing law. However, such legislation could hardly be expected to materialize very soon, and the idea was set aside pending a general reform of fishery laws.

Nevertheless, under present conditions the opposing movements within this fishery will probably grow stronger and stronger. This is because, with regard to the increase in vessel size mentioned earlier, there are many factors which bring about inequities at the producing level in the relationships between medium and large vessels and between single-vessel operations and mothership-type operations.

Now to look at the licensing policies for the four separate types of fisheries. First, for the small coastal boats, the Investigative Committee has recommended giving each prefecture a licensing quota under certain fixed conditions, for the sake of reviving and rationalizing the fishing villages, and since this is also approved by the authorities, we will expect its materialization. For the medium-size boats, whose growth is now blocked at the 100-ton line, steps are to be taken to remove this restriction. In this case a combined vessel replacement system will probably be adopted, taking into account production and consumption and avoiding an unlimited expansion of vessel size. For the distant-water vessels, however, no upper limit has been set. Doubtless improper competition should be restrained, perhaps with a limit set provisionally at the 1,000-ton line.

Conflicts Between Mothership-Type and Single-Vessel Operations: The problem is, of course, in the relationship between mothership operations and those of vessels working singly. It is considered that for the motherships a quota limit of 14,930 tons, like that of last year, will be continued. The dissatisfaction of the mothership companies with this is very great. The Nippon Suisan Company, which last year was held down to 2,150 tons, maintains that it must have at least 3,300 tons to break even. However, there are also the small and medium operators, who are dead set against this mothership-type operation, and the views of the fishermen's association are that, even though it may not be possible to eliminate them altogether, the mothership operations might be continued at the present level if it were part of an over-all policy for the relief of the small and middle-size operators. At any rate, there will be no change in their opposition to any expansion of mothership operations. The cries of the small and medium operators that the motherships should be completely done away with because of the decline of the resources can probably be dismissed as an appeal to emotion, in view of the ratio of their 14,930 tons to the total catch of over 350,000 tons. The source of this opposition is alarm at the subjection of small and medium operators to big capital through the formation of direct connections between individually-operated ships and the mothership companies, which since they are caught in a bind between the growing domestic demand for tuna sausage and the restraint on the catches of their mothership-type fleets, are seeking to get large supplies of raw material from the individually-operated vessels. However, even among the so-called individually operated vessels, some of the large ones working in the Indian Ocean are using boats which they carry aboard or which accompany them and are thus operating in a semi-mothership form, so the whole subject needs re-examination. The problem is whether to put the semi-motherships in with the regular motherships. With single-vessel operations in distant waters becoming gradually more difficult, it is probably a natural development to apply mothership-type techniques in both the Indian Ocean and the South Pacific. There is much doubt, however, as to what course will be taken by the Fishery Agency, which is in somewhat of a dilemma.

Supply Bases as a Means of Overcoming the Crisis: As the fleet has gone farther out in pursuit of the fish, the grounds have become more distant, but there are natural limits to this trend. The boats are fishing in waters around Mad-

agascar, on the east coast of Africa, and in the Arabian Sea, but to go farther than that appears to be unreasonable from a business standpoint.

This would seem to mean that in the present stage we need to set up supply bases near the fishing grounds in order to lighten the trip expenses, which have grown into an unreasonable burden. Industry circles consider that the promotion of plans for supply bases for vessels fishing the Indian Ocean is a project for this year. Their first candidate is the port of Mombasa on the east coast of Africa, and they have initiated negotiations with the ruling power and with the ministries concerned. If this materializes, fuel can be obtained at approximately the same price as at Singapore, and it is considered that fully profitable operations will be possible not only for large vessels but also for boats of the 300-ton class. The only obstacle is the problem of increasing the quota of foreign exchange for fuel oil, and strong efforts are being made at the Finance Ministry to get this done as a measure to overcome the difficulties of the tuna fishing business.

If this is advanced a step further, we come to the stage of agreements for fishing bases, with landings and sales of the catch, amounting to an advance of the tuna fishing industry into foreign territory, but this development is forced to mark time because of the Fishery Agency's administrative policy of holding back foreign-based enterprises which have the export of tuna to the United States as their object. The only hope is for expansion of the European market, but although France and Italy have begun to show signs of activity, it is likely to be a long time before anything important develops.

Early Establishment of Assignment of Fishing Grounds by Vessel Size: One remaining means of breaking through the crisis of the tuna fishery is to develop new fishing grounds by privately-owned vessels, as in the past, the limit of what can be done by private capital has been reached. Great expectations are held for the Fishery Agency's research ship Shoyo Maru, and the problem seems essentially to be to get a rapid grasp of the facts concerning tuna spawning grounds, migration of the young, and growth rate.

Mothership-type operations, which cover a ground intensively over a short period of time and clean it out at one crack, will probably be a problem from a conservation point of view, but even aside from mothership operations, it seems desirable in the present stage to hasten the adoption of selective gear and fishing methods and the establishment of a system of assignment of fishing grounds in accordance with the size of the vessels.

This latter point is particularly related to the encouragement of construction of larger vessels, and it should be an extremely effective means of relieving the problem of excess fishing power. With the series of nuclear experiments by the British at Christmas Island coming up, the fishermen's association is planning for a shift to the fishing grounds of the Indian Ocean. This, however, as set forth earlier, will have serious effects on the business operations of the fishery just because of the increased distance to the grounds. At any rate, it does represent a step toward the assignment or rotation of fishing grounds, and if it is accompanied by investigations of the resources, it may possibly lead to a regulative policy which will take into account the business management of the industry.

Is There Little Hope for Effect From the Committee's Report?: The Fishery Agency has, while wrestling with the 1957 budget, had on its hands the matter of establishing tuna policies based on the Investigative Committee's report, but with the decision of the cabinet on the budget, the Agency will at the end of this month at last begin work on this matter.

A conference on tuna export policies which includes persons connected with the markets has already taken up where the Investigative Committee left off in the field

of exports, and it is known that they are taking up the problem of agreements on ex-vessel prices. However, on the problem of the licensing system, which should be the keystone of tuna policies, there is ample reason to fear that the matter will be passed off with just some partial reforms.

This is because the reform of the fishery laws is many years in the future, and the tuna fishery, which cannot get free of the fishery rights with which that law is so involved, has no hope for any basic reform at an early date.

Although we now have the report which was made as a result of the setting up of a consultative body by the Kono fishery administration, there are those who think it all the more doubtful that this report will be reflected to any extent in administration for the very reason that the tuna fishery does present such important problems.

Don't Shy Away from the Establishment of Policies: Now that 12 years have passed since the end of the war, one feels that all of the problems of the fisheries have come to light and that the time has come to find the way to stability for the fishing industry. As a beginning, the Fishery Agency is going to examine the reorganization of whaling. When the results on that are out, they will get around to the reorganization of other fisheries, but in the case of tuna, as has been said, the internal maladjustments are extremely bad. Although consistent policies running through conservation--production--distribution--and consumption are desired, wherever one touches the structure there are immediate repercussions of opposition between levels, and that is why the authorities shy away from any reforming of the system, let alone seeking new legislation.

The tuna fishery is up against a great wall, and although in this it shares the fate of the fisheries in general, another reason can be found in the length of the period during which it was let go without policies or management. We hope that the Fishery Agency will go deeply into the actualities of the business operations of the fishery, without wasting time on "careful study," and if they see a need for concrete action, that they will go ahead with enough enthusiasm to set up a tuna policy even if it has to be done in the form of an emergency order.



Mexico

MERIDA SHRIMP FISHERIES TRENDS, JANUARY-MARCH 1957: Shrimp exports from Merida, Mexico, during the first quarter of 1957 totaled 3.3 million pounds, all of which went to buyers in the United States, according to a dispatch from the United States Consul in Merida (April 11, 1957).

Average prices for 15-20 count headless shrimp per pound f.o.b. Brownsville, Tex., were reported to be: 70 cents in January, 68 cents in February, and 75 cents in March. Smaller sizes were approximately 5 cents a pound lower for each size grade smaller than 15-20 count. These prices at Brownsville were approximately 20 percent higher than the prices for the similar quarter in 1956.

Total shrimp landings in the Merida area were good, but the catch per boat fell off considerably. This may be attributed to the increased number of fishing vessels. At the moment, there are approximately 40 more fishing vessels under construction at Ciudad del Carmen and approximately 35 more at Campeche.

Due to the rapid depletion of large shrimp on the banks off Campeche, the Mexican Maritime Department has ordered part of the State shrimping fleet to Veracruz and Tamaulipas, where large shrimp are reported more plentiful. In compliance with the order, 20 fishing vessels moved into the new areas and it is anticipated

that several more vessels will also be transferred to those areas, if found to be necessary.

* * * * *

VERACRUZ FISHERIES TRENDS, MARCH 1957: Catches of fish and shrimp in the Veracruz area were not good at the beginning of the January-March 1957 quarter, but improved at the end of February. Early in March about 660,000 pounds of mackerel were taken near Veracruz and by the end of the month catches were definitely good. The fishermen were receiving about one peso a kilo (about 3.6 U.S. cents a pound) and this price was considered to be high enough to enable the fishermen to make some money. Improvements in the refrigeration plants located in Veracruz, Alvarado, and Frontera may have contributed to the more profitable operations.

During the first quarter of 1957 large brown shrimp have been relatively scarce and the Veracruz area shrimp vessels were catching the smaller less profitable white shrimp found closer to shore (United States Consulate at Veracruz, dispatch dated April 1).

* * * * *

SHRIMP FISHERY TRENDS, MARCH 1957: Shrimp landings by the Mexican shrimp fleets in March followed the pattern established early in 1957. The catch through March on the west coast is falling behind that of 1956 and the catch on the east coast is greater this year as compared with last year.

The National Cooperative Confederation during March was in the process of negotiating shrimp fishing contracts with the boat owners for the west coast of Mexico. The present contract expired on March 15, 1957. The cooperatives were asking for an increase of 1,345.00 pesos (US\$107.69) a metric ton of headless shrimp. This represents an increase of about 4.9 U.S. cents a pound, headless weight.

At Salina Cruz, Oaxaca (the only area open in March for fishing on the west coast because a closed season is in effect for Lower California, Sonora, Sinaloa, and Nayarit beginning with March 15 and probably continuing through May 15) the boat owners agreed to an increase of 1,125.00 pesos a ton plus an additional 30 pesos a ton when the catch per trip was two tons or more. In addition the boat owners agreed to pay for the loading and unloading of the boats. This represents an increase of about 4.2 U.S. cents a pound (heads-off) when the trip is less than two metric tons and about 4.3 U.S. cents a pound when the catch is two tons or more. The boats out of Salina Cruz in March were averaging less than two tons a trip, states an April 18 dispatch from the United States Embassy in Mexico.



Norway

FISHERIES TRENDS, MARCH 1957: The catch of winter herring by Norwegian fishermen for the season that ended February 15, 1957, amounted to about 786,250 metric tons as compared with 1,166,666 tons for the 1956 season. The 1957 herring catch was utilized as follows: for fresh purposes, 98,570 tons; for curing, 83,918 tons; for canning, 13,015 tons; for fish meal and oil, 581,882 tons; for fishbait, 4,087 tons; and used for domestic consumption, 4,778 tons.

As of the first week in March the spawning cod fisheries continued to be disappointing with bad weather contributing to the lower catch. The catch of cod from the Lofoten fishery was only 7,753 tons, down 5,869 tons from the 13,616 tons landed

in a similar period in 1956. The total catch of cod from all districts up to the first week in March 1957 was 26,413 tons as compared with 44,280 tons for the same period last year. The cod catch has been sold as follows: for drying, 6,280 tons; for curing, 14,691 tons; and 5,442 tons for fresh purposes (Fiskets Gang, March 7, 1957).

* * * * *

COD FISHERIES TRENDS TO MARCH 28, 1957: Landings of spawning cod continued to be disappointing, especially from the Lofoten Islands area. The total Lofoten cod catch through March 28 was only 14,800 metric tons, as compared with 49,397 tons landed during a similar period in 1956.

Landings of cod from the Finnmark-More og Romsdal districts were close to 43,456 tons as of March 28, or 46,253 tons below the catch of 89,709 tons landed by this date a year ago. The season's cod catch has been sold for the following purposes: 13,041 tons for drying; 22,768 tons for curing; and 7,647 tons for fresh purposes. In addition, 1,815 tons of cod liver oil have been processed and 2,704 tons of cod roe have been either salted, canned, or sold as fresh (Fiskets Gang, March 28, 1957).

* * * * *

SARDINE ADVERTISING CAMPAIGN IN BRITAIN SPONSORED BY CANNERS: The Norwegian fish canning industry has provided three million kroner (US\$420,000) for a three-year advertising campaign in Great Britain. Industry leaders hope that the Volvo-type agreement for the exchange of Norwegian sardines for British cars will represent a first step in the campaign to win back the British market backed up by the projected advertising campaign.

Before the war, Norwegian sardines were very popular in Britain, about 200,000 cases a year being sold to the British, but postwar sales gave way to British competition.

The British producers are launching a campaign against the sardine-car agreement. A sharp protest to the British authorities is being prepared, in which the agreement is referred to as "dumping," as the sardines are exported at 11.5 percent below the regular price. Norwegian canners, however, maintain that they are not dumping, and that they are selling the sardines at the authorized minimum price, according to press sources quoted by the United States Embassy in Oslo (April 5, 1957).

GOVERNMENT ASSISTANCE TO FISHERMEN PROPOSED: Because of the failure of the Lofoten cod fisheries, many fishermen have suffered severe losses and are unable to finance continued fishing in other waters. The Norwegian Ministry of Fisheries has therefore proposed the appropriation of 7 million kroner (US\$980,000) for loans to fishermen, and 300,000 kroner (US\$42,000) to be added to the Government's Guarantee Fund for Fishermen.



Panama

PINK SHRIMP CATCHES IN 1957 HIGHER: The February 1957 run of pink shrimp (Penaeus brevirostris) promises to exceed all past records, according to a March 28 dispatch from the United States Embassy in Panama City. The pink shrimp run, which usually occurs in March, appeared earlier than usual this year. During February the packing firms operated at capacity level for most of the month and at times the smaller firms had some losses due to the heavy volume.

The early dry season accompanied by the strong northeasterly winds brought the pink shrimp into the Gulf within reach of the Panamanian shrimp boats whose maximum fishing depth does not exceed 50 fathoms. The catch in November-January was about 1 million pounds, well above the total catch of pink shrimp in the 1956 season. Catches of the boats increased steadily from the end of January with the height of the season the last half of February. On February 23, some 131,000 pounds (which was estimated to be about 50 percent of the total catch that day) were unloaded by the boats owned by the Cooperative. The daily catches were spotty in March with a sharp reduction in the first week offset by heavy catches around the middle of the month. Several holidays on which the boats did not go out also reduced the total catch for the month of March.

The Cooperative, principal packer in Panama, reports that it was able to handle all pink shrimp offered by independent boats as well as the catch of its own 52 boats. The bottleneck this year was in the unloading of the boats due to the tide. Three tides were required on several of the heavy days to unload the catch and service the boat for its next trip. The company handled as high as 72,000 pounds of packed and frozen shrimp in a single day. Refrigerated storage space of the national abattoir was used to supplement the firm's own plant facilities. The longshoremen's strike which cancelled one round trip of a ship of The Panama Line, regular carrier of shrimp, placed further strain on limited storage facilities. Four shipments totaling around 68,500 pounds of packed and frozen shrimp were sent to Miami by air freight.

Facilities of the three smaller packers are known to have been taxed heavily and some losses were incurred, particularly in the first week of the heavy run. The total amount of pink shrimp packed by the small companies, however, is 4 to 5 times greater than their production in the 1956 season.

The total catch of pink shrimp for the 1957 season may reach 3 million pounds as compared with 600,000 pounds taken in the 1956 season. The pink shrimp were still being caught at the end of March on an average of 15,000 to 20,000 pounds a day. The water temperature, however, was gradually rising and the pink shrimp were expected to return to deep water.



Peru

CANNED BONITO PACK LOWER: Due to a shift in ocean currents, the 1956/57 Peruvian bonito season, which usually ends in April, has been cut short, points out a March 26 United States Embassy dispatch from Lima. Thus the canned bonito pack for this season will probably be at least 100,000 cases less than that of the previous season (estimated to be between 1.4-1.5 million cases).



Portugal

FISHERIES TRENDS, DECEMBER 1956: Sardine Fishing: The Portuguese sardine catch during December 1956 of 9,531 metric tons (value US\$1,663,000 ex-vessel) was better than average and exceeded that for December 1955 by 2,329 tons. The December sardine catch declined seasonally from the November 1956 catch of 16,906 tons.

Sardines purchased by the packing centers during the month amounted to 6,712 tons (value US\$970,000) or about 70 percent of the catch. During December 1955 the canners purchased 4,303 tons. The fresh fish markets in December 1956 took 2,811 tons and only 8 tons were used for salting.

The principal port of landings for sardines in December was Matosinhos with 61 percent of the catch followed by Setubal with 11 percent and Peniche, 10 percent.

Other Fishing: The December 1956 landings of fish other than sardines was confined to 8,233 tons (value about US\$420,000 ex-vessel) of chinchard. Landings previously unreported for October and November 1956 included 170 tons of tuna, 62 tons of bonito, and 1,678 tons of mackerel (Conservas de Peixe, February 1957).

* * * * *

SARDINE LANDINGS, 1956: Sardines landed in 1956 by the Portuguese fishing fleet totaled 93,172 metric tons, an increase of 11 percent from the 1955 landings of 83,967 tons, points out an April 3 United States Embassy dispatch from Lisbon.

Other species landed by the fleet of 370 boats and from the 13 traps were: chinchards, 33,885 tons (28,233 tons in 1955); anchovies, 4,523 tons (3,918 tons in 1955); other, 32,085 tons (11,162 tons in 1955). The fishing boats alone--excluding traps--accounted for a catch of 93,163 tons of sardines and 66,796 tons of other species.

Of the sardines landed in 1956, 51,202 tons were purchased by canneries and 41,970 tons were purchased as fresh fish for local consumption.

COD FLEET SAILS: The 53 sailing and motor vessels comprising the hand-line cod fleet were assembling in the Tagus River late in March before proceeding next week to the Newfoundland banks, and later to the Davis straits, for the 1957/58 season. The hand-line fishing vessels will have aboard some 4,000 men, mainly dorymen.

The 22 vessels of the cod trawler fleet, with about 1,500 men, preceded the hand-line vessels to the banks. Some units of the trawler fleet left in the latter part of February. The trawlers will return to unload cod cargos during mid-summer, later going to the banks for a second fishing voyage.

The Portuguese cod fleet was reported here to be the largest of the cod fleets, and the fleet this year comprises more vessels and a larger aggregate tonnage than ever before. Modernization of the fleet and the development of improved fishing methods have been achieved along with steady expansion of the industry.

The cod catch rose to a peak of 75,054 metric tons (wet basis) in 1956/57, from 68,537 tons in 1955/56 and 65,238 tons in 1954/55. The total number of vessels (hand-line fishing vessels and trawlers) increased to 75 in the present season from 72 last year and 70 in 1955. The number of fishermen has increased by about 500 since 1954 and there are about 100 additional crew members.

Other species landed by the fleet of 370 boats and from the 13 traps were: chinchards, 33,885 tons (28,233 tons in 1955); anchovies, 4,523 tons (3,918 tons in 1955); other, 32,085 tons (11,162 tons in 1955). The fishing boats alone--excluding traps--accounted for a catch of 93,163 tons of sardines and 66,796 tons of other species.

Of the sardines landed in 1956, 51,202 tons were purchased by canneries and 41,970 tons were purchased as fresh fish for local consumption.

* * * * *

CANNED FISH EXPORTS, 1956: During 1956 Portugal's exports of canned fish amounted to 62,756 tons (3,302,900 cases), valued at US\$37.4 million, as compared with 63,701 tons, valued at US\$32.4 million, for the same period in 1955. Sardines

in olive oil exported during 1956 amounted to 46,695 tons, down 4,730 tons from 1955.

In 1956 the leading canned fish buyer was England with 12,145 tons (valued at US\$7.1 million), followed by Germany with 8,849 tons (valued at US\$5.1 million), Italy with 8,149 tons (valued at US\$4.8 million), Belgium-Luxembourg with 5,707 tons (valued at US\$3.4 million), and the United States with 5,098 tons (valued at US\$3.9). Exports to the United States consisted of 2,629 tons of sardines, 1,881 tons of anchovies, and 39 tons of tuna.

During 1956 the United States was Portugal's fifth best canned fish customer in terms of quantity (8.1 percent) and ranked fourth (10.5 percent) in value.

Portuguese canned fish exports in December 1956 totaled 13,016 tons (685,000 cases), valued at US\$7.9 million, as compared with 6,477 tons, valued at US\$3.3 million for the same month in 1955.

In December 1956, England was the principal buyer of Portuguese canned fish, followed by Belgium, Italy, and Germany (Conservas de Peixe, February 1957).



Spain

VIGO FISHERIES TRENDS, JANUARY 1957: Fishing: Landings at Vigo during January 1957 amounted to about 7.7 million pounds valued at US\$884,506, a decrease in quantity of about 32 percent as compared with December 1956 and about 17 percent as compared with the same month in 1956. The lower January 1957 catch was partly due to unfavorable weather and uncertainty over the cost of Diesel and fuel oil. In addition, the port authorities were trying to force the fishing fleet to carry adequate life-saving equipment, states a February 6 dispatch from the United States Consul at Vigo.

Small hake (Merluccius merluccius) was the principal species landed in January (2.3 million pounds), followed by dollarfish (Brama raii) 1.4 million pounds, and horse mackerel (Trachurus trachurus) 773,149 pounds. Sardine landings amounted to 289,155 pounds (down from 1.4 million pounds in December). Rough weather held the small sardine boats in port during part of January.

During the latter part of January, as is customary at that time of the year, part of Vigo's long-range fishing vessels moved to ports in the south of Spain, especially to Huelva and Cadiz, for fishing off the African coast during the balance of the winter months. The fleet was expected to return to Vigo during the early part of April, if weather conditions are favorable, for fishing off the coast of Ireland.

Other fishing ports of commercial importance in the Vigo consular district are Marin and La Curuna. The landings for these ports for 1955-56 are as follows:

Portuguese Canned Fish Exports, 1956		
Species	1956	
	Metric Tons	US\$ 1,000
Sardines in olive oil	46,695	26,935
Sardinelike fish in olive oil	5,074	4,142
Sardine & sardinelike fish in brine	2,030	487
Tuna & tunalike in olive oil	2,050	1,651
Tuna & tunalike in brine	338	227
Mackerel in olive oil.	5,528	3,295
Other fish	991	415
Total	62,756	37,152

District	1956		1955	
	Quantity 1,000 Lbs.	Value US\$1,000	Quantity 1,000 Lbs.	Value US\$1,000
Marin ... 1/.....	19,950	1,649	30,077	1,691
La Coruna 1/.....	132,076	11,418	117,145	8,621

1/ All ports except El Ferrol.

Fish canning: The fish canneries in the Vigo area operated at a very low level during January 1957. By the end of January, approximately 90 percent of the canneries were idle. The canneries in operation packed small quantities of sardines and dollarfish but were engaged mainly in packing anchovies, received in brine from other parts of Spain. Purchases of fresh fish by the canneries at the Vigo fish exchange amounted to 171,540 pounds during the month as compared with 1,921,051 pounds in December and 815,574 pounds in January 1956. January is usually a slow month for the canneries, but the output this year was far below normal.

Domestic sales of canned fish were practically at a standstill during January 1957. Although this is a normal situation, conditions are different this year because of the uncertainty over prices. It is the general opinion that prices for domestic markets may be increased by at least 15 percent as the result of the new wage scales and other higher operating expenses.

Exports of canned fish were at a low level and, for the dollar areas, were confined mainly to Cuba, Venezuela, and Central American countries. The canneries may not make any great effort to increase exports until they are granted a more favorable rate of exchange. The exchange rate of 33,835 pesetas to the dollar makes it more difficult than ever to meet competition in foreign markets under present conditions.

Note: Values converted at the rate of 1 peseta equals US\$0.0257.

* * * * *

VIGO FISHERIES TRENDS, FEBRUARY 1957: Fishing: During February 1957 landings of fish at Vigo amounted to about 6.6 million pounds, valued at US\$754,767. The February catches represent a decrease in quantity of about 14 percent as compared with the previous month and were about 18 percent under the February 1956 catch. The weather was unfavorable for fishing operations during February 1957.

A closed season for sardines was established from February 15 through April 15, 1957, in the Cantabrian and Northwestern regions. Some fishermen in Galicia (Northwestern region) feel that this measure is not justified at the present time, and that they should be allowed to continue to take advantage of the abundance of sardines in these coasts. However, the official view is that suspension of sardine fishing will help to conserve the existing shoals and increase the future yield. Sardines (scarce during the past 10 years) appeared in great quantities late in 1956 and the early part of 1957, to the extent that what has been known as the "sardine crisis" was considered ended.

Fish Canning: The fish canneries in the Vigo area were practically inactive during February, this is a normal situation for this time of the year. According to the Vigo fish exchange, only 88,164 pounds of fresh fish were purchased by canneries in this area during February as compared with 171,493 pounds during the previous month and 128,564 pounds during February 1956. The main varieties packed were anchovies and dollarfish.

The tinplate situation continues to be the main concern of canneries, and available foreign exchange (20 percent of the value of products exported) is used to buy it. The outlook for an adequate supply of olive oil is good for 1957. Requirements of canneries are estimated at 14,000 metric tons for all of Spain and about 60 percent of this quantity may be needed for fish packing in the Vigo area.

Domestic sales of canned fish continued to be very slow in February. Buyers were probably holding off for possible fixing of prices by the Central Government. The export market continued in a state of flux. Few export sales were made in February. Canneries were waiting for a more favorable rate of exchange and expect to get it. Stocks of canned fish are known to be high.



Surinam

SURVEY OF FISHERIES RESOURCES IN SURINAM WATERS: The Chief of Fisheries, Surinam Department of Agriculture, Animal Husbandry and Fisheries, has informed the United States Consulate in Paramaribo (February 4, 1957) that a survey of Surinam offshore waters will begin in the spring of 1957. The Surinam Government has signed a contract for this work with a United States citizen of Miami, Fla. The shrimp trawler *Coquette*, which will do the job, was expected to leave San Diego, Calif., around March 1, 1957. The contract provides for a three-month survey. The Government is paying US\$18,900 under the contract.

The purpose of the project is twofold: (a) to determine whether large-size shrimp are present in the deeper waters off the coast (on the continental shelf); and (b) learn about what fish may be present in commercial quantities in the same area. It was also indicated that the survey boat might also operate off the French Guiana coast, outside of territorial waters.

The project is part of the Government's effort to assure a continuing shrimp supply for the shrimp-processing plant now established in Surinam.

The plant, which opened last summer to produce frozen shrimp for the United States market, has had difficulties in obtaining a steady supply of the local estuarian-type (small) shrimp. The present shrimp supply is obtained by nets placed in tidal estuaries of the Saramacca and Surinam Rivers. At the same time, the Government wishes to see what fish possibilities there are in addition to shrimp. Up to the present the trawlers available to the Government are too small and underpowered to go out to deep-water.

If the survey indicates that larger shrimp are present, it is expected that the Government would undertake the financing of trawlers large enough to go after the shrimp and perhaps fish that could be used for fish meal to be added to cattle and poultry feeds now being produced for the local market. The prepared feed industry (a private enterprise using imported ingredients plus the local fish meal) has recently tried its hand in the export market.



Sweden

SYNTHETIC MATERIALS FAVORED BY FISHERMEN: Plastic and nylon materials are steadily finding greater use by the Swedish fishing industry, according to the Swedish West Coast Fishermen's Central Association, which reports that nylon thread--short and long fiber thread as well as solid-drawn thread--is ousting cotton yarn as fishing gear material, and that also cordage, buoys, and floats are now to a great extent being made of synthetic materials. This is especially evident as respects trawl floats, and the glass floats are gradually disappearing and being replaced by plastic trawl floats. The weight of a plastic float is about one-third of that of a glass ball of the same size, and its supporting capacity has been found to be considerably greater, states a March 27, 1957, dispatch from the United States Consul at Goteborg.

LARSSON FLOATING TRAWL WINS AWARD. The inventor, Naval Architect Karl-Hugo Larsson, of the Swedish floating trawl (operated by one trawler) was awarded the silver medal at the 1956 International Inventors' Fair held in Paris in 1956

The floating trawl, which has been named the "Phantom" trawl, has recently won general acclaim for its outstanding qualities. Major advantages of the new trawl are (1) it is specially suited for use in combination with modern echo-sounding devices, and (2) can be operated by a single vessel. When so used for pelagic (mid-water) trawling it gives most effective fishing results, and the young fish and spawn are spared.

The "Phantom" trawl has undergone protracted tests by fishery experts and fishing authorities in most North-European countries, who have given it their full approval. Larsson, who has experimented since 1944 with this new type of trawl, based his construction on scientific hydro-dynamic designs and tests at the Swedish State Shipbuilding Tank in Gothenburg.

The usual bottom trawl boards are not very effective for keeping the mouth of the trawl open laterally. Sometimes pelagic trawling is done by two vessels using no trawl boards, but this system has many drawbacks. It can only be used by small vessels, control of the size of the catch is difficult, and the trawl is subject to heavy strain when used in that way. However, after having tried some 15 different models, the inventor designed a "floating wingboard," which moves through the water without touching the seabed. The shearing effect is just about twice that of an ordinary board, and it moves steadily through the water.

During the experiments it was found necessary to make some arrangements for increasing the height of the mouth of the trawl net. After much experimental work the inventor succeeded in designing a self-stabilizing shearing-plane, the so-called "trawl-toad," which can be attached to the headline and footrope by single ropes and works quite automatically. The shearing effect of the wingboard and trawl-toads increases with the square of the speed, which means that the mouth of the trawl net stands well open.

The echo-sounding devices, originally designed for locating submarines during World War II, which are now available for fishing purposes, make conditions for pelagic trawling very good at present. The new type of trawl net seems to be the technical solution of the problem of overfishing in the North Sea, as it leaves the young fish and the spawn unmolested at the greater depths. An incidental advantage is that the design of this trawl obviates the difficulties of being caught in obstructions at the bottom.

Outstanding practical experience has been gained with the use of the new trawl net in combination with echo-sounding instruments. As an instance it may be mentioned that the biggest catch so far recorded was made by the Swedish trawler Patricia, which caught 7 tons of herring in a $\frac{1}{2}$ -hour haul. (The Swedish International Press Bureau, March 30, 1957.)



Turkey

FISHERIES OF BLACK AND MARMARA SEAS: Turkish waters are richly endowed with fishery resources, according to the author who directed a purse seine technical assistance program in Turkey for the International Cooperation Administration. The author and his three assistants (all from California) were sent to Turkey in May 1955 as purse-seine specialists to work with the Turkish Meat and Fish Administration in organizing California-type purse-seine fishing and investigate

the pelagic fish resources in Turkish waters. At the end of the first year, two of the assistants returned to the United States, but the author and one assistant remained until December 1956.



Exploitation of Turkish fishing waters is now carried on largely by private fishermen using small equipment and rather primitive methods. One of the principal fishing methods is the "girgir" system--small boats which operate in pairs trolling with a net. Much of the fishing for the larger species is done by line.

For the investigation, a steel hull German dragger (*Sazon*) vessel was supplied, which had to be converted to purse-seining. Finally, the vessel (71 feet long with a beam of 19 feet) was converted after many delays. During the conversion, four purse-seine anchovy nets from the United States west coast were overhauled and mended, local fishing conditions were observed, and purse-seining was explained to the fishermen.



Fig. 1 - Schools of bluefin tuna follow anchovy in the Black Sea.

It is believed that refrigeration facilities are available, but minor additions are needed to facilitate the handling of fish. Processing and marketing facilities are lacking. Although the refrigeration plant in Istanbul can handle 100 tons of fish a day, it has no conveyor system for unloading boats and such unloading must be done by hand labor.

An extended trip along the Black Sea coast was made by the author and his three assistants to observe fishing methods and the types of fish landed.

Fishing in Turkey is seasonal and for some reason there are sharp year to year fluctuations in the quantity of fish in Turkish waters. Freak runs are very common, particularly among some types. This is especially true of the pelagic fish found in the Black Sea and the Sea of Marmara. The most abundant is the bonito which are thought to spawn in the Marmara

Sea. They are found in the Marmara during certain seasons from spawning size up to six pounds. Supposedly these fish spend the winter in the depths of the Marmara and migrate in the spring to the feeding grounds of the Black Sea. Winter fishermen locate these fish in great numbers in depths of 30 to 60 fathoms.

Turkish fishermen with their present "gir-gir" system are not able to handle the big runs of bonito often encountered. Their frail "girgir" nets often break under the weight of the fish and everything is lost. The boats have no booms to lift the nets. Everything must be done by hand. The boats are open, narrow, and unstable in choppy seas for handling heavy weights over the sides. The "girgir" boats, which operate in pairs, are often towed by motor boats. They also depend a great deal on their own oars to move around. Probably a hundred pairs of these boats are in operation.

Because of the small size, the boats do not venture far out to sea. They have two main fishing grounds. One around the entrance to the Bosphorus (connects the



Fig. 2 - A 400- to 500-ton school of bluefin tuna sighted in Turkish waters.



Fig. 3 - A school of about 200 tons of tuna in the Gulf of Mudanya.



Fig. 4 - A closer view of a school of bluefin tuna.

Black and Marmara Seas) on the Black Sea side and the other in the Marmara Sea. Several species of fish migrate regularly back and forth between the Marmara and Black seas. They accumulate in the autumn around the entrance of the Bosphorus on the Black Sea side as they come down from the Black Sea feeding grounds on the way to the Marmara. During this period fishermen concentrate their attention in the area around the entrance to the Bosphorus on the Black Sea side. Later fishing operations are transferred to the Marmara. In the spring the fish return to the Black Sea. The favorite fishing grounds appear to be between Sinop and Trabzon where anchovies are found in abundance. Large concentrations of bonito can be found here, particularly during July, August, and September. My colleagues and I observed large numbers there in August 1955. We saw local fishermen catching the bonito which often were observed in large schools. Bluefin tuna, Spanish mackerel, and "lufer" were also observed in abundance along this coast. Anchovies appeared to be rather scarce in 1955 and small in size.

The tuna have much the same habits as the bonito. In the spring they migrate to the Black Sea feeding grounds and in the winter they return to the Marmara. All

three species mill around the entrance to the Bosphorus on the Black Sea side from September through November, feeding on anchovies and blue mackerel which appear at the entrance of the Bosphorus at about the same time.

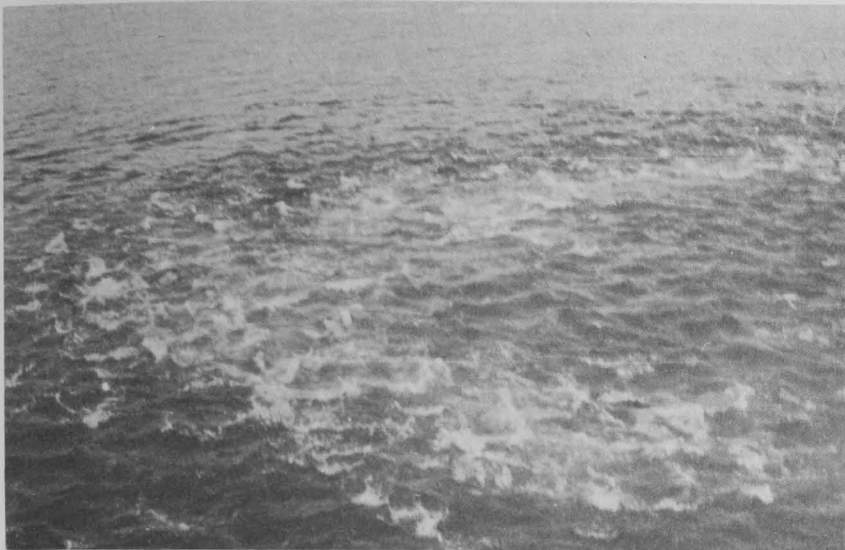


Fig. 5 - School of bluefin tuna.

During this time fishermen make some heavy catches--anywhere from several hundred metric tons to as high as 800 or 900 tons a day. In October 1956, the largest single day's catch was 1,000 tons.

Most of the fish were large and fat having just returned from the summer feeding grounds. Bonito may run up to 7 pounds each in weight. These fish stay rather fat for several months after they come down from the feeding grounds, but in the spring when they again migrate to the Black Sea they are very lean.



Fig. 6 - German-built steel-hull dragger converted for purse-seining in Turkish waters hauling in the purse seine.

The Turkish name for the larger bonito is "torik" and for the smaller one "palamut." These fish are not weighed but are counted in pairs. Annual landings of these fish vary considerably, according to records which have been kept for the last 25 years. There have been poor years in which

only 200,000 pairs or less were landed. In average years from one million to two million pairs were landed. In especially good years, as, for instance during the last two years, nearly 5 million pairs were landed annually. These increased landings are undoubtedly due in part to improved equipment such as better nets and bigger boats. Catches could still be greatly increased, however, by using heavier and stronger nets, but this would require a provision for lifting the nets mechanically rather than by hand as is now done. At present 25 men are used on a pair of "giringirs." The prevailing attitude is, if 25 men are not enough then get 50 men. In addition to being inefficient, this method is very tiring. A modern purse-seine boat with a crew of 11 could handle

100 tons of catch much easier than the 25 men fishing under the "girgir" system could handle 25 tons of catch. The life of a "girgir" fishermen is full of hardship. He is constantly exposed to weather and sea and since he has no protection except for a raincoat, he is usually wet through. There are 18 oars manned by 9 men on each boat. The crews have no hot meals. Practically all of the fishing is done at night. For light they use cotton waste soaked with cheap oil and tied to the end of a stick which is held over their heads. The most important thing which these fishermen have in their favor is weather, which is very good compared to other fishing areas of the world.

The blue or green mackerel is found mostly around the entrance of the Bosphorus on the Black Sea side. This mackerel is found in large schools chiefly from October through December. They are slender, not very big, but excellent to eat. His brother mackerel, or "kolyoz," is found mostly around the Dardanelles in the Sea of Marmara from June through August. This fish is a pale green in color and somewhat larger than the blue mackerel. This species is usually salted. Most of the catch is purchased by the Greek fishermen who come to the fishing grounds in season in their boats. There is a small cannery on Marmara Island which cans and salts small quantities of fish--mackerel, sardines, and anchovies.



Fig. 7 - Hauling aboard the Sazon a bluefin tuna caught with a purse seine in Turkish waters.

The mackerel are usually found running in small schools, ranging anywhere from 2 up to 6 or 8 tons. The fishermen fish for the mackerel day and night. Sardines are also found around Marmara Island, which is near the entrance to the Dardanelles. They are excellent quality, similar to European sardines and very good when salted properly. The sardine season runs for four months from July through October. Fishermen fish for sardines mostly at night with a light. The sardines are found in small schools, usually of not more than two or three tons. These sardines are also fished with beach seines and gill nets.

in small schools. Anchovies are not as abundant in the Marmara as they are in the Black Sea, however.

Anchovies are found more or less in the same area as the sardines and likewise

One of the most interesting observations in connection with the Black Sea trip was the caviar-carrying sturgeons observed in the Kizilirmak and Yesitirmak Rivers. The author spent several days with an interpreter in the mouth of these rivers observing the sturgeon fishing. The caviar from the sturgeon fetch fabulous prices on the market and the meat is also very good. With the present methods employed, sturgeon fishermen are taking only a fraction of the quantity they could take from the mouth of these two rivers. The camps of the fishermen are located at the entrance to the rivers and sometimes the fishermen are isolated for a week or ten days because of the weather. The caviar is salted and preserved, but the meat, which is very good quality, is discarded. The sturgeon come into the rivers to spawn in the early summer.

The "lufer" fish look like Atlantic bluefish or Pacific Coast blue perch. It is a very good fish to eat and it has been observed that the "lufer" follow the same migratory habits as the bonito. Tuna are mostly the big bluefin tuna. This fish also goes back to the Marmara in the fall. There are also other species of fish found on the Black Sea coast, particularly where the anchovies are found. Spanish mackerel ("istavrit") were observed running in large schools and the fish are quite large in size. From this coast are also taken the famous red mullets ("barbunya"). The present harbor facilities along this coast are limited, but with the completion of the breakwater at Samsun Harbor, Samsun will undoubtedly become a center of fisheries development. It is strategically located and if developed should rival the Bosphorus as the fishing center in Turkey. The Bosphorus undoubtedly will remain the greatest fishing center in Turkey because of its two very rich fishing grounds on either side--one in the Marmara Sea and one at the Black Sea entrance. At present the catch is limited because of the primitive equipment and methods employed. Considerable tuna are caught, for example, by hook-and-line fishing, particularly the bluefin which come in large sizes. Bluefin are also caught in a few traps along the Bosphorus, up to 200 or 300 tons in some years. I saw one bluefin tuna which tipped the scales at 1,100 pounds. Better facilities for receiving fish from these grounds are needed some place on the Bosphorus. At present fishermen are sometimes out for periods up to 30 hours. The first fish caught are thrown into the bottom of the boat with additional layers added later as more catches are made. Since no ice is carried, the result is that the first layers of fish have often already started to spoil by the time the boats return for unloading. This is particularly true in warm weather when no protection from the warm sun is provided. Facilities for preserving and handling fish at present are inadequate when large catches are made. I have observed personally large quantities of fish which have been allowed to spoil and were thrown away because the catch was greater than the marketing and handling facilities available to care for them.

The use of explosives to kill fish is also a common practice in various places along the Turkish coast.

The investigation vessel Sazan was not ready for work until April 1956. It was not until this date that the author and one assistant sailed to train Turkish fishermen in purse seining. The net was one of the type used for anchovies. The Turkish fishermen demonstrated they were anxious to learn. After two days, few additional alterations proved necessary, however, and the vessel docked. The vessel was again ready in mid-June 1956. During June and July we made trips to the Marmara Sea to do some exploring for fish and to make observations of casts. Around Marmara Island we saw a number of schools of small anchovies, also schools of small sardines, a few schools of tuna and several hundred schools of medium bonito. Our net was too small to be very successful in catching bonito, but we did catch one ton of medium-size bonito. In late July we set out for the Black Sea. We traveled up to the eastern end beyond Trabzon to Rize. The weather was excellent but few fish were sighted except between Sinop and Trabzon. In the section of the coast between Sinop and Trabzon we saw many fish. In the famous bay of Fatsa, which is the main point at which anchovies gather and on up to Ordu and Giresun, we found abundant fish. On many occasions one could see as many as 10 to 15 schools of fish at one time. Most of these schools were large bonito, but quite a few schools of "lufer" and Spanish mackerel were also observed. The anchovies were abundant but they were small, in fact too small for our mesh. We were able to give the crew much practice in handling a purse-seine net. Our net, however, was too light and too small to use for catching bonito. These were frequently seen in schools of 20 to 30 tons. This trip lasted 22 days, including four days at the Port of Trabzon. This is a very excellent port and we obtained much useful information regarding the fishing industry along this part of the coast. When we returned to Istanbul, our nets had to be cleaned and dried. Our net was treated with a tanning preservative. Nets treated in this manner cannot stay wet too long.

Again, after a few adjustments, we returned to the Black Sea to fish in the entrance of the Bosphorus. We found the fishing very good at night. In early October we transferred to the Gulf of Ismet in the eastern end of the Marmara. Here we saw numerous schools of small sardines, medium-size bonito, and quite a few schools of small anchovies. The most impressive sight, however, was the abundance of tuna. We cast our net in one school that must have been at least 100 tons in size. The fish averaged about 60 to 70 pounds each. We cast our net in this school to prove that tuna could be caught with purse-seining, which is not believed by Turkish fishermen. We must have encircled 60 to 70 tons. Our net was, of course, too weak to hold the catch and in the end we managed to save only about 4 tons. The net was, of course, badly damaged, but we had proved our point that tuna could be caught with purse-seine nets.

Based on my observations and the information which I collected, the Gulf of Ismet is an ideal fishing ground for tuna, particularly in late autumn. Weather is perfect for fishing and there is hardly any current. We continued during October to fish in the Marmara Sea and large schools of tuna were observed in several other areas of the Marmara. A number of schools of sardines or small anchovies were located with echo-sounders. We had the greatest success in catching these fish at night since our net was so small we could not cast deep enough to fish in the daytime.

We continued our fishing throughout November in the Bay of Indjir Liman. In no other place in Turkish waters did we see so many tuna. There must have been up to 500 tons in one school. Although we gave the crew much practice in casting and using the purse-seine nets, our catch of fish was on the whole disappointing. As pointed out earlier, our net was entirely too weak and too small to use for bonito and the tuna. On the other hand, most of the anchovies were too small to be held in the net. They ran in size from three up to 7 or 8 centimeters (about three inches). Since the mesh of our net was one-half inch, it did not hold anchovies smaller than about 9 centimeters. We were told that up to two years ago the anchovy run was much bigger. It appears to be a fact, however, that the fish in Turkish waters run in unpredictable cycles.

Note: Based on an original report by Samuel J. Braco which was edited by Irwin R. Hedges, Chief, Office of Food and Agriculture, U. S. O. M., Turkey.



--BY SAMUEL J. BRACO, IN CHARGE OF
TECHNICAL ASSISTANCE PROJECT FOR
PURSE-SEINE FISHING IN TURKEY

United Kingdom

FIRST SHIPMENT OF AUSTRALIAN SHRIMP: The first consignment of frozen Australian shrimp was expected to arrive at Southampton, England, about the middle of April. The shrimp were packed by the Queensland (Australia) Fish Board and were consigned to a Grimsby, England, distributor, according to the March 29 Fishing News.

The manager of the Grimsby firm stated that the demand for shrimp or prawns is always greater than the supply in England. He also stated that earlier small sample shipments of shrimp were good quality, and on the basis of these samples a larger consignment was ordered.

* * * * *

SUBSIDIES FOR FISHING INDUSTRY, 1939-57: British Government subsidies provided for fishermen in near and middle waters, including inshore fishermen,

since 1939, total close to US\$58.5 million, according to a statement by the Minister of Agriculture and Fisheries (The Fishing News, April 5).

This total is made up as follows: Grants under the Herring Industry Act, 1944, for provision of boats and equipment (United Kingdom) 1946-1953, US\$1,120,000; grants under the Inshore Fishing Industry Act, 1945, boats and equipment, Great Britain 1946-1952, US\$2,240,000; grants under the White Fish and Herring Industries Act, 1953, boats and engines (Great Britain) from 1953 to date (including estimate for 1956/57), through White Fish Authority, US\$9,240,000, through Herring Industry Board, US\$560,000; subsidy to White Fish Industry (United Kingdom) from 1950 to date (including estimate for 1956/57), US\$38,680,000; grants to the Herring Industry Board, respecting the Herring, Oil and Meal Scheme from 1948 to date (including estimate for 1956/57), US\$7,280,000.

* * * * *

FISHING FLEET SUBSIDIES EXPECTED TO END BY 1961: The British Government hopes that the fishing industry will be in need of no more subsidies by 1961, the Minister of Agriculture stated during a debate (March 12) on the White Fish and Herring Industries Bill.

The White Fish and Herring Industries Bill extends the period subsidies will be paid to the white fish industry up to May 1961, to provide grants for the conversion of coal-burning vessels up to 140 feet in length to oil, and to provide a new subsidy to herring fishermen.

In the course of the debate on the bill it was revealed that experiments had been carried out with an aircraft carrying a fish finder. The tests were made with a transducer pulled through the water by the airplane. It is believed that an airplane with a fish finder can cover a wide ocean area in a few hours. Once herring have been located by the airplane it will stay with them until the drifters at sea can make a haul, states The Fishing News (March 15, 1957).

* * * * *

ECHO-SOUNDER EQUIPPED HELICOPTER FOR FISH FINDING TESTED: Fish-finding experiments by helicopter have proved that shoals and their extent can be tracked with an airborne echo-sounder.

Following technical trials (by an air charter firm and a manufacturer of echo-sounding equipment), technicians felt completely satisfied with a helicopter-borne version of an established fish-detecting device. These tests may revolutionize fisheries that are seeking ways and means to locate fish schools between the surface and the sea bottom. If practical fishing trials bear out the preliminary tests, one airborne echo-sounder could lead trawlers to midwater fish schools and reduce the time wasted searching for a favorable spot. On the other hand, practical fishing tests (which will include the economics of the project) may prove that application to the commercial fisheries is not feasible.

In the autumn of 1956 a trial installation of an echo-sounder was made in a helicopter. To obtain an underwater reading equivalent to that obtained from echo-sounders installed on vessels, special bomb-shaped submarine gear was designed to be suspended 20 feet from the aircraft and towed through the water up to 50 knots, the March 22 issue of The Fishing News points out.

Early in 1957, trials off the English south coast established that underwater noise resulting from the downbeat of the helicopter rotors on the surface of the water do not affect the echo characteristics shown on the screen.

The tests also proved that noise arising from the travel of the submarine body through the water at a convenient cruising speed presented no major problem. Some difficulty was, however, encountered in the mechanical problems associated with the towing of the body at speeds in excess of 30 knots.

Subsequent redesign of the submarine gear, and extended trials under different weather conditions enabled the technicians to overcome this problem. Arrangements are now being made to install the equipment in a lighter and more-economical helicopter so that trials can be made under actual fishing conditions in cooperation with vessel owners.

Although the installed equipment is capable of fish detection as efficiently as in its more conventional form, its value from the fisherman's point of view cannot be assessed until full working trials have taken place.

An aircraft operating from a shore base within economical range of seasonal fishing grounds can conduct a search of a large area in a short time and make available information on shoal location to a number of fishing vessels.

Similarly, in principle, a shipborne helicopter operating in fishing grounds in distant waters can conduct a high-speed search to serve a fishing fleet.



PORGY AND THE POGY NOT THE SAME FISH

The name "porgy" is used for any of the porgy family (Sparidae), a spiny-finned group of marine fishes with strong teeth. The commonest of the group is the scup or northern porgy (Stenotomus chrysops), which is known along the Atlantic Coast from South Carolina northward to Maine.

While the porgy is sometimes called "pogie," the name "pogy" refers to the menhaden or mossbunker (Brevoortia tyrannus). This member of the herring family (Clupeidae) is a soft-spined fish with no teeth.

The porgy has some food value while the menhaden is rarely eaten. The latter is of great economic value, however. It is rich in oil, and about 1.3 billion pounds are caught in the United States each year for the manufacture of fish meal and oil. The meal is used to fortify poultry and hog feeds, and the oil has many industrial uses. The menhaden occurs from Nova Scotia to northern Florida and the Gulf of Mexico.

--Sea Secrets, The Marine Laboratory,
University of Miami, Coral Gables, Fla.