ternational

ROPEAN FREE TRADE ASSOCIATION

DUSTRIAL TARIFFS REDUCED NOTHER 10 PERCENT:

On December 31, 1963, the European Free rade Association (EFTA) announced a fur- er cut of 10 percent in the level of tariffs n industrial goods traded between the 7 mem- er countries of the Association (Austria, enmark, Norway, Portugal, Sweden, Swit- erland, and the United Kingdom) and be- ween them and Finland, as associate mem- er of EFTA. But fishery and agricultural roducts are not included in the industrial oods category. This brings the 1964 level industrial tariffs within EFTA to 40 per- nt of what it was on January 1, 1960. Suc- essive accelerations of the timetable for the duction of industrial tariffs, including new cisions of the EFTA Council of Ministers Lisbon in May 1963, have brought EFTA the 40 percent level 2 years earlier than e original timetable laid down in the 1960 ckholm Convention.

The 1963 Lisbon meeting also ruled that e industrial tariffs within EFTA should be duced to zero by December 31, 1966, three rs earlier than the original timetable. uropean Free Trade Association Reporter, nuary 23, 1964.)

: See Commercial Fisheries Review, October 1963 p. 39.

ING LIMITS

DIFIED 12-MILE FISHING LIMIT OPOSED AT EUROPEAN SHERIES CONFERENCE IN LONDON:

A majority of the 16 nations, attending the ropean Fisheries Conference in London ring January 1964, approved a draft agree- nt calling for a modified 12-mile offshore shing limit. The draft agreement provides a 6-mile exclusive fishery limit and an ditional 6-mile belt in which countries with "traditional fishing rights" will be permitted to continue to fish.

A conference communique did not name the countries opposed to the agreement.

Countries attending the conference were Austria, Belgium, Denmark, France, Germany, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

The conference expected to reconvene on February 16. (European Free Trade Association Reporter, January 23, 1964.

Note: See Commercial Fisheries Review, February 1964 p. 59.

FISH MEAL

PRODUCTION AND EXPORTS FOR SELECTED COUNTRIES, JANUARY-OCTOBER 1963:

Member countries of the Fish Meal Exporters' Organization (FEO) account for about 90 percent of world exports of fish meal. The FEO countries are Angola, Iceland, Norway, Peru, and South Africa/South-West Africa. Exports of fish meal by FEO countries during January-October 1963 were up 10.9 percent and their production was up 8.1 percent in quantity from that in the same period of the previous year.

Table 1 - Exports of Fish Meal by Member Countries of the FEO, January-October 1963

Country	July		Aug.		Sept.		Oct.		Jan.-Oct.	
	1963	1962	1963	1962	1963	1962	1963	1962	1963	1962
	(1,000 Metric Tons)									
Angola	0.8	1.1	1.5	3.3	1.5	1.4	3.6	4.4	21.3	25.1
Iceland	7.6	2.9	5.7	10.9	6.1	4.3	10.2	2.4	66.8	58.9
Norway	3.9	3.3	5.4	4.2	5.6	3.6	12.1	6.8	68.6	41.0
Peru	110.3	95.4	83.1	88.9	73.4	56.4	83.3	63.3	964.2	863.9
So. Afr.(inc. S.W.Africa	17.5	16.9	15.6	14.7	20.2	10.2	41.0	10.3	166.7	172.1
Total	140.1	119.6	111.3	122.0	106.8	75.9	150.2	87.2	1,287.6	1,161.0

Table 2 - Production of Fish Meal by Member Countries of the FEO, January-October 1963

Country	July		Aug.		Sept.		Oct.		Jan.-Oct.	
	1963	1962	1963	1962	1963	1962	1963	1962	1963	1962
	(1,000 Metric Tons)									
Angola	1.1	1.2	2.0	3.1	1.3	1.2	3.6	4.8	21.0	24.7
Iceland	6.3	19.1	18.2	29.2	13.3	11.8	0.9	0.4	78.3	92.9
Norway	25.3	36.5	18.3	18.7	14.1	9.4	7.8	11.9	110.0	107.1
Peru	39.2	65.7	38.0	52.4	47.7	64.5	76.8	92.3	903.4	819.3
So. Afr. (inc. S.W. Africa)	29.2	22.1	19.3	11.7	20.8	6.5	17.0	2.6	233.2	200.5
Total	101.1	144.6	95.8	115.1	97.2	93.4	106.1	112.0	1,345.9	1,244.5

International (Contd.):

During the first 10 months of 1963, Peru accounted for 74.9 percent of total fish meal exports by FEO countries, followed by South Africa with 12.9 percent, Norway with 5.3 percent, Iceland with 5.2 percent, and Angola with 1.7 percent. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, January 22, 1964.)

FOOD AND AGRICULTURE ORGANIZATION

1962 WORLD FISH CATCH BY SPECIES GROUPS:

The world fish catch in 1962 was 8.6 percent greater than in the previous year, according to The Yearbook of Fisheries Statistics published by the Food and Agriculture Organization (FAO) of the United Nations. Herring, sardine, and anchovy-type fish formed the largest group taken in 1962. The catch of that group was up 16.4 percent from 1961. The increase was a major factor in boosting world fish production to a record level in 1962. The only important species groups taken in lesser quantity in 1962 were flatfish (down 7.6 percent) and salmon, trout, smelt, etc. (down 28.6 percent).

World Commercial Fish Catch[1/] by Groups of Species, 1961-1962

Groups of Species	1962	1961
	(Million Metric Tons)	
Fresh-water fish	4.67	4.39
Salmon, trout, smelt, etc.	0.55	0.77
Flounder, halibut, sole, and other flatfish	1.21	1.31
Cod, hake, haddock, etc.	5.51	5.06
Herring, sardine, anchovy, etc.	14.66	12.59
Tuna, bonito, mackerel, etc.	2.38	2.11
Mullet, jacks, seabass, etc.	4.27	4.03
Sharks, rays, etc.	0.37	0.34
Unsorted and unidentified fish	6.95	6.68
Crustaceans	0.96	0.88
Molluscs	2.53	2.29
Aquatic plants	0.66	0.71
Total	44.72	41.16

1/Live weight or whole fresh weight basis.

* * * * *

WORLD TUNA-LIKE FISH CATCH, 1962:

A record world catch of 2,380,000 metric tons of tuna, bonito, mackerel, and other tuna-like fish was made during 1962, according to The Yearbook of Fisheries Statistics of the Food and Agriculture Organization (FAO) of the United Nations. The 1962 catch of those fish was up 13 percent from the previous year. The tuna, bonito, and mackerel group represented 5.3 percent of the 1962 world fish catch of 44.72 million tons.

Japan was the leading producer of tuna and tuna-like fish in 1962 with landings of 1,167,800 tons, just under one-half the world total. Thus Japan improved on her own previous tuna-like catch record of 1,036,700 tons in 1961.

The United States was second with a 1962 tuna catch of 169,700 tons. That was a drop of 9,300 tons from the 179,000 tons caught in 1961.

Peru came third with a catch of 151,500 tons, topping the previous Peruvian high of 146,500 tons caught in 1961. Spain was fourth with 72,300 tons--29,400 tons above her 1961 catch, but still slightly below her record tuna catch of 73,500 tons in 1958.

The only other countries to catch over 50,000 tons of tuna or tuna-like fish in 1962 were China (Taiwan) with 65,700 tons, and India with 62,900.

* * * * *

DIRECTOR-GENERAL RE-ELECTED AT NOVEMBER 1963 CONFERENCE:

B. R. Sen of India was re-elected on November 27, 1963, to serve as Director-General of the Food and Agriculture Organization (FAO) until the end of 1967. He was first elected Director-General in September 1956, following the resignation of Dr. Philip Cardon of the United States and was then re-elected in 1959.

D. R. Sen.

In thanking the FAO delegates, Sen called FAO an "indispensable forum" for the solution of some of the world's most urgent problems and called upon the Organization's member nations to help him in preserving that forum's strength.

Eight new countries were admitted as members or associate members of FAO at the Conference held the latter part of 1963. Algeria, Burundi, Rwanda, Trinidad and Tobago, and Uganda were elected members and Kenya, Malta, and Zanzibar were admitted as associate members. FAO now has 112 members and associate members. (An associate member differs from a full member only in that it does not have a vote at Conference sessions.)

rnational (Contd.):

The Conference also voted to elect Georges raoui of Lebanon as Independent Chairman he 27-Nation Council which governs FAO ween biennial sessions of its Conference. eplaces Louis Maire of Switzerland who served in the post since 1959. Haraoui member of the Lebanese Parliament and rmer Cabinet Minister.

The FAO Conference decided that the num- of seats on the FAO Council would be in- ased to either 30 or 31 from the present member seats. The Conference, however, uested the Council to make recommenda- ns as to whether the increase in seats ll be 3 or 4, to which regions the w seats should be allocated, and wording to nge the FAO Constitution in order to pro- e for the increase. The Council's recom- ndations will be submitted for adoption to 13th Session of the Conference, which will held in 1965.

* * * * *

SHERIES DEVELOPMENTS IN Y OF BENGAL, ARABIAN SEA, D PERSIAN GULF PROPOSED:

The Food and Agriculture Organization O) Conference asked the Director-Gener- o help member governments in preparing t projects to exploit marine resources in Bay of Bengal, the Arabian Sea, and the rsian Gulf. The Conference's Commission asked FAO's help in getting financial and r help from the United Nations (UN) Spe- l Fund and from other agencies in execu- the projects.

The Government of Pakistan, jointly with r governments, had proposed two such jects, one for fishing in the seas adjoining east coasts of Pakistan and Burma, and other for the Arabian Sea, the Persian f, and other waters adjoining the coasts ran, Pakistan, Iraq, Kuwait, Saudi Arabia, other countries. All those countries sup- ted the proposal.

A resolution adopted by the Commission ed the Director-General to give urgent istance to those countries in the joint jects, pending the help which might be ob- ed from the UN Special Fund and other ncies.

The resolution says there was urgent need "for comprehensive projects to be carried out by the governments . . . severally and jointly with the help of FAO and the financial assistance of the UN Special Fund and/or other aid resources. . . ." The projects would include oceanographic and biological surveys and exploration of fishery resources; economic and marketing surveys of fish and fish products; measures to improve fishing boats, gear and nets, and work on the design and location of fish harbors, jetties, cold-storage and processing plants. (FAO, Rome, December 3, 1963.)

SALMON

INTERMINGLING OF UNITED STATES AND CANADIAN PACIFIC SALMON UNDER STUDY:

An informal committee to study king and silver salmon along the Pacific coast was formed after a meeting during November 1963 in Vancouver, British Columbia, between Canadian and United States fisheries officials. The study was considered desirable because United States and Canadian stocks of those species are harvested in many areas by commercial and sport fishermen of both countries. There has also been a general decline in king salmon catches during the past few years.

The committee will first review available information on the migratory movements of king and silver salmon. This will be done to determine where and when fish bound for United States and Canadian streams intermingle and the extent of such intermingling in areas where fishing takes place. The review can provide the basis for joint research programs wherever it is indicated additional information is needed.

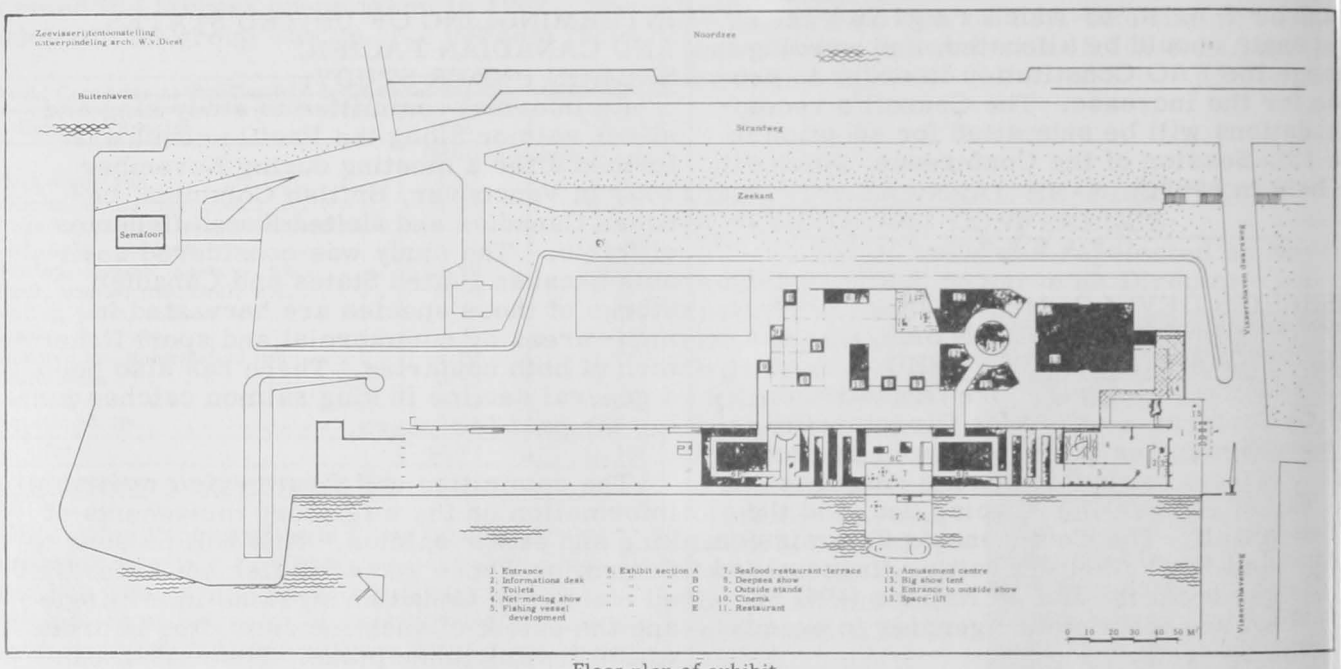
The Canadian members of the committee are the Director of the Nanaimo (B. C.) Biological Station of the Fisheries Research Board of Canada, and the Pacific Area Director of the Canadian Department of Fisheries. United States members are the Pacific Northwest Regional Director of the U. S. Bureau of Commercial Fisheries, and the Director of the Pacific Marine Fisheries Commission. A technical working group is being appointed by each country to assist the committee. (Canadian Department of Fisheries, Trade News, November-December 1963.)

International (Contd.):

INTERNATIONAL FISHERIES EXHIBITION PLANNED FOR SCHEVENINGEN IN THE NETHERLANDS

The international fisheries exhibition described as Scheveningen 64, "Rijk is de Zee" (Rich is the Sea), will be held July 17-29, 1964, at Scheveningen on the North Sea, which is essentially a part of The Hague in the Netherlands. Scheveningen is both a fishing port and seaside resort area and the exhibition is to be held in and around the new fish auction rooms of that port.

The new fish auction hall along the first inner harbor at Scheveningen, Holland.



Floor plan of exhibit.

Organizations and institutions in the Netherlands as well as those in other countries have shown considerable interest in the exhibition and discussions have been held with many fishery nations on participation and contributions.

Plans call for the exhibition to be a gala event including a completely decorated first inner harbor as well as fully decorated fishing vessels and other craft calling at the port. All of the fishing ports in the Netherlands are expected to contribute to the event.

A terrace is planned to be built over part of the harbor adjacent to a special seafood restaurant overlooking the sea. One of the main attractions at the exhibition will be a deep-sea show. By means of a skillful ultra-violet illumination system, visitors to the show will have the impression that they are walking below sea level.

Note: For additonal information write: M. Van de Meeberg, Adviesbureau voor Public Relations, Lange Voorhout 16, 's-Gravenhage, Netherlands.

WHALING

FLEET COMPOSITION OF 1963/64 ANTARCTIC WHALING SEASON:

A total of 16 factoryships were used during the 1963/64 Antarctic whaling season. This is one factoryship less than in the 1962/63 season as the British vessel Southern Harvest, which was sold to Japan during

ernational (Contd.):

63, did not participate in the 1963/64 sea-
n. With the Japanese purchase of the
uthern Harvest in 1963, the United King-
m became a nonwhaling nation in the latest
tarctic whaling expedition. The Southern
rvest was a sistership of the Southern
nturer which was purchased jointly from
British in June 1962 by Japan's three
aling companies in conjunction with an-
er Japanese fishing firm.

No definite information is available at
s time on how many catcher vessels the
r Soviet factoryships are using. If the
timate is used of 70 Soviet catcher vessels
e same as calculated for the 1962/63 sea-
n), the 16 factoryships operated by the four
aling nations participating in this season's
pedition would be using a total of 192 catcher
ssels.

Antarctic Whaling Fleets, 1963/64 Season With Comparisons						
Country	1963/64		1962/63		1961/62	
	Factoryships	Catcher Vessels	Factoryships	Catcher Vessels	Factoryships	Catcher Vessels
way	4	33	4	32	7	71
ted Kingdom	-	-	1	9	2	22
herlands	1	11	1	11	1	15
n	7	78	7	79	7	85
S. S. R.	4	1/70	4	70	4	67
Total	16	192	17	201	21	260
timated.						

The two land stations on South Georgia--
rytviken and Leith Harbour--were leased
the Japanese whaling companies for the
63/64 season. Grytviken, which was ac-
ated from October 1 to November 30, 1963,
ring the previous season, is using 8 catch-
vessels. Leith Harbour, which was to op-
te during the whole permissible catching
son (October 1, 1963 to March 31, 1964),
to use 7 catcher vessels, except during
period from October 31, 1963 to March 1,
64, when possibly only 5 catcher vessels
ght be used.

Of the 192 catcher vessels used during
1963/64 season, 4 were built before 1940,
during 1940-49, 95 during 1950-59, and
during 1960-62. (Norwegian Whaling
zette, December 1963.)

: See Commercial Fisheries Review, October 1963 p. 63;
ptember 1963 p. 84; August 1963 p. 78.

Aden

INTERNATIONAL INTEREST IN GULF OF ADEN FISHERIES:

During June through October 1963, international fishing activities in the Gulf of Aden and southern Red Sea waters showed a great increase over previous years. By far the greatest interest was shown by the Soviets, although the British, Americans, and Italians did some survey work.

In mid-1963, a small Soviet fleet of purse-seine vessels supported by a carrier vessel and a refrigerated mothership operated in the central Gulf of Aden along the north coast of Somalia, and also adjacent to Aden. Yellowfin tuna, skipjack tuna, and large jack mackerel were the main catch of the Soviet purse seiners. They claimed to have averaged about 15 good fishing days per month and a catch of 10 metric tons per day per vessel.

In the fall of 1963, tuna schools began to swim deep and below the reach of the purse-seine nets. Since the Soviet vessels were not equipped for long-line operations, they returned to their Black Sea ports. With suitable alterations to their purse-seine equipment, they are expected to return to the Aden area in May 1964.

Two Soviet stern trawlers operated along the coast of the eastern Aden Protectorate in the summer of 1963. The vessels, the Alushta and the Shota Rustaveli, claimed excellent results. Catches were said to have reached 30 tons per day per vessel, and 1 of the 2 claimed to have taken 400 tons in 20 days. The fish taken by the trawlers were sold mainly in Colombo, Ceylon. The vessels used Aden as a source of supplies and fuel.

It has been reported that an Egyptian delegation visiting Moscow in late 1963, attempted to negotiate arrangements for Soviet fishing

Aden (Contd.):

vessels in the Indian Ocean and Red Sea to take their catches directly to Port Suez for sale.

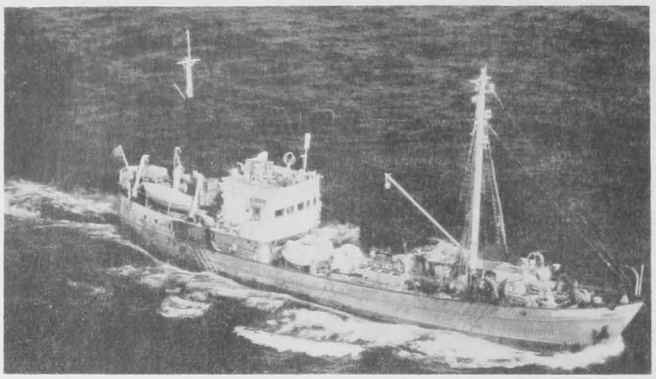


Fig. 1 - Soviet research vessel Konstantin Boldyrev.

Soviet research vessels, including the Konstantin Boldyrev and Vladimir Vorobjov, have been active in the Gulf of Aden and the Red Sea as far as the Sudanese coast. They have indicated that Yemen coastal waters may have a rich fisheries potential.

Fig. 2 - Soviet research vessel Vladimir Vorobjov.

Genepesca VII, a privately-owned Italian fishing and survey vessel, has carried out tuna investigations along the Somali coast. During the summer of 1963, the Italian vessel's highest tuna catch rate with long lines was 50 percent with a consistent catch rate of 15 to 20 percent as far west as Berbera.

Discovery II, a British research vessel, visited Aden following a survey expedition in the north Indian Ocean. In early October 1963 the United States research vessel Anton Bruun was in Aden before continuing her researches in the Gulf of Aden and northern reaches of the Indian Ocean adjacent to Muscat and Oman. Partly as a result of those and other visits which are a part of the International Indian Ocean Expedition, the Fisheries Department of Aden expects to begin tagging yellowfin tuna in 1964. This should reveal information on the movements of the different age groups of tuna in the Gulf of Aden. (United States Consulate, Aden, December 12, 1963.)

Note: See Commercial Fisheries Review, February 1963 p. 66, May 1963 p. 56.

Angola

FISH CANNERY PLANNED FOR ANGOLA BY SOUTH AFRICAN INTERESTS:

A fish cannery is planned in Angola by South African interests. A South African company with South African and South-West African directors and capital has bought control of two fish factories in Angola, according to the The Windhoek Advertiser of December 23, 1963, and the Johannesburg Sunday Times of December 22, 1963.

The new joint South Africa-Angola company has 2 South Africans and 5 South-West Africans as directors. The group states that the two Angolan factories are at present worth R1,500,000 (US$2,115,000). A development program for the factories was discussed at a directors' meeting in Cape Town. At present the factories have no facilities for canning, but are confined to the production of fish meal and fish oil. One of the factories is now producing 200 tons of fish meal per day, which has sold for R80 ($122) a short ton, and fish oil from the same plant is said to have been sold at R200 ($282) a ton.

A spokesman for the group announced:

"In addition to establishing the first fish-canning factory in Angola, we will fly fresh rock lobster, crab, and prawns to Johannesburg via Luanda... . The authorities in Luanda will not restrict us in any way."

There is now a Luanda-Windhoek weekly air service operated by the Portuguese airline DTA, and South African Airways' own Boeing 707's now land in Luanda en route to

Angola (Contd.):

al from Europe "by sea." It is the introduc-
n of the latter service which makes possi-
the export of fresh shellfish from Angola
the Johannesburg market. (United States
nsulate, Cape Town, December 31, 1963.)

Australia

FISHERIES LANDINGS, 1962/63:

Australian fisheries landings in fiscal
ar 1962/63 (July 1962-June 1963) were up
6 percent in quantity and 3.6 percent in
ue from those in the previous fiscal year.
th the exception of crab, there was some
n in landings of all leading fishery items.
Shrimp landings showed the greatest gain
th an increase of 35.3 percent in quantity
d 42.2 percent in value due to heavier pro-
ction in New South Wales, Queensland,
d Western Australia. Landings of spiny
bsters were up 5.9 percent in quantity but
wn 4.2 percent in value.

New South Wales was Australia's leading producer of shrimp, finfish, and oysters in 1962/63. Western Australia was the leading producer of spiny lobsters, and also made rapid gains in shrimp production during 1962/63. (Australian Fisheries Newsletter, December 1963.)

Note: See Commercial Fisheries Review, March 1963 p. 45.

Canada

FISH CATCH, 1962:

Canada's fish catch in 1962 reached an all-time high of 1,115,100 metric tons with a record ex-vessel value of C$128,730,000 (US$119,000,000), according to The Yearbook of Fisheries Statistics of the Food and Agriculture Organization (FAO) of the United Nations. The 1962 catch topped by 9,600 tons the previous Canadian high of 1,105,500 tons caught in 1956. It was 95,500 tons above the 1961 Canadian catch of 1,019,600 tons valued at C$110,639,000 (US$102,000,000).

Table 1 - Australia's Landings[1/] and Ex-Vessel Value of Fishery Products, 1961/62 and 1962/63[2/]

Species	1962/63			1961/62		
	1,000 Lbs.	A£1,000	US$1,000	1,000 Lbs.	A£1,000	US$1,000
Fish	80,587	6,122	13,713	78,526	6,075	13,608
Spiny lobster	30,532	5,570	12,477	28,821	5,815	13,026
Shrimp	12,616	1,906	4,269	9,322	1,340	3,002	
	843	82	184	875	79	177
Oysters	13,028	1,123	2,516	12,613	1,014	2,271
Scallops	6,498	245	549	5,172	193	432
Other shellfish	987	38	85	1,030	45	101
Total[3/]	145,091	15,086	33,793	136,359	14,561	32,617

1/ Landed weight.
2/ Preliminary.
3/ Includes landings in Australia's Northern Territory, but excludes fresh-water fish landings in Queensland.
4/ Australian pounds converted to US$ at rate of £1.00 equal US$2.240.

Table 2 - Australia's Fishery Landings by States, 1961/62 and 1962/63[1/]

Species	New South Whales		Victoria		Queensland		South Australia		Western Australia		Tasmania	
	1962/63	1961/62	1962/63	1961/62	1962/63	1961/62	1962/63	1961/62	1962/63	1961/62	1962/63	1961/62
	(1,000 Pounds)											
Fish	31,598	27,071	12,011	12,259	2/9,041	2/8,834	16,137	15,059	8,017	8,895	3,467	6,182
Spiny lobster	498	398	1,080	1,138	31	58	4,650	4,025	20,512	19,238	3,761	3,964
Shrimp	6,623	4,678	4	4	4,971	4,400	-	-	1,017	239	-	-
	228	190	-	-	571	625	-	-	36	59	-	-
Oysters	12,604	12,204	63	65	330	323	-	-	28	10	1	1
Scallops	-	-	-	-	627	400	-	-	3/	-	5,871	4,772
Other shellfish	-	-	860	899	119	117	-	-	8	14	-	-
Total	51,551	44,541	14,018	14,365	15,690	14,757	20,787	19,084	29,618	28,455	13,100	14,919

1/ Preliminary.
2/ Exclusive of fresh-water fish landings in Queensland.
3/ Less than 500 pounds.
4/ Total Australian fisheries landings shown in table 1 are greater than the combined total landings in the individual states which do not include landings in the Northern Territory.

Canada (Contd.):

Canada's catch represented 2.5 percent of the 1962 world catch of 44.72 million tons, and ranked Canada number seven among the major fishing nations, behind Japan, Peru, Mainland China, the Soviet Union, the United States, and Norway.

About 850,000 tons of the 1962 Canadian catch was used for human food in fresh, frozen, cured, or canned form. The remainder was processed into fish meal and oil to be used for animal feed and miscellaneous purposes.

* * * * *

FEDERAL-PROVINCIAL CONFERENCE ON FISHERIES DEVELOPMENT:

The first Canadian Federal-Provincial Ministerial Conference on Fisheries was held in Ottawa, January 20-24, 1964. The Ministers concluded that the fishery resource in Canada's inland waters and coastal seas can support a long-term expansion of the fishing industry. The future for Canadian fishermen is bright if a progressive program of education, modernization, and economic encouragement is adopted. The representatives of the Canadian Federal Government and the 10 Provinces agreed to cooperate in working out a national fisheries development program patterned after that in effect for Canadian agriculture.

Such a fishery program would include measures to: (1) expand the available resource, (2) improve catching and processing methods, (3) diversify products and improve quality, and (4) expand markets and reduce price uncertainty. The program would be designed to bring about greater productivity and efficiency in all phases of the fishing industry. It would also have to consider the increasingly important sport fishery.

Many aspects of the fisheries were considered at the Conference. Some of the conclusions reached follow:

The Conference clarified the responsibilities of Federal and Provincial governments in various phases of administration and development. Although the Federal Government has sole responsibility for the enactment of fishery regulations in coastal and inland waters, enforcement in many instances has, by agreement, been undertaken by Provincial authorities. The Federal Minister agreed to facilitate administration of regulations as much as possible through appropriate delegation of authority, and to discuss those problems with interested Provinces.

The Provincial representatives unanimously supported the plan of the Government of Canada to establish a 12-mile exclusive fishing zone measured with straight baselines from headland to headland. The new fishing limits would include such waters as the Bay of Fundy, the Gulf of St. Lawrence, Dixon Entrance, Queen Charlotte Sound, and Hecate Strait as Canadian waters.

The Conference stressed the importance of expanded efforts to discover unexploited stocks in ocean and inland waters. Increased explorations are to be undertaken by the Federal Government.

The need for continuing strict control to prevent poaching in the lobster fishery was emphasized.

Considerable interest was shown by several Provinces in the development of commercial fish farming.

The problem of pollution was recognized as being one of th most serious facing the fisheries today. The need was emphasized for corrective measures. The importance of fisheries representation on pollution boards was generally agreed upon.

The meeting recognized the tremendous and increasing importance of sport fishing. Although promotion of sport fishing is generally a Provincial matter, the Federal Department of Fisheries has responsibility for managing anadromous species (such as salmon) and, in some Provinces, other species as well.

The Conference stressed the importance of basic research to guide conservation and expansion of fishery resources as well as to improve processing techniques. Also emphasized was the need for more applied research and for more effective communication of the results to fishermen and the industry. It was agreed that the Federal Government, through the Fisheries Research Board, has responsibility for research wherever it may be required, especially in its more fundamental aspects. The Federal Minister agreed that the research effort would be increased insofar as funds and qualified personnel permit.

It was recognized that Canada is in a good competitive position through her proximity to very productive fishing grounds. This opportunity could be used to better advantage by adopting the most modern techniques whether developed in Canada or elsewhere. Assurances were given to the Provinces that the Federal Government intends to expand its technical development services, adapting, testing, and demonstrating new techniques in cooperation with the Provinces.

Attention was drawn to the excellent coordination of effort brought about through the Federal-Provincial Atlantic Fisheries Committee on which five East Coast Provinces and the Federal Department of Fisheries are represented. The Provinces in Canada's central area asked that a similar committee be set up for the Prairie Provinces.

The Conference paid particular attention to the need for better education of fishermen as well as others associated with the industry. It noted the steps being taken by several Provinces to meet this need and the very useful contribution of the Federal Department of Labor through its vocational training assistance program. Much, however, remains to be done and the Conference unanimously recommended greatly increased efforts by all concerned. It was hoped that a greater share of the expanding program of the Federal Department of Labor might be devoted to fisheries. The Federal Department of Fisheries also announced its intention to increase its efforts to give specialized advice and assistance.

The Conference stressed the importance of effective long-term planning to provide adequate harbors, marine works, and navigational aids to meet the changing needs of the inshore and offshore fisheries. It recommended the establishment in each Province of a continuing committee representing the appropriate Federal and Provincial agencies to carry out the engineering and economic studies needed for guidance.

The important question of market development was thoroughly discussed by the Conference. On the problem of export market expansion, the Federal Minister of Trade and Commerce outlined the activities of his department and offered its full cooperation in expanding old and opening up new markets for fishery products. The Conference discussed in detail the possible usefulness of marketing board techniques (similar to those of the Canadian Wheat Board) for the handling of the salted cod production of the Atlantic Provinces and the fresh-water products of the inland lakes. It was agreed that the subject required further specialized study. Arrangements were made for an early meeting between representatives of the Provinces of Ontario, Manitoba, Saskatchewan, Alberta, and the Federal Government to consider establishing a fresh-water fish marketing board. Arrangements were also made to hold a meeting of representatives of the Atlantic Provinces to discuss a proposal put forward by Newfoundland for the establishment of a salted cod marketing board.

The Conference considered present arrangements for the provision of financial assistance to fishermen and the fishing industry. The general view appeared to be that present arrange-

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rs suffered from a lack of coordination and in some particu- nstances failed to meet requirements. The consensus was the objectives of a fisheries development program called he investment of public and private funds in a coordinated omprehensive program, designed to operate on a national but adapted to regional needs. Such a program would in- improved credit facilities and some adjustment of pres- ssel construction assistance measures. It was generally at Provincial loan agencies could best meet the capital requirements of fishermen, but the view was expressed e Federal Government might assist through making avail- dditional capital for such purposes.

e Federal Minister said that the need for assistance com- der the main headings of credit, subsidies, and grants d in different Provinces and areas. He suggested that the r should be further discussed between the Federal and ncial Governments on a regional basis. (Report by Cana- Minister of Fisheries, Ottawa, January 24, 1964.)

* * * * *

SHERIES MINISTER EMPHASIZES ED FOR SCIENTIFIC RESEARCH:

The need for a scientific basis to maintain develop Canada's fisheries was empha- ed by the Canadian Fisheries Minister in essage on January 4, 1964, to the opening he annual meeting of the Fisheries Re- rch Board of Canada. The protection of fisheries resource through domestic or rnational regulation of fishing depends research into many important stocks, said Minister, and the hope for improvement he resource through cultural methods de- ds on biological research of a complicated basic nature. Canada's competitive po- on, internationally, depends on the quality volume of her research effort on the high s. The Minister also mentioned the de- lence of industry on research for the nical development of processing tech- es.

he Fisheries Research Board of Canada ade up of 18 members who serve with- salary and are drawn from the scientific s of Canadian universities, the fishing stry, and the Government. The Board cts the scientists, oceanographers, and nologists working from seven research ons throughout Canada. (Canadian De- ment of Fisheries, Ottawa, January 6, 4.)

The following reports and subjects on re- rch conducted by Canadian fishery labora- es and stations were discussed at the an- meeting of the Fisheries Research Board anada, held in Ottawa in early January 4:

COD POPULATION IN NORTHWEST ATLANTIC STUDIED:

Cod spawn progressively later in the south than in the north in the Newfoundland area, and the largest fish are generally the last to spawn. This was brought out in maturity studies carried out by scientists attached to the St. John's (Nfld.) Biological Station of the Fisheries Research Board of Canada. In their 1963 studies, the scientists found that, in April, spawning was nearly completed in the Labrador and Northeast Newfoundland Shelf area, although it had not yet begun on the northeastern Grand Bank. On the northern Grand Bank, spawning was almost completed by the latter half of May.

For age and growth studies of the cod, the fisheries scientists collected about 20,000 pairs of otoliths (ear bones). The otoliths were taken from fish caught in inshore and offshore waters and will be examined at the St. John's laboratory.

The 1963 cod study also covered routine sampling of the inshore fishery. This will provide biological background information to be used in population studies of cod in the area. The sampling was carried out in the spring, summer, and fall at regular sampling stations in several of the larger fishing ports. Commercial fishermen working the inshore waters reported varying regional success with traps, and generally poor results with other gear throughout the season. The nylon gill net became an important gear in use in many localities.

The studies revealed that, in the inshore fishery, cod are first retained in numbers by cod traps at four years of age. During 1963, the bulk of the trap catches consisted of cod in the 5- and 6-year age group. For the various line gears, cod aged from 6 to 8 predominated. But in the fishery using nylon gill nets, most of the cod caught were of large size, age 8 and older.

NORTH ATLANTIC LOBSTER INDUSTRY:

Studies of the North Atlantic lobster (Homarus americanus) from the larval stage to marketing, and the economic effects of maritime lobster regulations were discussed at the annual meeting of the Fisheries Research Board of Canada, held in Ottawa early in January 1964. Over the years a very large store of knowledge has been built up around that marine crustacean which is the source of millions of dollars in revenue to Canadian and United States fishermen. The catch of about 50 million pounds a year and its generally high price make the lobster the most valuable single species taken by Canadian fishermen.

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At the January meeting, present and future research on marine crustaceans was discussed. Scientists of different disciplines, while stating that much has been learned about the lobster, reported that there are still many unknown factors which must be studied, and they are collaborating in the effort to throw more light on the subject. Biologists and technicians at the St. Andrews, N. B., Biological Station of the Board are concentrating on the biological aspects, and scientists at the Board's Technological Research Laboratory in Halifax, N. S., are centering their attention on the chemistry of the Atlantic lobster. At the same time economists of Canada's Department of Fisheries are examining the structure, organization, and operations of the lobster fishing enterprise in the Atlantic provinces.

Management of the lobster fishery was essential to continued productivity, stated one of the biologists associated with studies conducted at the St. Andrew's station. He described the application of size limits and fishing seasons, which vary in different areas of the Canadian Atlantic coast, on the stocks of lobsters. In the area east of Halifax the fishing season usually lasts two months, generally in the spring; west of Halifax the seasons are longer but extend through the winter and early spring. Peak lobster landings are made in May and June. The biologist said that short fishing seasons did not necessarily reduce the catch, as the fishermen tended to increase their fishing during the shorter open seasons. While the productivity of lobsters is conditioned more by natural factors than by regulations, the latter are necessary not only from a conservation standpoint but for their economic effects.

The meeting was told that interaction of the biological and the economic factors is particularly intense in the lobster fishery. An official of the Economics Service of the Federal Department of Fisheries described the economic effects of regulations as divided into three main categories: (1) administration, such as licensing of fishermen, the establishment of fishing districts and limitation of the number of traps; (2) conservation, including limitation of the type of gear, minimum size limits, length of seasons, and prohibition of the taking of egg-bearing lobsters; and (3) marketing, which was related to the allocation of fishing seasons by districts and minimum size limits.

The physiological aspects of lobster research, both in relation to the shipment of live lobsters and the lobster in its natural environment were reported on by two scientists of the Board's St. Andrews station. Scientists who are also SCUBA divers have begun an underwater study in certain sections of Northumberland Strait to determine where lobster larvae settle after they leave the free-swimming stage which they enter when the eggs are released from the female, and sink to the bottom of the ocean. These larval studies were begun 20 years ago, and one of the aims is to find out if future stocks can be predicted on the basis of larval abundance. The underwater work is tied in directly with laboratory observations on the commercial possibilities of lobster stocks, made with a view to aiding the lobster industry.

Fisheries technologists engaged in studies at the Halifax laboratory are directing their attention to the chemistry of the lobster. With the rapidly increasing demand for live lobsters, scientists are seeking more information on the effects of live-holding on the physiological condition of the lobsters and their ability to withstand infection and the stresses of live-holding and shipment of the lobsters themselves. Reporting on this aspect, it was stated that many factors are involved, and if not properly controlled can lead to the death of lobsters with ensuing financial losses to the industry. Biochemists have proved that the constituents of the lobster's blood, particularly the blood cell counts, are altered during live-holding and can serve as indexes of the general health of lobsters. Experiments have shown that weakened lobsters can be strengthened and the resistance to infection increased by proper feeding in fresh sea water.

Research by biologists has proved that lobsters generally remain in a local area and that they move about very little. A member of the Board pointed out that lobsters are internationally known when it comes to marketing. The Board member, who operates one of the biggest if not the biggest lobster holding pound in the world, said that within hours after the lobsters are caught on the Atlantic coast, they are ready to be eaten in such widely separated cities as Ottawa and Paris, and in countries including Holland, Belgium, and throughout the United States. He added that there were probably more lobsters flying the Atlantic Ocean today than people.

While acknowledging the enormous amount of research already done on lobsters, it was pointed out at the Board meeting that further studies were required in catching, handling, processing, and shipping. There was great concern over the loss of lobsters through natural mortality after they are caught and it was felt that more knowledge of the species, which would indicate improved handling and holding conditions, might counteract this loss. In such research, it was felt that the Fisheries Research Board, the Federal Department of Fisheries, and the fishing industry each had a part to play.

Research being conducted by the Board's Biological Station at Nanaimo in British Columbia on crab and shrimp of Canada's Pacific coast was related by another biologist. One of the problems facing the crab fishery is "ghost fishing" . . .the continued kill by traps which are lost but, because of their sturdy construction, continue in fishing order, thus killing many crabs which cannot be recovered. The Canadian scientists were working on a variety of corrodible metal wires which would deteriorate and cause lost traps to collapse. Investigations on shrimp are designed to provide further information on stocks in the major shrimp trawling areas as well as to delineate the extent of shrimp fishing grounds.

Studies relating to lobsters and shrimp in Newfoundland waters was another subject discussed by a scientist from the Board's Biological Station in St. John's, Newfoundland. Stocks of shrimp had in the past been found as the result of exploratory fishing but a commercial fishery had yet to be developed. A practically interesting line of research on lobsters concerned the social behavior of the creatures. There were indications that lobsters establish personal territories and resist the efforts of other lobsters to reside within their sphere of habitation. This would take the form of cannibalism by older lobsters on the young, and fighting off intruders. Studies on growth rates, the scientist said, had shown that lobsters increase in weight by almost 50 percent after their first molt and by about 40 percent after the second molt. This indicated strong support for the returning of small, undersize lobsters to the water in order to let them grow to larger and more profitable market sizes. (Canadian Department of Fisheries, Ottawa, January 7, 1964.)

PACIFIC SALMON TRANSPLANTED TO ATLANTIC COAST:

The experimental transplanting of British Columbia pink salmon eggs to a stream 5,0 miles distant in Newfoundland may enric

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East Coast salmon resources. The project is being carefully watched by the St. John's Biological Station of the Fisheries Research Board of Canada.

In the fall of 1962, 2.5 million eggs flown in from Briish Columbia were planted in a channel of the North Harbor River on the Avalon Peninsula of Newfoundland. Survival was excellent. The fry run amounted to 84 percent of the transplant as a result of favorable weather during the planting, scarcity of silt in the river, and moderate winter conditions.

Hatching began around February 15 and was completed by March 22, 1963. The fry run extended from May 7 to June 16, reaching a peak on May 24. In two days (May 23 and 24), over a million fry, or half the total run, passed through the counting fence. In their seaward migration, it was noted that the fry remained near the surface and close to shore. In two months, they had moved 22 miles from the mouth of the river.

Predation did not appear to be a serious problem. Sampling of trout moving downstream in the river indicated 12 percent had been feeding on the salmon fry. Further investigation disclosed no predation from herring. Sampling of commercial catches of cod in St. Mary's Bay revealed no fry in the stomachs of nearly 4,000 fish examined.

The exceptionally good survival and the comparatively minor loss through predation are promising signs in the attempt to introduce a new species of salmon to Newfoundland.

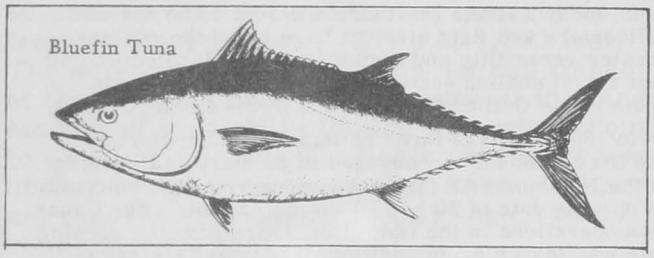
SALMON ESCAPEMENT ON EAST COAST IMPROVED IN 1963:

The escapement of Atlantic salmon to spawning grounds in Newfoundland rivers in 1963 was encouraging, according to the St. John's (Nfld.) Biological Station of the Fisheries Research Board of Canada. The Little Codroy River had its largest run since 1957. The increase, due mainly to a large number of grilse, was about twice the escapement recorded during the years 1960-1961. Throughout the migration period, water levels in the rivers were generally favorable, and the spawn-bearing fish had little difficulty getting upstream.

On the other hand, the run of smolts (young salmon on their first seaward migration) was the smallest on record for the Little Codroy River. This was probably due to the small numbers of adults that entered the river in 1959 and 1960.

TUNA MIGRATIONS OFF ATLANTIC COAST STUDIED:

The tagging of 18 bluefin tuna off St. Margaret's Bay, Nova Scotia, in the summer of 1963, initiated a Canadian study of Atlantic tuna migrations. The work is being done by scientists of the St. Andrews (N. B.) Biological Station of the Fisheries Research Board of Canada. The marking experiment involved large bluefin weighing between 400 and 600 pounds. After capture in a trap net, the giant fish were tagged with dart-type tags and released. None of the tags had been recovered by early January 1964.


Bluefin Tuna

That bluefin tuna cross the Atlantic Ocean has been proved by United States tagging studies. But much more information about tuna movements is needed. For example, a few years ago, tuna suddenly disappeared from the waters off Wedgeport, N. S., which had been a famous hunting ground for sport fishermen. Now, with increasing attention being given to the newly developed purse-seine fishery for tuna in the Atlantic, St. Andrews scientists hope to gain new knowledge about this elusive fish.

Late in the summer and early fall of 1963, two fishing craft out of Campobello initiated the first tuna-seining project by Canadian fishermen on the Atlantic. The fishing was carried on along the American seaboard as far south as Block Island. One of the boats enjoyed a fair degree of success considering the lateness of the season and newness of the operation.

HARP SEAL STOCKS DECLINE:

To learn more about the declining stocks of harp seals in the Gulf of St. Lawrence, extensive tagging of "whitecoats" (young harp seals) has been undertaken by the Canadian Fisheries Research Board's Arctic Unit.

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The Board is offering a nominal reward for recaptured harp seal tags which are returned to the Arctic Unit in Montreal. Scientists expect the tags to provide additional clues concerning the population of the seal herd in the Gulf of St. Lawrence, the animals' migration patterns, and the proportion of the whitecoats caught by sealing activities each spring.

Extensive data already collected by the Arctic Unit reveal that the stocks of harp seals in the Gulf of St. Lawrence as well as on the "Northern Front" (off the east coast of Newfoundland and Labrador) have been going down in recent years, the indications being that the catch has been too high. The increase in the value of seal pelts has heightened the pressure of seal hunters.

As the result of aerial surveys and other studies, scientists have estimated the combined population of seals on both the "Front" and in the Gulf to be somewhat less than 1.5 million seals. It is thought that about one-third of the pups whelped each year can be safely harvested. But the annual catch is believed to be considerably in excess of that proportion.

Because of the low level of sealing activities during World War II, the seal herds showed a considerable buildup. Since that time, sealing operations have been intensified to the point where they are now thought to be comparable to those at the turn of the century. However, today's fleets are more efficient. The use of helicopters and light aircraft have given the sealers greater versatility and striking power. It is estimated that aerial sealing accounted for one-half the seals taken in the Gulf of St. Lawrence in the spring of 1963.

In 1963, ships of three nations--Canada, Norway, and the Soviet Union--engaged in the harp seal fishery in the Northwest Atlantic, observing by mutual consent an opening date of March 10 on the "Front." For Canadian operations in the Gulf of St. Lawrence, the opening date was March 5. In addition, landsmen (sealers operating from the shore) took seals when favorable winds brought the icefloes within walking distance. They also took seals in nets during migrations in other seasons.

The recognition last spring of an earlier closing date (April 30) for killing seals is believed to have helped reduce the catch of the older, breeding seals. In order to pursue additional seal conservation measures, the problem has been brought before the International Northwest Atlantic Fisheries Commission, which is concerned with the investigation and conservation of the major fisheries in the Northwest Atlantic. It is hoped that harp and hood seals can be brought within the responsibility of the Commission by a protocol amendment to the Convention under which this Commission operates. Ratification of such an amendment by member countries is expected. (Canadian Department of Fisheries, Ottawa, January 8, 1964.)

NORTH PACIFIC GROUNDFISH RESOURCES STUDIED BY SCIENTISTS:

The groundfish resources of the North Pacific Ocean are being studied by fishery scientists of the Nanaimo (B.C.) Biological Station of the Fisheries Research Board of Canada. The Pacific ocean perch is a species of considerable economic value off British Columbia. Farther to the north, it is sought mainly by foreign fleets. But changing market conditions or other situations may eventually influence the devlopment of a Canadian offshore ocean perch fishery and, if this happens, the Research Board will have the answers to the questions which industry may raise.

Using the new research vessel G. B. Reed, scientists of the Nanaimo Biological Station carried out two major North Pacific investigations in 1963. On the initial cruise, extensive explorations for ocean perch were conducted in the eastern Gulf of Alaska in the area off Cape Spencer. The second cruise extended farther west covering grounds in the vicinity of Kodiak Island. The second cruise had a double purpose. Studies were made on the local shrimp populations as well as on the distribution of ocean perch.

The first cruise covered waters where no fishery existed. Large catches of ocean perch were common--as much as 16,000 pounds were taken per 30-minute drag.

The Nanaimo Biological Station plans to expand its program in order to obtain additional information on the biology of the ocean perch.

SALMON STUDIES IN GULF OF ALASKA:

Significant numbers of pink salmon of Asian origin travel as far eastward as the mid-Gulf of Alaska. This was learned during tagging studies by Canadian fisheries scientists. Personnel of the Nanaimo (B.C.) Biological Station of the Fisheries Research Board of Canada have also found that some of the chum salmon tagged in the Gulf of Alaska are of Asian stocks. Tagging programs have been the key to a major break-through in obtaining knowledge of salmon during their ocean existence.

Early in 1964, Canada's new research vessel G. B. Reed and a United States research vessel will begin cooperative North Pacific investigations in an effort to find where salmon spend the winter months.

The two vessels will range over an area extending from the Oregon coast to the Aleutian Islands.

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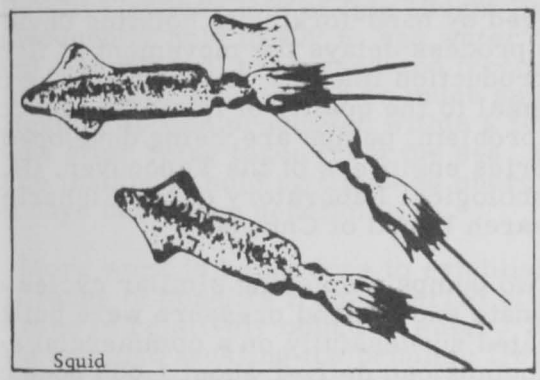
ISHERY RESOURCES OF
AR NORTH SURVEYED:

A wide assortment of unusual species is und in the water wastes of Canada's far rth. There are octopus, squid, crab, long-othed narwhal (whales), and curvetoothed alrus. Also found, are tiny fossil skeletons organisms normally found at great depths der tropical Atlantic waters, according to report at the annual meeting of the Fisher-s Research Board of Canada.



Squid

Both the octopus and squid are normally arm water species, but some crab and a latively small species of squid have previ-sly been found in the colder northern areas. t octopus had not previously been found in e North American Arctic region until redged up from the bottom of Darnley and ranklin Bays by scientists of the Board's rctic Unit in 1963. Scientists were also rprised to find tiny calcareous fossil skele-s called "discoasters," which micropale-ologists had considered to be extinct prod-s of unknown organisms. The fossils were nd in primitive, tiny, whiplike creatures led dinoflagellates whose discoasters are ntical to those forming deep sediments nd in a core drilled to a depth of 12,450 t below tropical Atlantic waters.

The narwhal is a whalelike species with a rkscrew tusk sometimes reaching nine feet length. The narwhal's blubber and edible at are good sources of oil and food, while e tough carcass provides large strips of luable sinew used in sewing boots and othing. The long ivory tusk is of some actical value to the natives who sell it in-ct for C$1 a pound. A large tusk will weigh much as 40 pounds.

The Canadian scientists investigated the nge of virtually untapped populations of Greenland cod which inhabit Dolphin and Union Straits and Coronation Gulf, between the District of MacKenzie and Victoria Island. Such a resource has prime importance as a domestic food supply which would also help relieve the pressure on other species, such as char and lake trout, and on the limited mammal stocks.

The project of depth-probing and surveying fish populations in Canada's Great Bear Lake also was discussed by scientists of the Board's Arctic Unit at the annual meeting of the Fisheries Board of Canada.

Great Bear Lake is located within the Arctic Circle in Canada's Northwest Territories and has an area of 11,800 square miles making it the fourth largest lake on the North American continent. Only Great Slave Lake, also in the Northwest Territories, is as deep as Great Bear. During the summer of 1963, a 5-pound lake trout was caught in a fishery scientist's test net and hauled straight up from a "float-popping" depth of 1,350 feet. The scientists were sure the net had fished at the bottom of the lake because of the large amount of mud still clinging to it when brought to the surface. Plastic floats on the net were broken by the pressure and it seemed apparent that the type used "popped" apart at around the 600-foot depth.

The abundance and even the condition of the fish stocks in Great Bear Lake vary widely in different parts of the lake. But whether caught below or above "float-popping" levels, the lake trout there run to unusually large sizes. One angler, using light spinning tackle, caught four lake trout in one afternoon with the largest weighing in at 30 pounds. The largest lake trout netted by the scientists scaled 40 pounds and there are reports of 60-pounders having been taken. The prospects for a commercial fishery on Great Bear Lake are not very promising at this time mainly because of its remoteness, but the native population depends on that large body of water for a major part of its food supply. The lake also provides an excellent sport fishery and there are several sportsmen's lodges in the vicinity.

Another northern species within the Arctic Circle, on which intensive studies continued during the past year, is the Arctic char. This species has been sold commercially and has met with some success in a number of large cities in Canada and the United States. Com-

Canada (Contd.):

mercial fisheries for char have been established at Wellington Bay on the south coast of Victoria Island, Frobisher Bay on Baffin Island, Payne Bay on the west side of Ungava Bay, and Port Burwell on the east side of Ungava.

The Arctic char is a slow-growing fish and in some of the more northern areas the fish are as much as 28 years old when they reach an average maximum size of seven pounds. The size of the fish varies and specimens up to 23 pounds have been caught.

Commercial fishing operations for Arctic char were initiated after scientific studies were made to determine the quantity that may safely be harvested each year. Subsequent studies have shown the presence of Arctic char in many other areas but the most promising new find up to now is the Nettiling Lake system on Baffin Island. On the basis of a yield of one pound of fish per acre, it is estimated that this lake (which is the sixth largest in Canada) could produce a yearly quota of 500,000 pounds of char without fear of depleting the resource. But considerable additional studies will be required to substantiate that theory, and before any commercial operations could be started, facilities for handling the catch as well as for shipping to southern markets would be necessary.

Note: See Commercial Fisheries Review, March 1963 p. 51.

DEVELOPMENTS IN REFRIGERATION ABOARD VESSELS:

There is a growing use in Canada of shipboard refrigeration systems developed by the Vancouver (B.C.) Technological Laboratory of the Fisheries Research Board of Canada. The total single-trip holding capacity of the refrigerated sea water systems on Canadian vessels amounted to nearly four million pounds at the end of 1963. That type of refrigeration is widely used on British Columbia salmon transport vessels.

Two large tuna purse-seine vessels being built in eastern Canada will have brine-spray freezing systems which were also developed by the Vancouver Technological Laboratory in collaboration with the Industrial Development Service of the Canadian Department of Fisheries.

The largest fishing vessel built in British Columbia in recent years, the Royal Pacific, was equipped with a brine-spray freezing system as well as a dry cold-storage. A sistership under construction will have similar refrigeration equipment. Those vessels will probably employ the equipment to freeze halibut at sea.

"AIRLIFT" PUMP TO UNLOAD FISHING VESSELS BEING DEVELOPED:

Fish larger than herring are usually discharged by hand-forking to hoisting devices. This process delays the movement of fish to the production line and, in itself, can be detrimental to the quality of fish. To overcome this problem, pumps are being developed by fisheries engineers of the Vancouver, (B.C.) Technological Laboratory of the Fisheries Research Board of Canada.

Two pumps employing similar cycles of alternate suction and pressure were built and operated successfully on a commercial scale. The pumps can deliver about 1,000 pounds of salmon per minute.

The third and latest pump employs the "airlift" principle. The "airlift" pump, which is now being tested commercially, has no moving parts and requires only a supply of low-pressure compressed air for its operation. It is a simple system which can be installed on vessels or at dockside at comparatively low cost.

IMPROVEMENT IN TEXTURE OF FISH FILLETS STUDIED:

The texture of cod fillets can be improved according to scientists of Canada's Fisheries Research Board who have been investigating the texture of fillets cut from that species. They have found that, depending on the condition of the fish at the time it is caught, holding the fish alive for limited periods in 40° F. sea water before slaughtering can result in better textured fish fillets for freezing.

The cod studied were small and medium fish which spend part of their lives each spring and summer feeding in the relatively warm waters (45° to 55° F.) along the Northeast Atlantic Coast. Sea water at a temperature of 50° F. is relatively warm for cod as

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compared with bottom waters on the fishing banks having a temperature as low as 33° to 35° F. Shore catches must often be held alive in sea water almost that cold before the meat undergoes changes sufficiently great to be noted by those tasting the cooked sample.

The texture studies are being conducted by the Board's St. John's Unit which reported at the annual meeting in Ottawa on January 7 on the apparent high quality of some of the cod landings. Those fish do not need to be held alive. Other lots of fish caught live and subsequently held in 40° F. sea water have been slaughtered, processed and frozen, and found by taste panelists to be much superior in texture to fish processed within a few hours after being taken from the sea. In some instances holding times as short as ten days have been beneficial.

More work is being done to establish the full range of benefits from a period of live storage in relatively cold sea water. Scientists are also tackling the problem from still another angle--changing the methods of handling and chilling fish killed at cod traps. If those fish could be treated so that they would keep well in frozen storage it would not be necessary to hold them live for a period of time. But so far, best results have been obtained by dealing with the live fish.

NEW METHOD TO SPEED TUNA CANNING DEVISED:

The time consumed in processing tuna from the raw to the canned state has been significantly reduced as a result of a new method devised by scientists of the Fisheries Research Board of Canada. Personnel of Canada's Technological Research Laboratory at Vancouver, B. C., worked closely with a British Columbia fish-processing plant in modifying a retort, the huge "pressure-cooker" used in the canning process. The modifications included reinforcement of the retort to withstand a vacuum, and the installation of special devices for steam condensation and ejection of condensing water.

Tuna, unlike salmon and most other fish, must be precooked prior to the actual canning. Whole tuna are placed in the retort and cooked for a predetermined period of time. Until this new method was introduced, the precooking was followed by a cooling period of several hours in which no further processing could take place. As a result of the modifications by Canadian scientists, this delay no longer is necessary as very rapid cooling is accomplished under vacuum and the tuna can be processed immediately.

SCIENTISTS DEVELOP NEW PROCESS FOR SMOKING SMALL FISH:

In order to reduce handling costs when smoking small fish such as smelt and alewives and to improve product appearance, Canadian scientists have incorporated new features into a vertical-type smoke tunnel. Fish are fed into the smokehouse at one end and they emerge automatically at the other end, fully smoked. The speed of the conveyor system inside the smokehouse can be regulated to insure sufficient smoke pickup.

Ordinarily, small fish shrivel during smoking and they also show screen marks on their sides. But specially-built holders in the improved smokehouse tumble the fish gently so that they assume a firm, roundish shape, free of wrinkles and of screen marks.

Additional work to further improve the new smokehouse is being done by the Fishery Research Board of Canada at its Technological Station in London, Ontario.

NEW ELECTRONIC FISHERY RESEARCH AIDS DEVELOPED:

New electronic devices to improve fisheries research techniques are being introduced at the Nanaimo (B.C.) Biological Station of the Fisheries Research Board of Canada. A photo-electric apparatus designed to count migrating sockeye salmon shows promise of doing the job more accurately, much faster, and with less effort than methods currently in use. The photo-electric fish counter underwent large-scale tests in 1963 at Babine Lake in northern British Columbia.

A new instrument which makes it possible to observe young salmon while they are still submerged in gravel beds is also in development. The "snooperscope" uses infrared light to illuminate the young salmon and make them visible to the eye. The use of infrared light protects the salmon from the effects of ordinary light at this sensitive stage.

Canada (Contd.):

A third instrument already being used successfully is an electronic baleen plate reader. This device accurately sketches a diagram of the tiny ridges on sections of baleen taken from whales. The number of ridges is a fairly accurate indication of the age of a whale. Earlier, the ridges were read by touch, a difficult task even for experienced personnel.

WAYS OF PRODUCING FISH PROTEIN CONCENTRATE STUDIED:

The production of fish protein concentrate (FPC) from noncommercial species (dogfish, skate, sculpin, etc.) is being studied by scientists at the Halifax Technological Station of the Fisheries Research Board of Canada. After producing FPC (also known as fish flour) from haddock and cod fillets, the Halifax investigators began experiments with whole fish (including herring), fish offal, and semiprocessed fish meal known as "press cake." The FPC produced from fillets received the highest protein rating, its flour being whiter than that produced from other raw materials. However, in all cases the protein rating was excellent.

The development of FPC is a project sponsored by the Food and Agriculture Organization of the United Nations. It has been undertaken by many of the world's leading fishery research laboratories, including the station at Halifax. The program is prompted by a desire to supply underdeveloped nations with a cheap supply of animal protein. Also, dietetic studies showed that in Canada and the United States there is need for additional proteins in some diet formulations, especially for people engaged in heavy manual work, postoperative patients, and elderly people. One of the simplest uses of the product has been as an additive to bread and cereals.

* * * * *

FISH MEAL EXPERIMENTALLY STORED IN 2,000-POUND CONTAINERS:

A new method of storing herring meal in one-ton packages is being investigated by the Vancouver (B.C.) Technological Laboratory of the Fisheries Research Board of Canada. The 2,000-pound containers are made of laminated paper. At present, herring meal is usually stored in 100-pound bags, which reduces the amount of herring meal that may be stored in a given area. One of the major problems in storing herring meal in bulk is the self-heating tendency of the meal. To suppress this tendency, antioxidants have been added to the meal in the large containers. The preliminary results of the project are encouraging. (Canadian Department of Fisheries, Ottawa, January 6, 7, and 8, 1964.)

Denmark

LANDINGS AND FISHING INDUSTRY TRENDS, 1962-1963:

Preliminary data on Denmark's 1963 total fishery landings show they were up 3.3 percent in quantity and increased 1.0 percent in value from the previous year. The 1963 landings were greater for cod (up 9.6 percent) and plaice (up 4.5 percent), but herring and sprat were down slightly from 1962.

Table 1 - Danish Fishery Landings by Principal Species, 1961-1963

Product	1/ 1963			1962			1961		
	Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	1,000 Kr.	US$1,000	Metric Tons	1,000 Kr.	US$1,000	Metric Tons	1,000 Kr.	US$1,000
Plaice	60,000	98,000	14,210	57,379	91,480	13,265	53,176	87,094	12,629
Cod	69,000	59,000	8,555	62,904	51,443	7,459	65,539	54,268	7,869
Herring and sprat	267,000	75,000	10,875	272,900	80,607	11,688	267,416	79,301	11,499
Pond trout	8,000	61,000	8,845	7,838	56,790	8,235	7,662	53,037	7,690
Other	401,000	175,000	25,375	378,334	182,981	26,532	237,108	141,431	20,507
Total landings	805,000	468,000	67,860	779,355	463,301	67,179	630,901	415,131	60,194

1/Preliminary.
Note: One Danish krone equals about US$0.145.

A greater proportion of the 1963 landings than in 1962 was utilized by processors for fillets of flatfish and cod, and there were some increases from the previous year in the quantity of fish used for smoked and canned fish.

There also were some gains in the 1963 production of fish meal and oil as compared with the year earlier.

Denmark's exports of fish and shellfish during the year were up 10.2 percent from

enmark (Contd.):

Table 2 - Fish Used to Produce Edible Processed Products in Denmark, 1961-1963

roduct	1963	1962	1961
	(Metric Tons)		
ed by processors:	1/180,000	1/135,918	1/120,058
r fillets of flatfish and cod	93,000	79,000	-
r smoking	6,500	6,200	-
r canning	17,000	15,000	-

oes not include fish meal and fish oil production.

Table 3 - Danish Fish Meal and Oil Production, 1961-1963

product	1963	1962	1961
	(Metric Tons)		
meal	90,000	88,200	57,900
oil	25,000	24,500	17,300

962 and the value increased 3.7 percent as mpared with the previous year.

In 1963, there was a slight decline in the mber of fishermen permanently engaged in enmark's commercial fishery. There were so fewer fishermen in 1962 than in 1961. t the average annual gross income for 962 increased 14.6 percent from 1961.

The value of Denmark's commercial fishing fleet and fishing gear and nets was higher in 1963 than in the previous year.

Denmark's per capita consumption of edible fishery products in 1963 rose to 16.0 kilograms (35.3 pounds) from 14.3 kilograms (31.5 pounds) in 1962. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, January 15, 1964.)

Note: See Commercial Fisheries Review, October 1963 p. 46; September 1963 p. 62.

* * * * *

INDUSTRY VIEWS PRESENTED AT ANNUAL MEETING OF DANISH FISHERIES COUNCIL:

The annual meeting of the Danish Fisheries Council opened January 11, 1964, at Aarhus, Denmark. The Council was established in April 1954 by the leading Danish fishery organizations to present a single, united front in promoting and protecting the interests of the entire industry.

In opening the 1964 annual meeting, the Chairman recommended some consolidation

Table 4 - Danish Fishery Products, Exports, and Imports, 1961-1963

lassification	1963			1962			1961		
	Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	1,000 Kr.	US$1,000	Metric Tons	1,000 Kr.	US$1,000	Metric Tons	1,000 Kr.	US$1,000
ports of fish and shellfish	351,000	615,000	89,175	318,514	593,080	85,997	270,728	482,280	69,931
ports of fish and shellfish	1/	-	-	163,544	166,811	24,188	126,343	123,919	17,968

ata not available.

Table 5 - Number of Danish Commercial Fishermen Employed and Average Annual Gross Income, 1961-1963

ype	1/1963	1962			1961		
			Average Annual Gross Income			Average Annual Gross Income	
	Number	Number	Kroner	US$	Number	Kroner	US$
hermen:							
manently employed	13,280	13,416	26,080	3,782	13,675	22,755	3,299
casionally "	4,370	4,343	1/	-	1/	-	-
Total	17,650	17,759	-	-	13,675	-	-

ata on income not available.

Table 6 - Value of Danish Commercial Fishing Vessels and Equipment, 1961-1963

its	1963		1962		1961	
	Value					
	1,000 Kr.	US$1,000	1,000 Kr.	US$1,000	1,000 Kr.	US$1,000
hing vessels	454,000	65,830	437,877	63,492	416,890	60,449
hing gear and nets	117,000	16,965	108,816	15,778	102,798	14,906
	(Number)					
e of vessel:						
ith motors	1/		8,350		8,347	
ithout motors	1/		5,526		5,692	
ansporters	1/		22		24	
Total	-		13,898		14,063	

ot available.

Denmark (Contd.):

of fisheries organizations, reaffirmed the need for an independent secretariat to work on market promotion, and suggested increased foreign contacts by industry and Government representatives. Discussing ex-vessel prices, the Chairman said that minimum prices for plaice, or any other species, should be worked out by fishermen with processors and exporters on a countrywide basis. He pointed out that the Council could serve as a link between the various groups.

Fishermen: The fishermen's representative stated that the 1963 catch was large but economic progress for fishermen was unsatisfactory. He declared that the considerable increase in the price of new and used fishing vessels made it difficult for young fishermen to acquire the capital needed to buy their own vessels.

Pointing out that fishermen own, alone or jointly, the greater part of the production capacity in Denmark, he called for more influence by fishermen on the processing and marketing of food fish. Bornholm fishermen have engaged in processing for years, and Esbjerg fishermen now are establishing two fillet plants. If the undertaking meets expectations--more stable ex-vessel prices--similar efforts will probably be made in other ports.

Exporters: The exporters' representative pressed for the fishing industry to take a joint position on market promotion, stating that with a joint effort new markets could be won and old ones maintained. He also said there should be a minimum size of 270 millimeters (10.63 inches) for plaice landed by fishermen. In Denmark, exporters normally combine processing and exporting.

Food-Fish Processing: The represntative of this segment said that markets for fish fillets should be good in the coming year. He said that fishermen and processors, under the auspices of the Council, should establish a minimum price level for small plaice which would be fair to all concerned. This could lead to the solution of many other problems, including a minimum size limit for plaice. He said that the future will require close cooperation between fishermen and processors.

Retail Markets: The retailer's representative said there is a need for date marking of all frozen fish and fish products if customers are to be given the best possible service. Canned fish should indicate on the label the number of fish or pieces. An indication of the keeping quality--length of storage--should also be included. He also called for other changes in labeling practices.

Fish consumption was 35.2 pounds (round weight) per capita in Denmark in 1962. Despite ready access to superb fresh fish, including live plaice and eels, increasing quantities of frozen packaged fish are being marketed in Danish supermarkets and smaller stores with freezer cabinets.

Industrial Fish: A representative of the fish-meal factories said that fish meal and oil prices should be stable during the coming year. Many of the Danish factories have arranged forward sales of part of their production at good prices. Herring prices may reach 0.25-0.27 kroner a kilo (US$32.95-$35.59 a short ton) during the summer. And prices for sand eels may be about 0.20 kroner a kilo ($26.36 a short ton). The Danish fish-meal industry should consider production of fat-free meal for feeding Danish swine; this offers a very large market. The need for buffer stock warehouses to handle possible overproduction was stressed.

About 45 percent of the Danish fisheries catch is used for producing fish meal and oil. This involves about 75 percent of the herring catch, much of the whiting and brisling landings, and all of the sand eel and Norway pout landings not consumed by other industrial uses such as feed for animals.

Fisheries Ministry: Representatives of the Danish Fisheries Ministry suggested that the small independent exporters consider some form of cooperation among themselves in order to meet the increasing competition of larger organizations. Although exports are at record levels, Ministry officials restated their concern over the difficulties small Danish exporters face in competing with large or integrated foreign fishery companies which can assist their outlets with financial and other merchandising assistance.

The Danish Fisheries Minister said he believed that all concerned had benefitted from the joint meeting. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, January 29, 1964.)

ominican Republic

RICES ON CANNED MACKEREL, ANNED TUNA, CANNED SARDINES, ND DRIED COD REDUCED:

An expanded market for canned mackerel lmon style), canned tuna, canned sardines, d dried cod in the Dominican Republic ould result from the reduced prices made ssible by Dominican Law No. 34 of October 1963, which freed those fishery products m import duties. The Dominican Bureau Price Control then established new maxim prices as follows:

tem	Unit	Maximum Selling Price Per Case by		
		Importer	Wholesaler	Retailer
		. . . . . (US$)		
nned Fish:				
ackerel (salmon style)	48 8-oz. cans	6.29	6.73	8.41
ardines:				
in tomato sauce	100 5½-oz. cns.	8.02	8.58	10.73
in olive oil	100 4⅜-oz. cns.	11.50	12.31	15.39
una in oil	48 7-oz. cans	8.10	8.67	10.84
ied Fish:				
od ("pollock")	100 pounds	24.60	26.32	32.90

The prices listed were contained in Bu-au of Price Control Resolution No. 5, which as published in the Listin Diario of Decem-r 6, 1963. (United States Embassy, Santo mingo, December 9, 1963.)

ji Islands

TATUS OF TUNA BASE:

Construction of cold-storage facilities at e joint Anglo-Japanese tuna base at Levuka, ji Islands, was reported in December 1963 be 80-percent complete. They include a -ton capacity rapid-freezer unit, 2,000-ton pacity cold-storage plant, 30-ton ice-mak-g plant, and a 600-ton capacity ice-storage cility.

The shore facilities are to be operated by e Pacific Fishing Company (PAFCO), which presents three Japanese firms and a local glish firm. PAFCO will buy fresh tuna m the South Pacific Fisheries Coopera-e Association, then freeze for export to e United States. The export quota for the se is 9,000 short tons of tuna.

The South Pacific Fisheries Cooperative ssociation is composed of 25 members from the northern prefectures in Japan, 18 from Hokkaido alone. The Association was formerly organized in February 1962, with each member investing five million yen (US$13,900). The Association owns 13 tuna vessels and plans initially to operate out of Levuka a combined total of thirty 99-ton tuna vessels in 1964. (Hokkai Suisan, December 23, 1963.)

German Federal Republic

DEVELOPMENTS ON NEW FISH REDUCTION METHOD:

The new German fish-reduction method, developed by the German inventor Heinz Doevenspeck of Bremen during early 1961, involves the use of electrophoresis and electrostriction to remove the cellular fluids from the tissue of fish and fish offal. The new method obviates the need for external heat, and permits the extraction of oil and raw protein at temperatures of not over 45 degrees centigrade (113° F.).

Knowledge of the new fish reduction method aroused considerable interest both in the United States and abroad, and the inventor has now furnished the following answers to a number of questions asked regarding his invention:

1. The process involves a discharge of condensor fields which produces the following three overlapping effects:

   (a) It increases the electric potential (voltage) of the raw material which has passed through the electric field during the discharge.

   (b) It produces electrostriction of the muscular cells which causes a change in volume and a pulse.

   (c) It produces electroosmosis as well as electrostatic reaction, the latter destroying the so-called NERST electrostatic field between, for instance, the oily and watery phases of the raw material (ref: MILLIKAN tests).

2. (a) The potential gradient used in the electrical discharge is from 6,000 to 12,000 volts.

   (b) It is a static discharge.

   (c) It is not a damped oscillatory discharge.

   (d) It is a pulsed discharge repeated approximately sixteen times per second.

   (e) The energy involved in each discharge is 1,000 Joule (one Joule is the equivalent of one watt per second).

Doevenspeck stated that he has already obtained patents for his invention in Peru, France, and the South Africa Republic. His patent application dated February 1, 1961, filed in the South Africa Republic describes the invention in detail, but the inventor pointed out that it does not reflect the latest stage of development of his reduction method. Certain improvements have been achieved since early 1961, but he did not divulge further particulars because of the involvement of patent rights.

From the beginning of 1962 until about mid-1963, Doevenspeck's method of fish reduction was tested commercially under his management in a pilot plant erected by one of the largest West German trawler companies, which is a

German Federal Republic (Contd.):

leading producer of fish meal and fish oil in West Germany. According to the technical director of the trawling company's pilot plant, the tests were terminated because, in his opinion, the meal and oil yields obtained by the new method compared unfavorably with those obtained by conventional methods.

The inventor of the new fish reduction method later entered into a new contract with a firm in Cuxhaven which manufactured fish meal and an antibiotic poultry feed additive. He started a new pilot plant in the Cuxhaven factory during the summer of 1963 where he is now processing one metric ton of fish per hour with reportedly good results. He claims that his new reduction method was judged favorably by a professor of the Max Planck Institut fuer Ernaehrungs-Physiologie in Dortmund.

With regard to the commercial aspect of his invention, Doevenspeck maintains that the construction costs of his plant are about equal to those of a conventional fish meal plant, while his operating costs are about one-third less. He added that the principle of his invention may be applied to many other fields, e.g. sterilization, decontamination, etc. (United States Consulate, Bremen, December 20, 1963.)

Ghana

FISHERIES AGREEMENT WITH SOVIET UNION SIGNED:

On December 20, 1963, Ghana and the Soviet Union signed an agreement covering cooperation in the field of marine fisheries. The agreement was negotiated during the visit to Ghana of the Soviet Minister of the State Committee for the Fishing Industry. According to newspaper reports, the agreement covers the development of marine fisheries on a commercial scale, the training of Ghanaian fishermen in the Soviet Union, and the establishment of a joint commission to direct technical fishery assistance. The 6-member commission is to be composed of 3 representatives from Ghana and 3 from the Soviet Union.

In September 1963, a total of 92 Ghanaian students went to the Soviet Union for training in fishing techniques. Unconfirmed reports in December 1963 indicated that 88 more students from Ghana would go to the Soviet Union to begin a similar course.

In addition to providing large-scale training programs for Ghanaian fishermen, the Soviet Union has signed contracts to construct a complex of fish-processing factories at Tema and to supply 18 fishing vessels for the State-controlled Ghana Fishing Corporation. According to a statement made in late 1963 in the Ghana National Assembly, 10 of the 17 large fishing trawlers operating off Ghana are of Soviet registry. (United States Embassy, Accra, December 29, 1963.)

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IMPORT DUTY ON FISH AFFECTS JAPANESE AND RUSSIAN TRAWLING IN ATLANTIC OCEAN:

The six-pence (US$0.0696) a pound duty on imports of fresh and frozen fishery products imposed by the Ghanaian Government on October 21, 1963, has greatly affected that part of the Japanese and Russian Atlantic trawl-fishing operations dependent on Ghana as an export market. Moreover, the duty is indirectly working a hardship on Ghanaian consumers since it has already brought about a sharp increase in retail fish prices, by as much as one-third.

Japanese fishing companies in December 1963 were negotiating the reduction of Ghana's high tariff. Also, in mid-December 1963, Soviet Fisheries Minister Ishkov was reported to have arrived in Ghana for the same purpose.

The Japanese fishing company, after the imposition of Ghana's high tariff, has begun to intensify its search for other possible new markets in Africa. Reportedly, that firm, together with a Nigerian and a North European firm, recently established a company in Nigeria called the Nigerian Frozen Foods Development Company. The Development Company has already undertaken the construction of a 1,000-ton capacity cold-storage plant. The plant, which is scheduled for completion in spring 1964, is being constructed so that it can readily be enlarged into a 4,000-ton capacity facility. (Suisancho Nippo, December 19 and 25, 1963.)

Greece

FREEZER-TRAWLER LANDINGS, JANUARY-OCTOBER 1963:

The Greek fleet of refrigerated trawlers and carrier vessels operating in the Atlantic landed 1,318 metric tons of frozen fish in Greek ports in October 1963, down 29 percent from landings of 1,858 tons in the same month of the previous year.

Greek frozen fish landings during January-October 1963 amounted to 15,670 tons, com-

eece (Contd.):

ed with landings of 13,786 tons in the me period of 1962 and 11,331 tons in the t 10 months of 1961. The increase in dings in 1963 was partly due to an expan- n of the Greek fleet of freezer-trawlers. eia, November 1963.)

See Commercial Fisheries Review, February 1964 p. 69.

atemala

MMERCIAL FISHERY LIMITED IN 3 BECAUSE OF LACK OF VESSELS:

The lack of a fishing port on Guatamala's cific Coast as well as an insufficient num- r of commercial fishing vessels were the jor problems facing the development of t country's commercial fishing industry. at observation was made on December 17, 3, by the Chief of the Department of Hunt- g and Fishing of Guatemala's Directorate neral of Forestry, who felt that the short- e of fishing vessels caused smaller com- rcial landings of fish and shrimp during 3. (Several fishing vessels were dam- ed or destroyed during severe Pacific rms in June 1963.)

The value of Guatemala's fishery products ports in 1962, consisting chiefly of shrimp ports to the United States, was US$942,000.

With regard to vessels from other coun- s fishing in Guatemala's territorial wa- s, which extend 12 miles from shore and ch are identical with her exclusive fish- zones, the Guatemalan official pointed that foreign vessels must have licenses fish within Guatemala's jurisdiction and st process the catch in Guatemalan ports. he added that no such licenses were held oreign fishing vessels. He also noted some foreign fishing vessels were be- ved to be fishing illegally from time to e in Guatemalan waters but that Guate- la lacked an adequate coastal patrol fleet police her waters. (United States Embas- Guatemala, December 20, 1963.)

Ireland

JOINT JAPANESE-IRISH-FRENCH TRAWLING BASE:

A large Japanese fishing company, togeth- er with an Irish company and a French organ- ization, are reported to be planning on estab- lishing a joint trawl-fishing base at Galway, Ireland. The joint enterprise is to be estab- lished with a capital of 500,000 pounds (US$1.4 million), with each participating firm contri- buting one-third of the investment. Reported- ly, the Irish firm will provide the fishing base and shore-processing facilities, the Japanese firm will invest one 1,500-ton stern trawler, and the French group will undertake the con- struction of additional similar-type trawlers to be assigned subsequently to the base. Ini- tially, the joint company will employ only one trawler, but plans call for eventual expansion of the trawl fleet to a total of six vessels.

Fishing will be conducted in the North At- lantic Ocean off Iceland principally for cod, and the catch is expected to be ship-frozen for export to Great Britain and other Euro- pean countries. Ireland is reportedly seeking to have local fishermen conduct the fishing under Japanese guidance. (Minato Shimbun, December 21; Suisan Keizai Shimbun, Decem- ber 19, 1963.)

Japan

FROZEN TUNA EXPORT PRICE TRENDS, JANUARY 1964:

The Japanese export frozen tuna market was reported to have softened somewhat in January 1964 as compared to December 1963. January 1964 c. & f. prices of frozen tuna ex- ported directly to the United States from Ja- pan proper are quoted as follows: gilled-and- gutted yellowfin US$375 a short ton; round al- bacore $380-385 a ton. They represent a de- cline in price of approximately $10 a ton.

The average ex-vessel price of albacore in Japan is said to be 136-137 yen per kilo- gram ($343-345 a short ton), showing a slight increase. The rise in price is attributed to indications that the Japanese packers will ter- minate tangerine packing earlier this year and begin packing albacore. They expected to begin tuna packing on a full-time basis by the end of January.

Japan (Contd.):

As of mid-January, Japanese-caught Atlantic Ocean albacore for export to the United States were selling for $325-335 a short ton f.o.b. Las Palmas. (Suisancho Nippo and Suisan Tsushin, January 10, 1964.)

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FROZEN TUNA EXPORT PRICES, DECEMBER 1963:

The Japanese export frozen tuna market was reported to have improved somewhat in December 1963, and the following prices (f.o.b. Japan) were reported for frozen tuna shipped to the United States from Japan proper: round albacore US$340-345 a short ton; gilled-and-gutted yellowfin $335 a ton.

In October 1963, the average f.o.b. export prices of frozen tuna were reported to be $347 a ton for round albacore and $309 a ton for gilled-and-gutted yellowfin. (Suisan Tsushin, December 26 and November 7, 1963.)

* * * * *

FROZEN TUNA EXPORTS TO THE UNITED STATES, 1962-1963:

Japanese frozen tuna exports (direct shipments and transshipments) to the United States in calendar year 1963 were down about 24 percent from those in the previous year. Direct shipments were down about 33 percent and transshipments were down 10 percent. The decline was due mainly to a drop in exports of frozen yellowfin tuna. (United States Embassy, Tokyo, January 17, 1964.)

Table 2 - Japanese Exports of Frozen Tuna and Frozen Tuna Products to the United States, 1962

Product	Direct Shipments		Transshipments		Total	
	Qty.	Value	Qty.	Value	Qty.	Value
	Short Tons	US$ 1,000	Short Tons	US$ 1,000	Short Tons	US$ 1,000
Albacore 1/ .	20,718.8	7,496.7	20,048.7	7,004.8	40,767.5	14,501.5
Yellowfin:						
Round . . .	-	-	664.8	150.2	664.8	150.2
G. & G. 2/ .	36,272.9	12,197.9	8,377.0	2,516.8	44,649.9	14,714.7
Dressed . .	426.5	149.0	5,546.0	1,594.2	5,972.5	1,743.2
Fillets . . .	4,228.8	1,642.2	1,067.7	312.6	5,296.5	1,954.8
Total . . .	40,928.2	13,989.1	15,655.5	4,573.8	56,583.7	18,562.9
Big-eyed:						
Round . . .	-	-	0.2	3/	0.2	3/
G. & G. 2/ .	369.0	99.6	3.0	0.7	372.0	100.3
Dressed . .	-	-	1,129.1	258.4	1,129.1	258.4
Fillets . . .	29.0	9.0	195.0	42.3	224.0	51.3
Total . .	398.0	108.6	1,327.3	301.4	1,725.3	410.0
Skipjack 1/ .	326.1	84.3	1,080.7	166.6	1,406.8	250.9
Bluefin 4/ . .	23.0	7.6	482.5	112.6	505.5	120.2
Loins:						
Albacore .	725.8	584.6	-	-	725.8	584.6
Yellowfin .	3,865.7	2,800.7	-	-	3,865.7	2,800.7
Big-eyed .	360.8	226.8	-	-	360.8	226.8
Bluefin . .	133.4	89.6	-	-	133.4	89.6
Total . .	5,085.7	3,701.7	-	-	5,085.7	3,701.7
Grand Total	67,479.8	25,388.0	38,594.7	12,159.2	106,074.5	37,547.2

1/Round.
2/Gilled and gutted.
3/Less than $500.
4/Fillets.

FROZEN TUNA EXPORTS TO YUGOSLAVIA:

Japanese exports of frozen tuna to Yugoslavia for January-December 1963 totaled 12,465 metric tons, an increase of 63 percent

Table 1 - Japanese Exports of Frozen Tuna and Frozen Tuna Products to the United States, 1962-1963 1/

Product	Direct Shipments		Increase or Decrease	Transshipments		Increase or Decrease	Total Shipments		Increase or Decrease
	1963	1962		1963	1962		1963	1962	
	(Short Tons)		%	(Short Tons)		%	(Short Tons)		%
Albacore . .	15,525	20,719	-25	23,127	20,049	+15	38,652	40,768	-5
Yellowfin . .	23,421	40,928	-43	7,343	15,655	-53	30,764	56,583	-46
Big-eyed . .	31	398	-92	285	1,327	-79	316	1,725	-82
Skipjack . . .	70	326	-79	3,693	1,081	+342	3,763	1,407	+17
Bluefin 2/ . .	-	23	-100	374	482	-22	374	505	-26
Loins	6,236	5,086	+23	-	-	-	6,236	5,086	+23
Total . . .	45,283	67,480	-33	34,822	38,594	-10	80,105	106,074	-24

1/Exports in 1963 only include shipments to Canada. The quantity shipped to Canada is thought to be about 1.0 percent of the total.
2/Fillets.

pan (Contd.):

er 1962 exports, which totaled 7,631 metric ns. The 1963 export price averaged US$377 metric ton c.i.f., and reached a high of 70 a ton. Average export price in 1962 s $370 a ton. (Suisan Tsushin, January 1964.)

* * * * *

NNED TUNA IN BRINE LES TO UNITED STATES:

The Japan Canned Foods Exporter Asso- tion announced on December 18, 1963, t a total of 110,000 cases of canned tuna brine for export to the United States would offered at the first canned tuna sale of the w export year, but did not specify the quan- y of white meat or light meat to be sold. he new export year started December 1963.) losing date for offers was set at December , with shipments to be made not later than ebruary 22, 1964. Export prices per case lo. ½ 7-oz. 48's) are US$10.40 for white eat tuna and $7.80 for light meat tuna, both ices f.o.b. Japan. The sale of 4-pound cans light meat tuna in brine is expected to be nited to a total of 12,000 cases of both A and grade packs due to light supply. (Suisancho ippo, December 19, 1963.)

* * * * *

NNED TUNA IN OIL EXPORTS, PRIL-OCTOBER 1963:

Data compiled by the Japan Canned Foods porters Association indicate that Japanese ned tuna in oil exports for April-October 3 totaled 1,260,000 cases, an increase of ,000 cases over the same period of 1962. tober exports alone amounted to 260,000 es. Principal countries of destination e reported as West Germany (430,000 es) and Canada (160,000 cases). (Suisan zai Shimbun, December 26, 1963.)

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PANESE COMMENT ON NNED TUNA MARKET TRENDS:

The Japan Canned Foods Exporters Asso- tion recently announced that because of v supply it would offer in the new market ar at the first sale of canned tuna for ex- rt to the United States only a limited quan- of institutional-pack (4-lb.) light meat ned tuna. The Association is said to have ceived reports that institutional-pack light eat tuna is in very short supply in the Unit- ed States. Reportedly, regular institutional-pack users, such as hotels, restaurants, and schools, are said to be finding it difficult to purchase 4-pound canned light meat tuna, and this has stimulated demand for that product.

On the other hand, canned white meat tuna, U. S. and Japanese, are said to be in abundant supply in the United States, with prices holding firm following a brief period of decline. The Canned Foods Association believes that, depending on strategy employed, it may be possible during the Lenten season to clear up the 800,000-1,000,000 cases of Japanese canned white meat tuna inventory carried over from 1963. (Suisancho Nippo, January 9, 1964.)

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CANNED TUNA PROMOTION IN UNITED STATES:

A total of US$250,000 has been budgeted for canned tuna promotion in the United States during the 1964 Lenten season by the Japan Canned Tuna Packers Association. This brings the total amount budgeted for canned tuna promotion in FY 1963 (April 1963-March 1964) to a total of US$500,000. Reportedly, based on Japanese production, this is equal to an assessment of approximately US$0.20 per case. This action was decided at a meeting of the Association on January 18. The Packers Association expected to meet with the Exporters Association to work out promotional details. (Suisan Tsushin, January 21, 1964.)

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HIGH PRICES PAID FOR FRESH TUNA IN TOKYO MARKET:

A record 3,700 yen per kilogram (US$4.66 per pound) was paid on January 4, 1964, at the Tokyo Central Fish Market for a 188-pound trap-caught bluefin tuna. This was equivalent to $9,320 a short ton. On the same day, a prime fresh big-eyed tuna sold for 2,000 yen a kilogram ($5,040 a short ton) and a prime yellowfin 1,500 yen a kilogram ($3,780 a short ton).

In December 1963, fresh prime bluefin frequently sold for prices ranging from $2.00-3.50 a pound (equivalent to $4,000-7,000 a short ton). The high prices were attributed to the short supply of prime fresh tuna for the sashimi (raw fish) trade and the strong holiday demand. (Suisan Keizai Shimbun, January 5, 1964, and other sources.)

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Japan (Contd.):

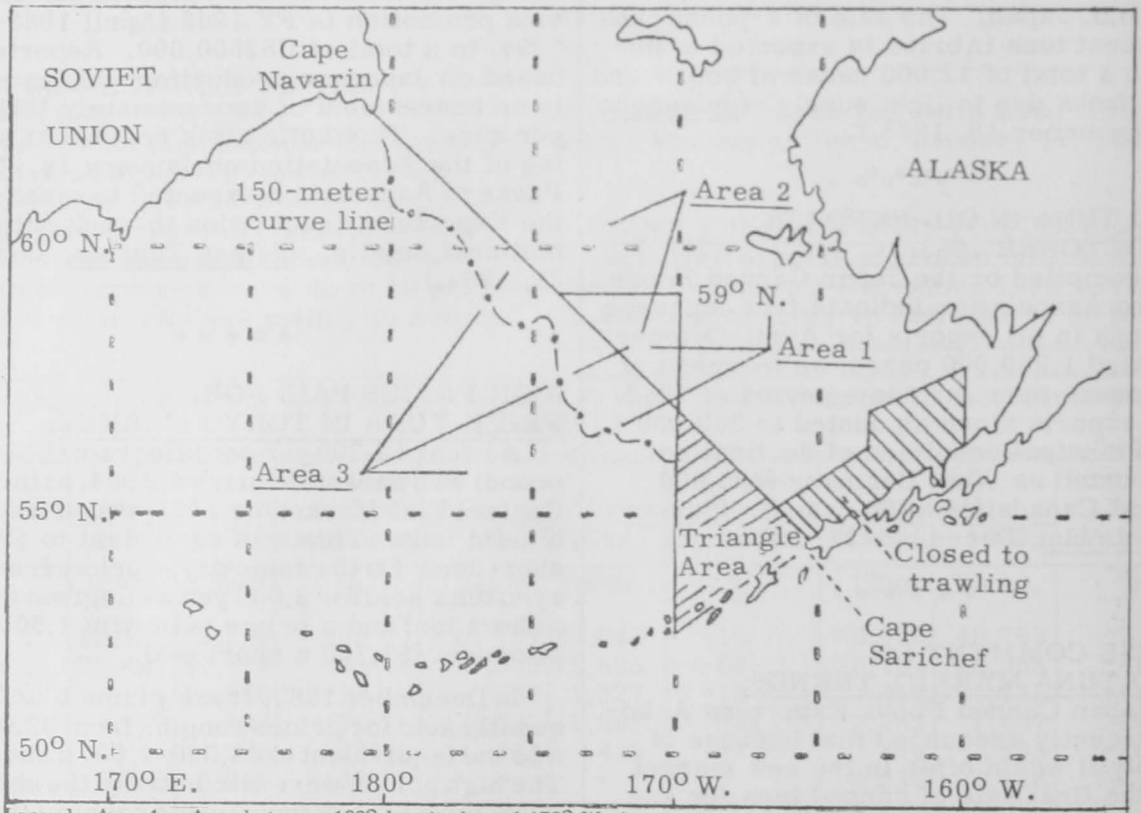
EASTERN BERING SEA MOTHERSHIP BOTTOMFISH AREAS FOR 1964:

The regulatory program proposal submitted by Japan's Fisheries Agency on the licensing and operation of mothership-type bottomfish fleets in the eastern Bering Sea in 1964 was reviewed and approved by the Japanese Central Fisheries Coordination Council on December 13, 1963. The main features of the 1964 regulatory program as contrasted to the 1963 regulations are: (1) reduction in bottomfish mothership fleets from a total of 19 to 14, and in catcher vessels from 252 to 228; (2) revival of a fishing firm's fish-meal operations; (3) simplification in area licensing system; and (4) relaxation of fishing restrictions, e.g., fleets permitted to operate over wider area.

Although the 1964 mothership-type bottomfish fleet has been reduced by a total of 5 motherships and 24 catcher vessels, the fishing capability of the fleet apparently has not been reduced due to the use of larger motherships and catcher vessels, not to mention the addition to the fleet of 2 large stern trawlers (Ibuki Maru and Taiyo Maru No. 82), which also will be serving as motherships.

In 1963, the 19 bottomfish motherships totaled 90,917 tons in gross weight. The 14 bottomfish motherships licensed to operate in the eastern Bering Sea in 1964 total 94,609 tons in gross weight, an increase of 3,692 tons.

The firm which pioneered the development of the mothership-type fish-meal operation in the Bering Sea and which voluntarily completely curtailed its Bering Sea fish-meal operation (two factoryships) in 1963 due to heavy financial losses it suffered in 1962 and in earlier years, has been authorized to revive its meal operation. The firm plans to use the 14,094-ton factoryship Renshin Maru. However, the operation of that firm's fish-meal fleet has been restricted to an area considered not as lucrative as the area assigned to one other company's fish-meal fleet.



Legend: Area 1: Area between 180° longitude and 170° W. longitude in waters less than 150 meters in depth, and area northeast of the line extending from Cape Sarichef, Unimak Island, to Cape Navarin (Navarin-Sarichef Line).
Area 2: Area northeast of the Navarin-Sarichef Line.
Area 3: Area southwest of the Navarin-Sarichef Line, and the Triangle Area bound by the Navarin-Sarichef Line, longitude 170° W., and latitude 59° N.

Japanese Bering Sea Bottomfish Fishing Areas, 1964.

apan (Contd.):

The 1964 area licensing regulations have een simplified through the establishment of nly three fishing areas. In 1963 the Fish-ries Agency had established eight fishing ones in the eastern Bering Sea, which were esignated by letters, as A, B, CF, DF, E, c. As in 1963 there is considerable over-pping in the 1964 fishing areas.

The 1964 area licensing regulation, in mmary, reads:

1. One mothership under 12,000 gross ns, accompanied by 30 catcher vessels of izes 50-550 tons, shall be permitted to op-rate in the area between 180° longitude and 70° W. longitude in waters less than 150 eters in depth, and in the area northeast of e line extending from Cape Sarichef, Unimak land, to Cape Navarin (Navarin-Sarichef ine).

2. One mothership under 15,000 gross ns, accompanied by 30 catcher vessels of izes 50-550 gross tons, shall be permitted operate northeast of the Navarin-Sarichef ine.

3. A total of 12 motherships, accompanied y a total of 168 catcher vessels of sizes 50-50 gross tons, shall be permitted to operate the area southwest of the Navarin-Sarichef ine, and in the triangle area northeast of at line bound by said line and longitude 70° W. and latitude 59° N.

4. The area bound by the following lines hall be closed to trawling: Line extending om the northern coast of Alaska Peninsula at 160° W. longitude to the point 160° W. longitude-58°10" N. latitude, and connecting the points 160° W. longitude-58°10" N. latitude; 163° W. longitude-57°10" N. latitude; 163° W. longitude-56°20" N. latitude; and extending from the point 163° W. longitude-56°20" N.. latitude to the Navarin-Sarichef Line through the point 164° W. longitude-56° N. latitude.

For purposes of identification, the areas described in items 1 to 3 have been arbitrarily designated as Areas 1, 2, and 3. Fishing areas assigned to the 14 mothership fleets, their complement, type of operation, etc., as reported in several Japanese periodicals, are shown in table. The table does not include the Japanese mothership-type king crab fleet licensed to operate in Bristol Bay or a fishing company's two 1,500-ton stern trawlers (Akebono Maru Nos. 51 and 52) which operate independently in the eastern Bering Sea.

The operational plans submitted by the Japanese fishing companies planning to operate mothership-type bottomfish fleets in the eastern Bering Sea show several noteworthy trends. Those trends are: (1) decline in the number of long-line vessels and switchover to trawl vessels; (2) increase in size of catcher vessels; and (3) the use for the first time of large (over 2,500 tons) stern trawlers as motherships.

In 1963, the fleets operating long-line vessels, and particularly those which concentrated on fishing for halibut, reportedly had a poor season, whereas those which operated trawl gear had a successful season. Long-lining prospects for 1964 are considered poor, and catcher vessels operating long lines in 1964 are expected to total substantially less

Composition of Japanese Bering Sea Mothership-Type Bottomfish Fleet, 1964

ea of Operation	Mothership	Size	No. Catcher Vessels	Type of Operation	Period of Operation
		Gross Tons			
Area 1	Gyokuei Maru[1]	10,357	30	Fish meal	Early April to early October
Area 2	Renshin Maru	14,094	30	Fish meal	Early April to early October
Area 3	Tenyo Maru[1]	11,581	28	Trawl	Late April to early October
Area 3	Soyo Maru[1]	11,192	28	Trawl	Late April to early October
Area 3	Shikishima Maru[1]	10,144	24	Trawl	Early May to early October
Area 3	Seifu Maru[1]	8,269	28	Trawl-longline	Late April to late September
Area 3	Einin Maru[1]	7,482	15	Trawl	Early April to early October
Area 3	Chichibu Maru[1]	7,420	12	Shrimp	Year round
Area 3	Itsukushima Maru[1]	5,871	18	Trawl-longline	Early April to early October
Area 3	Taiyo Maru No. 82[2]	2,890	1	Trawl	Mid-May to mid-October
Area 3	Ibuki Maru[2]	2,500	1	Trawl	Starts mid-March
Area 3	Chichibu Maru No. 2[2]	1,693	8	Trawl	Early May to late October
Area 3	Kotoshiro Maru No. 15[2]	701	3	Trawl-longline	Early April to late October
Area 3	Seisho Maru No. 2	415	2	Trawl-longline	Unknown

[1] Motherships which operated in Bering Sea in 1963.
[2] Stern Trawlers.

Japan (Contd.):

than half the some 90 vessels which used that type of gear in 1963. As of mid-January 1964, operational plans submitted to the Fisheries Agency by the mothership companies indicated that about 20 catcher vessels will fish long lines this year. On the basis of that information, it appeared that at least four mothership fleets (Sifu Maru, Itsukushima Maru, Kotoshiro Maru No. 15, and Seisho Maru No. 2) will be fishing for halibut in the Triangle Area.

Although trawlers were much more successful than the long-line vessels, they had their share of difficulties in 1963, particularly the smaller draggers, because of bad weather early in the season. It became readily apparent that to operate successfully, larger trawlers would have to be used and the Fisheries Agency, in anticipation of that trend, apparently has placed a ceiling for the first time on the size of trawlers (maximum size 550 tons) that can be used as catcher vessels. As far as could be determined, there were no maximum size restrictions in previous years.

The trend towards using larger trawlers is seen, for example, in the case of one fishing company, in particular. In 1963, that company's mothership Chichibu Maru No. 2 operated with 80-ton class catcher vessels. During 1964 that mothership will be served by trawlers about 300 tons or over in size.

Operational plans of the different fleets at the beginning of 1964 further revealed that all fleets were planning to leave for the fishing grounds after early April. In 1963, a large percentage of the 19 fleets departed for the fishing grounds in March, and 1 or 2 of them left earlier, but many vessels lost fishing time due to bad weather during the early part of the season.

With regard to the operation of large stern trawlers, the Japanese Fisheries Agency had expressed the view in 1963 that, on the basis of available information, it appeared the operation of a mothership-type trawl fleet, composed of a large stern trawler fishing with several small trawlers, appeared to be the most efficient and economical way to fish the eastern Bering Sea. This year, for the first time, two stern trawlers over 2,500 tons (Ibuki Maru and Taiyo Maru No. 82), each fishing with a smaller trawler, are scheduled for operation.

In addition to those two large trawlers, another fishing company which has operated the two 1,500-ton stern trawlers Akebono Maru, Nos. 51 and 52, in the eastern Bering Sea for several years, is planning to replace them this fall with two 3,500-ton stern trawlers, which are now under construction and scheduled for completion in August 1964. (Japanese fishery periodicals.)

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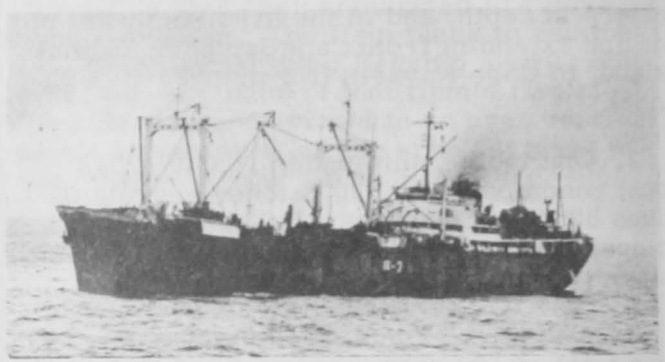
FISH-MEAL OPERATION IN EASTERN BERING SEA PLANNED:

The application of a Japanese fishing company to revive its fish-meal operations in the eastern Bering Sea is said to have been unofficially approved by the Fisheries Agency.



Japanese fish-meal factoryship Renshin Maru.

The company plans to assign the fish meal factoryship Renshin Maru (14,094 gross tons) to that operation. (Suisan Tsushin, January 10, 1964.)

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PLANS FOR 1964 TRAWLER OPERATIONS IN EASTERN NORTH PACIFIC OCEAN:

The Japanese Fisheries Agency is reported to have informally approved the applications of two fishing companies to operate trawlers in the eastern North Pacific Ocean in 1964. It is reported that 1 of the 2 firms plans to operate a 1,500-ton trawler and the other firm a 500-ton trawler. Four other fishing companies which operated trawlers in the eastern North Pacific in 1963 are reported to be planning on using larger vessels in 1964. (Suisan-cho Nippo, December 23, 1963.)

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FUTURE OF DISTANT-WATER TRAWL FISHERIES:

Production Chief Shunichi Oguchi of the Japanese Fisheries Agency made the following comments regarding the future of Japan's distant-water trawl fisheries:

Jan (Contd.):

aters off West Africa: At the present time, Japanese
lers are operating mainly in the waters off northwest
a and, as a result, their catches must necessarily be
d at Las Palmas (Canary Islands). An important prob-
f the future is the expansion of new market outlets.
ey are developed, they will lead to the gradual develop-
of fishing grounds further to the south.

ere is also need to develop the operational efficiency
wl operations. In the past, the large trawlers
d their catches back to Japan, but, at the present time,
catches are being transshipped to Japan. There should
ther experimentation in making a clear separation be-
fish-catching and fish-transporting activities. If this
ne, the trawl fishery off Africa can be developed
er.

rthwest Atlantic: One large Japanese fishing company
erating the Tenyo Maru (3,500 gross tons) on an ex-
mental basis but the Northwest Atlantic is an area fished
awlers of many nations. Problems will be created if
n should enter into competition with those countries in
kets on which they are heavily dependent. Thus, Japan
esently collecting data on markets on which those na-
s are less dependent, mainly the United States.

aribbean Sea: One Japanese firm operated one trawler
Maru, 1,104 gross tons) in the Caribbean Sea on an
rimental basis. Due to the vast area involved, there is
much to be learned about that area.

aters off Argentina: For some time now we have had
eyes on those waters. However, due to the great dis-
e of those grounds from Japan and to restricted market
ets, they have not been explored. This year two firms
onducting experimental fishing in those waters but it
be necessary for them to develop markets in Europe.
ess of developing the grounds off Argentina will depend
nding market outlets.

aters off New Zealand and Australia: They are not
attractive to fishermen, probably due to the lack of
ble fishing bases nearby. Those waters will continue to
appeal unless suitable measures are developed with re-
to catching and transporting fish.

astern North Pacific Ocean: Operation of Japanese
lers in the waters southeast of the Alaska Peninsula
ndered by the fear (held by the United States and Can-
hat halibut may be taken incidentally to other bottom-
f However, Japanese trawlers are taking almost no
t in their nets, so there is room to expand further
g effort in those waters.

ould we be provided with a share of the halibut catch,
have been insisting at the treaty (United States-Can-
apan) negotiations, and should this result in the estab-
ent of restricted areas and in the prohibition of trawl-
erations, as in the Bering Sea, this will create prob-
Our vessels will not be able to operate profitably if
icted areas to trawling should be established. It is not
ible to visualize the future of this fishery without a
idea of the outcome of the treaty negotiations. (Suisan
ai Shimbun, January 1, 1964.)

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SH-FREEZING OPERATIONS F ANGOLA PLANNED:

Preliminary discussion on the establish-
nt of Japanese fish-freezing operations
Angola held between a Japanese fishing
m and Angolan Government officials were
orted to have shown promise. The presi-
dent of the Japanese firm was planning on leaving for Angola in mid-January 1964 for the purpose of completing the plans. The Japanese firm plans to operate off Angola a 6,800-ton freezer factoryship and 5 pairs of two-boat trawlers. (Suisan Tsushin, December 24, 1963.)

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WHALE OIL AND MEAT PRODUCTION, 1962/63 SEASON:

Japan's 1962/63 season's catch of whales produced 166,400 metric tons of oil and 168,323 tons of meat, according to whaling industry officials.

Table 1 - Japanese Whale Oil Production by Area, 1962/63 Season

Area	Baleen	Sperm	Total
	(Metric Tons)		
Coastal	2,500	8,000	10,500
North Pacific	11,966	20,320	32,286
Antarctic	113,334	10,380	123,614
Total	127,800	38,600	166,400

Table 2 - Japanese Whale Meat Production by Area, 1962/63 Season

Area	Baleen	Sperm	Total
	(Metric Tons)		
Coastal	10,000	1,200	11,200
North Pacific	20,052	2,000	22,052
Antarctic	133,987	1,084	135,071
Total	164,039	4,284	168,323

It was estimated that the 1963/64 season's catch for the Japanese whaling fleet operating in the Antarctic would produce 117,000 metric tons of whale oil and 125,000 tons of meat. The yield of other products e.g. bone meal, viscera, liver oil, and skin was not included in the information furnished by the Japanese whaling industry. (Fisheries Attache, United States Embassy, Tokyo, January 7, 1964.)

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BALEEN WHALE OIL SALES BY JAPANESE WHALING FIRMS:

Japanese whaling firms, which late in 1963 concluded the sale of 14,000 metric tons of baleen whale oil at £82 (US$229.60) per metric ton, are reported to have been offered £83 ($232.40) per metric ton by an independent fat- and oil-processing firm. (Suisancho Nippo, December 26, 1963.)

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ESTABLISHMENT OF FOREIGN-BASED WHALING OPERATIONS STUDIED:

Japanese whaling firms are reported to be actively conducting feasibility studies on the

Japan (Contd.):

establishment of foreign-based whaling operations. The studies are being undertaken to cope with the problem of fully utilizing their whaling vessels in the future in view of the likelihood that the international whale-catch quota will be further reduced. This would, in turn, necessitate a reduction in their Antarctic whaling opeations. The Japanese firms appear to be primarily interested in establishing whaling bases in African and South American countries. In 1963, Japanese whaling operations were established for the first time in South Georgia Island in the South Atlantic Ocean. One Japanese firm was reported to be planning on establishing whaling operations in Chile in early 1964. (Suisan Keizai Shimbun, December 19, 1963.)

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LICENSES TO OPERATE TWO WHALE CATCHER VESSELS OFF CHILE ISSUED:

Licenses were issued to a Japanese whaling company by Japan's Fishery Agency permitting it to operate two whale catcher vessels to hunt sperm whales in waters off the coast of Chile, according to the vice president of the whaling firm. The vessels are the No. 3 Ryhuo-Maru (429 gross tons) which arrived on the fishing grounds on December 31, 1963, and the No. 2 Seiho-Maru (306 gross tons) which was scheduled to join the other vessel on January 29, 1964. The licenses specify an operating period of about four months.

The whaling company official said that the catch target is 1,000 sperm whales, all of which are to be purchased by a Chilean firm which manufactures fish meal and oil. He stated further that the catcher boats will not make delivery to the land stations; instead, delivery to the Chilean firm will be made at sea. (United States Embassy, Tokyo, December 30, 1963.)

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SPANISH TRAWL-CAUGHT FISH IMPORTED BY JAPANESE FIRM:

A Japanese fishing firm which has a five-year contract with Spain to purchase fish from Spanish trawlers based in the Canary Islands, imported 1,000 metric tons of Spanish-caught fish in January 1964. The fish, which are being transported to Japan on a Spanish vessel, consist mainly of "monko" squid and sea bream. It was the third shipment of fish tha the Japanese firm imported. A fourth shipment, also of 1,000 tons, was scheduled for delivery in February.

In September 1963, the Japanese firm imported 200 tons of trawl-caught fish on a tri basis, and in October it imported 4,000 tons The second shipment was transported to Japan by that company's 8,500-ton freezer fac toryship, the Awazu Maru. (Suisancho Nipp December 21, 1963.)

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EXPORTS OF FISHERY PRODUCTS, APRIL-SEPTEMBER 1963:

Data on Japanese exports of fishery products for FY 1963 (April 1963-March 1964) released by the Japanese Ministry of International Trade and Industry on December 9, 1963, indicate that exports during the first half of the fiscal year (April-September) totaled US$127,790,000. Exports of canned fishery products for the six months totaled 4,850,580 cases, valued at US$46,384,000, and exports of frozen fishery products totale 83,221 metric tons, valued at $30,374,000. (Nihon Suisan Shimbun, December 11, 1963.)

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NUMBER OF SMALL VESSELS TO FISH IN NEW OFFSHORE TUNA FISHER

The Japanese Fisheries Agency announced on December 19, 1963, that at the recommendation of the Central Fisheries Coordination Council a total of 1,850 tuna vessels in the 2 to 50-ton class will be licensed to operate in the newly designated offshore tuna fishery (north of 10° N. latitude and west of 160° E. longitude). Vessel owners planning to engage in that fishery must submit their applications between December 25, 1963, and March 24, 1964. The Agency had earlier, on December 7, stopped receiving applications for permits to construct 39-ton tuna vessels. (Suisan Tsushin, December 20 and 27, 1963.)

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FISHING VESSEL CONSTRUCTION, JANUARY 1964:

On January 20, 1964, the Japanese Fisheries Agency licensed the construction of 23 fishing vessels (gross tonnage 12,695 tons). Included are 8 tuna fishing vessels of the following size classes: 250 tons, three; 192 tons four; and 111 tons, one. The Agency also au-

pan (Contd.):

trized the construction of three large stern twlers, one of 1,850 tons and two of 2,530 ts; and two 1,800-ton freezer vessels. (Suisan Keizai Shimbun, January 23, 1964.)

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RMITS ISSUED BY FISHERIES AGENCY R VESSEL CONSTRUCTION, CEMBER 1963:

The Japanese Fisheries Agency issued rmits on December 16, 1963, for the conuction of 46 fishing vessels. They inded seven tuna long-line vessels: 1 ves- of 99 tons, 2 of 192 tons, one 300-ton tuna g-line training vessel, and one 888-ton rtable-boat-carrying tuna mothership (Taniya Maru), plus two 19-ton portable boats.

On December 26, the Agency issued conuction permits for 96 fishing vessels. ey included 22 tuna long-line vessels: one ton portable boat, 5 vessels between 96- tons, eight 192-ton long-liners, and 8 ssels ranging in size from 253-324 tons. e Agency also authorized the construction three 3,470-ton stern trawlers. (Suisan izai Shimbun, December 18 and 28, 1963.)

One of Japan's largest fishing companies under construction two 2,800-ton stern wlers, Taiyo Maru Nos. 81 and 82. The iyo Maru No. 81 was scheduled for comtion in late February 1964, and was exted to be sent to the eastern North Pacific an. (Suisancho Nippo, December 25, 3.)

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TTOMFISH LONG-LINE HERY OFF NEW ZEALAND PLANNED:

A total of 17 Japanese fishing companies luding 6 tuna vessel owners) have subted to the Fisheries Agency applications permits to operate bottomfish long-line ts in the waters directly north of North nd, New Zealand.

The 17 companies are planning on operng 300- to 1,000-ton vessels which would directly engage in fishing but would deckry 1- to 2-ton unpowered boats which uld do the actual fishing. The mothership ts would fish about ten months of the year, ept June and July, principally for red sea am.

The interest of the Japanese fishing firms to engage in long-lining for red sea bream off New Zealand is based on the following reasons: (1) the distant-water mothership-type bottomfish long-line fishery, not to mention the distant-water trawl fishery, is one of the few remaining fisheries that can still be exploited and which shows promise; (2) fishing licenses are not presently required to engage in that fishery; (3) employment of tuna vessels retired from the tuna fishery and long-line vessels presently engaged in the Bering Sea bottomfish fishery is possible; (4) low cost of gear investment; (5) long-line gear fished at the bottom is highly selective, as revealed by experimental fishing conducted in New Zealand waters in 1961, thus making it possible to harvest red sea bream almost exclusively; and (6) ready market for red sea bream in Japan, which commands a high price. Current market price for red sea bream (heads-on) in Japan is quoted at about 150,000 yen (US$417) a metric ton, and is said to be comparable to that for dressed halibut.

The Fisheries Agency hopes to prevent severe gear competition on the New Zealand grounds. At the present time, the New Zealand offshore trawl fishery is regulated by the Agency as a "designated (licensed) fishery" but the bottomfish long-line fishery is not, and the Agency is said to be studying the possibility of regulating the long-line fishery as a "designated fishery." For the present, the Agency is said to be planning on restricting the operation of bottomfish long-line fleets to a total of 5 or 6 fleets. (Suisan Keizai Shimbun, January 10, 1964.)

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HIGH SPEED ENGINES FOR FISHING VESSELS RECOMMENDED:

The Japanese Fisheries Agency plans to install a high-speed Diesel engine in its new fishery research vessel Naikai Maru (80 gross tons) scheduled to be built in Fiscal Year 1964 (April 1964-March 1965) to determine its adaptability to Japanese fishing vessels. High-speed engines, widely used in fishing vessels of western countries, are not presently used on Japanese fishing vessels.

The recommendation for installation of high-speed engines in fishing vessels was made by officials of the Fisheries Agency and the Japan National Federation of Fishery Cooperative Associations, who during their tour of Europe in November 1963 observed that high-speed engines installed on fishing vessels resulted in considerably reducing manpower

Japan (Contd.):

requirements. For example, a crew complement can be reduced to 4 or 5 on a 60-ton Japanese fishing vessel presently manned by 12-13 crew members. Other advantages are: (1) engineroom area can be reduced to allow more space for fish holds; and (2) engine operation can be controlled entirely from the wheelhouse. Possible disadvantages are: (1) high-speed engines must be replaced as a unit, whereas low-speed engines can be repaired in enginerooms, and (2) shorter period of serviceable life. (Suisancho Nippo, January 9, 1964.)

日本

Mauritius Island

JAPANESE TUNA TRANSSHIPMENT BASE AT PORT LOUIS:

The Japanese Overseas Company, which manages the tuna fishing base at Penang, Malaysia, has established an advance tuna transshipment base at Port Louis, Mauritius Island, in the western Indian Ocean, following approval granted by the Japanese Government on November 22, 1963. The Overseas Company presently has one 300-ton refrigerated vessel and one 400-ton carrier vessel based at that port, and hopes eventually to contract a total of 30 ice boats to fish out of its bases at Penang and Port Louis. At the present, five ice boats are operating out of Port Louis. Their ice supply is being transported to Port Louis from Penang. (Suisan Keizai Shimbun, December 26, 1963.)

Morocco

CANNED SARDINE MARKET TRENDS, 1963:

Morocco's 1963 sardine landings were reported as disappointing despite continuation of fishing operations beyond the season's normal closing at the end of September 1963. Spokesmen for the Moroccan fishing industry's merchandising organization and individual canners were inclined to blame the current sardine shortage on unusually bad weather conditions off the coast. Further observations were that the local fishing fleet is increasingly centered at Safi and Agadir and is handicapped in the search for more productive fishing grounds by limitations imposed by obsolescent boats and gear. Another explanation in connection with the present sardine shortage was the Moroccan fisherman's traditional reluctance to go long distances from the home port.

It was reported by authoritative sources that the canned sardine export program to which the industry is committed will exhaust inventories by April 1964.

The local industry has for some time been concerned with the static quality of its markets and the extent to which its narrow overall margin of profit depends on the duty-free import quota of 685,000 cases accorded by France. For these reasons, stocks on hand will be fully utilized in an effort to meet commitments, with the franc market favored if supplies run out.

Exports of canned sardines for the first four months of the season, June-September 1963, totaled 728,542 cases (100 cans No. $\frac{1}{4}$-4.5-oz.), compared with 733,574 cases in the same period of 1962. Of that total, 38.5 percent went to France, 22 percent to the other Common Market countries and Algeria, 14 percent to African countries which were formerly French territories, and the balance largely to Nigeria and other African markets in the sterling zone.

The target for the 1963 canned sardine pack was about 2,400,000 cases. Since exports tend to be fairly evenly spaced over the 12 months, with relatively little seasonal variation, the shortage expected to develop in April and May 1964 before new supplies become available can be estimated at 250,000 to 300,000 cases which is likely to be withheld from the West German and Italian markets.

The Moroccan canned sardine is a quality product packed for export under rigid control standards. But under present merchandising policies it has to compete in world markets on the basis of price rather than quality. The implicit disadvantage to that system is reflected in the fact that sales to any but the French market are at cost, if not at a loss. Various domestic considerations, including the large-scale unemployment elsewhere in the Moroccan economy, contribute to high prices for fish delivered to the canneries and high costs for labor in processing. While the Portuguese canned sardine industry is re-

rocco (Contd.):

ded locally as the principal competitor ermining world market prices, there is d to be no present prospect and little fu- e prospect of meeting such competition. T exception might perhaps be the establish- nt of a much larger market than at pres- in the United States by packing a smaller ine to meet United States consumer pref- ces.

The Norwegian brisling is by contrast not rded by the Moroccan industry as being mpetitor in quality terms except in the ted States. The Moroccan industry would l to imitate certain Norwegian methods, ecially in fishing operations, but considers t the capital investment required to mod- ize the fishing fleet is unavailable until re extensive markets are developed. (Unit- States Consulate, Casablanca, December 1963.)

Note: See Commercial Fisheries Review, January 1964 p. 64.

herlands

ANTARCTIC WHALING RESULTS, RLY 1963/64 SEASON:

The management of the Netherlands Whal- i Company in Amsterdam has released pre- linary data on its 1963/64 Antarctic whal- i expedition in which its factoryship, the Willem Barendsz, participated with 11 catch- essels. The vessel started operations in t Antarctic on December 12, 1963, and up

Table 2 - Netherlands Whaling Company Production in Antarctic, December 12, 1963 to January 5, 1964

Product	Season	
	1/1963/64	1962/63
	(Metric Tons)	
Whale oil	1,421	3,742
Sperm oil	1,058	1,225
Meat meal	199	465
Frozen meat and liver	176	140
Frozen meat for Japanese refrigerator vessel	1,226	2,802

1/Preliminary.

At a stockholders meeting of the whaling company early in 1964, proposals were advanced to discontinue hunting for whales and to use the factoryship for another purpose, such as general fishing off the South American and African coasts. No decisions were made on the proposal.

As far as is known, 16 whaling expeditions were operating in the Antarctic during the 1963/64 season as compared with 17 in the previous season. They were the Netherlands with 1 factoryship, Norway 4, U.S.S.R. 4, and Japan 7.

Higher prices for fish meal and fish oil during the 1962/63 season resulted in a production value for the Netherlands Whaling Company of Fl. 13.1 million (US$3.6 million) as compared with Fl. 12.3 million ($3.4 million) in the previous season. This included the whaling company's share of the Japanese vessel's (Awazu Maru) operations which accompanied the expedition and froze 7,285 pounds of whale meat for the United Kingdom. It was reported that the Japanese vessel would again work with the Netherlands expedition during the 1963/64 season. The 1962/63 season was reported to have closed with a loss of about $400,000 to the Netherlands whaling expedition. (United States Consulate, Amsterdam, January 2 and 16, 1964.)

Note: See Commercial Fisheries Review, June 1963 p. 83.

Table 1 - Whale Products Produced by Netherlands Whaling Company in Antarctic and Average Prices Per Ton, 1961/62 and 1962/63 Seasons

duct	1962/63 Season			1961/62 Season		
	Metric Ton	Average Price Per Metric Ton		Metric Ton	Average Price Per Metric Ton	
		Fl.	US$		Fl.	US$
e oil	10,463	656	182	12,084	401	113
n oil	2,905	867	241	2,915	769	214
-meat meal	1,261	561	156	1,742	550	153
n whale meat	795	779	216	1,220	808	224
e liver	344	905	251	417	909	253
whale products1/	60	-	-	31	-	-
e meat for Japanese igerator ship	7,285	-	-	7,936	-	-

1/Whale bones, sperm whale teeth.

anuary 5, 1964, the results were considerery disappointing. The data given in e 2 show the production as of January 5, 1, as compared with the same period in previous season.

Norway

CANNED FISH EXPORTS, JANUARY 1-OCTOBER 26, 1963:

Norway's total exports of canned fish in January 1-October 26, 1963, were 8.5 percent less than in the same period of 1962. The decline affected all of Norway's principal canned fish products. There was a particularly sharp decline in shipments to the United States due in large part to the recovery of the Maine sardine industry which recaptured a good part of the United States market for canned sardines.

Norwegian Exports of Canned Fish, January 1-October 26, 1962-63

Product	1/1963	1962
	(Metric Tons)	
Brisling	4,437	5,100
Small sild	11,779	12,010
Kippered herring	2,570	3,576
Soft herring roe	672	739
Sild delicatessen	396	439
Other canned fish	2,702	2,646
Shellfish	1,272	1,544
Total	23,328	26,054

1/Preliminary.

In 1963, the small sild-canning season opened on May 2. By November 23, 1963, the small sild pack amounted to 679,717 standard cases, compared with 663,283 cases in the same period of 1962.

The 1963 brisling packing season extended from June 4 to October 15. At the close of the 1963 season, a total of 282,039 standard cases of canned brisling had been packed, a decline of 32.5 percent from the pack of 417,918 cases in the previous year. The Norwegian brisling catch was rather poor in the fall of 1963.

The production of canned mackerel up to November 16, 1963, amounted to 1,577 metric tons, compared with 2,194 tons by the same date in 1962. (Norwegian Canners Export Journal, December 1963.)

* * * * *

FISHERIES LANDINGS AND EXPORTS, 1963:

Norway's fisheries landings in 1963 amounted to 1,138,105 metric tons with an ex-vessel value of Kr. 685 million (US$96 million), according to preliminary estimates. The 1963 landings were up about 1.8 percent in quantity and 3.0 percent in value from those in the previous year.

Norwegian exports of fishery products in 1963 were valued at Kr. 970 million (US$136 million), an increase of Kr. 25 million (US$3 million) from those in 1962. (News of Norway, January 9, 1964.)

Pakistan

NEW FISH-PROCESSING PLANT ESTABLISHED AT KARACHI:

A new fish-processing plant in Karachi, Pakistan, was to start processing fishery and fishery byproducts by March 1964. The plant is built along modern lines with the latest freezing and processing facilities for processing shrimp, fish fillets, and other fishery products, as well as the manufacture of shark liver oil.

The Karachi fish harbor and market was built by the Pakistan Government and started operating in late 1959. Since then it has become an important fisheries center and has given impetus to the growth of West Pakistan's fisheries. A certain amount of space at the market area was set aside for private industry and as of the end of 1963 a number of firms have located there with processing equipment to freeze, can, and dry fish, and also extract shark-liver oil.

Poland

TRAWLING OPERATIONS IN THE NORTHWEST ATLANTIC:

Polish factory-trawlers operating in the Northwest Atlantic off Newfoundland and Labrador in 1963 reported average daily catches of 31 metric tons. One of the vessels caught 6,400 metric tons of cod, ocean perch, and flatfish in 1963. The Polish trawlers began deep-water operations in 1963, operating at depths of 550 to 700 meters (1,800 to 2,300 feet.) (Polish Maritime News, December 1963.)

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TRAWLING OPERATIONS OFF NORTHWEST AFRICA:

In early November 1963, the Polish factory trawler Pegaz landed 1,270 metric tons of fish at Tema, Ghana. The Pegaz and 11 Polish mo-

land (Contd.):

trawlers are based at Tema, Ghana, re their catch is landed and sold. The ssels are said to be taking good catches fr fishing grounds off Northwest Africa. (lish Maritime News, December 1963.)

rtugal

RICAN TRAWLING FLEET MAY BE RVICED BY MOTHERSHIP:

Portuguese trawlers operating off Northst Africa have recently had to move fartr south to find fish. The added distance a lack of refrigeration on the fishing vess has created problems. Now, however, t Gil Eanes, a refrigerated supply ship, l be available to pick up the catch of the ican fleet during part of the year. In the st, the Gil Eanes has been used exclusivelo service the Portuguese Northwest Atltic cod-fishing fleet of about 75 vessels. e supply ship has normally remained in t Northwest Atlantic about six months each r providing equipment and welfare servis to the 6,000 fishermen of the cod fleet. w legislation (Decree-Law No. 45,496) cted December 30, 1963, makes the Gil nes available for charter to other registed vessel operators when it is not workin the Northwest Atlantic. (United States bassy, Lisbon, January 20, 1964.)

mania

O NEW FREEZER STERN AWLERS ORDERED FROM JAPAN:

The Rumanian state-owned fishing industis planning to extend its operations into t western Atlantic Ocean (off Newfoundland) a into the equatorial Atlantic (off the West ican coast) in 1964. Two large stern wlers have been ordered from Japanese pyards at Hitachi, the first of which was eduled for delivery in December 1963. e second vessel will be delivered some e during 1964. The vessels are 305 feet g with a displacement of 3,800 gross tons a a speed of 13 knots. They will have a ezer-hold capacity of 58,269 cubic feet a a fish-meal-hold capacity of 18,187 cubic fleet. The vessels will be capable of remaining at sea 100 days. (Le Marin, November 15, 1963.)

South Africa

TUNA COMPANY EXPANDING FISHING FLEET:

In late 1963, a South African tuna-fishing company was negotiating in Copenhagen, Denmark, for the purchase of 2 more ocean-going vessels at a cost of R220,000 (US$306,680). The new vessels will each have a refrigerated storage capacity of 60 to 70 tons of fish. The South African company was formed in Cape Town in mid-1963. It began tuna fishing operations off the west coast with the Marinette, a converted refrigerated cargo vessel which was outfitted for both long-line and pole-and-line fishing. The success of the Marinette led to the negotiations for the new vessels. (South African Fishing News and Shipping Industry Review, November 1963.)

Note: See Commercial Fisheries Review, November 1963 p. 78.

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FISH MEAL EXPORT QUOTA FOR 1964 INCREASED:

A 1964 fish meal export quota of 300,000 short tons has been assigned to South Africa (including South-West Africa) by the Fish Meal Exporters' Organization (FEO). This is 75,000 tons above South Africa's 1963 export quota. (In late October 1963, FEO met in Lima, Peru, and assigned 1964 fish meal export quotas for its five member countries--Angola, Iceland, Norway, Peru, and South Africa.)

In 1963, South Africa produced about 120,000 tons of fish meal while the Territory of South-West Africa produced about 140,000 tons, for a total of 260,000 tons. Only about 25,000 tons were consumed domestically, leaving 235,000 tons available for export.

South-West Africa's fish catch quota, which is set by the Government, has been increased from 600,000 tons in 1963 to 720,000 tons this year, and it is expected that the Territory's factories will again emphasize fish-meal production. (Fish canned, in contrast, was cut back from just over 2,000,000 cases in 1962 to 1,900,000 cases in 1963.) The increased

South Africa (Contd.):

quota from FEO will help absorb any surplus resulting from the larger catch.

About 60 percent of South African and South-West African estimated fish-meal production for 1964 has already been sold on future contracts at prices slightly above current rates, according to the chairman of the South African Fish Meal Producers' Association. Selling has now been stopped to await market developments. (United States Consul, Cape Town, January 14, 1964.)

South-West Africa

PILCHARD SEASON IN 1963 SETS RECORD:

The last of the six pilchard-processing factories at Walvis Bay in South-West Africa completed operations during the second week of November 1963. This was the best pilchard season yet at Walvis Bay with more than 600,000 short tons of raw fish landed.

The approximate production at Walvis Bay during the 1963 season was: fish meal, 140,000 short tons (an all-time record)--last season the production was 95,000 short tons; fish oil, 4 million imperial gallons--was less than in 1962 when the record production reached 4.5 million gallons.

The canned fish pack dropped in 1963 to 1.9 million cases in comparison with just over 2 million cases in the 1962 season.

Most of the factories were expected to start the 1964 season during February. The total South-West African pilchard quota for 1964 will be 720,000 short tons. (The South African Shipping News and Fishing Industry Review, December 1963.)

Spain

FISHERIES DEVELOPMENT PLAN, 1964-1967:

The Spanish Government's comprehensiv Economic and Social Development Plan for 1964-1967 went into effect January 1, 1964. The Plan places heavy emphasis on investments as the key to increased output and p ductivity.

The main goals for the Spanish fishing i dustry in the 4-year Plan are: (1) improve the fishing fleet by replacing 44,000 metric tons of obsolete vessels with 42,000 tons of new construction--vessels less than 25 yea old are expected to make up 453,000 gross tons of the Spanish fleet in 1967; (2) to equi fishing harbors; and (3) to modernize the fi canning and preserving industries, improve fish marketing, and increase consumption o fishery products.

Spanish canned production in 1967 is expected to be 60.9 percent greater than in 196 domestic consumption of canned fishery pro ucts should be 41.5 percent above the 1961 level, and exports should be 134.9 percent above 1961.

Salted fish production should increase by 50 percent during the 1962-1967 period. It hoped that production costs will decline with greater mechanization and expanded capacit

A special plan has been designed for the Canary Islands calling for an annual growth rate of 11.6 percent in the fisheries of that territory. (United States Embassy, Madrid, January 3, 1964.)

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FISHERY TRENDS AT VIGO AND LA CORONA, OCTOBER-DECEMBER 1963:

Vigo Landings and Prices: Fishery land ings at the port of Vigo, Spain, in October-December 1963 totaled 20,599 metric tons valued at 268.3 million pesetas (US$4.5 million), a considerable decline from third qua

Table 1 - Landings and Average Ex-Vessel Prices of Selected Species at Vigo, October-December 1963 with Comparisons

Species	1963						1962		
	October-December			July-September			October-December		
	Quantity	Average Price		Quantity	Average Price		Quantity	Average Price	
	Metric Tons	Pesetas/Kilo	US¢/Lb.	Metric Tons	Pesetas/Kilo	US¢/Lb.	Metric Tons	Pesetas/Kilo	US¢/Lb.
Small hake . .	4,675	25.50	19.3	4,550	25.45	19.3	2,363	25.79	19.5
Sardines . . .	3,359	8.09	6.1	4,414	7.07	5.4	5,066	6.53	4.9
Horse mackerel	3,034	4.14	3.1	4,394	3.33	2.5	4,777	4.61	3.5

Sin (Contd.):

t 1963 landings of 30,122 tons valued at 4.4 million pesetas (US$6.7 million), and rth quarter 1962 landings of 25,428 tons ued at 245.8 million pesetas (US$4.1 mil-n).

Table 2 - Distribution of the Fishery Landings at Vigo, October-December 1963 with Comparisons

iod	Shipped Fresh to Domestic Markets	Canned	Other Distribution (Smoking, Drying, Fish Meal, etc.)
	(Metric Tons)		
arter 1963	12,020	5,364	3,215
arter 1963	13,786	10,117	6,219
arter 1962	12,882	7,115	5,431

A drop in landings at Vigo during the last te months of the year is expected. The e of the albacore season and dwindling sar-de landings are the main reasons for the de-cie, but other species are also affected. T offshore fleet is often inactive in winter bause of bad weather.

Total fishery landings at Vigo during 1963 we up 15.8 percent in quantity and 41.7 per-ce in value from 1962 (which was also a rord year).

Table 3 - Fishery Landings at Vigo, 1959-63

Ye	Quantity	Value	
	Metric Tons	1,000 Pesetas	US$1,000
1	91,882	1,261,424	21,036.8
1	79,344	890,449	14,850.0
1	74,810	723,033	12,058.0
1	65,457	660,645	11,017.6
1	75,179	759,661	12,668.9

La Coruna Landings and Prices: Fishery la ngs at the port of La Coruna in 1963 were r orted to be about 75,000 metric tons (in-c ng cod landings) with an ex-vessel value o most 1,200 million pesetas (US$20.0 mil-l). About 11,000 metric tons of the La C na 1963 landings were sold to canneries, a about 70 percent of the landings (exclud-i od) were shipped fresh to domestic mar-k .

anned Fish Industry: Difficulties were r rted in the canned fish industry at Vigo a La Coruna during October-December 1 . Canned fish production was down con-s rably from that in the preceding quarter a well as from that in the fourth quarter of 1 (table 2). All canneries were said to h large stocks on hand. A serious decline i anned fish exports has been only partly o t by improved domestic sales. There is a growing sense of concern among all but the strongest firms.

Some relief may be obtained if the Government authorizes the export of canned fish packed in peanut oil. However, it is thought that the industry needs a thorough reorganization, including new machinery and equipment, new production methods, and possibly some consolidation of producers. (United States Consul, Vigo, January 16, 1964.)

Note: 59.96 Spanish pesetas equal US$1.00.

Taiwan

FISHERIES TRENDS, 1963:

Production: Taiwan's fisheries production in 1963 was up 7.2 percent from that in 1962. The increase in production from deep-sea fisheries was mainly due to a good trawling

Taiwan's Fisheries Production, 1962-63

Type of Fishery	1963	1962
	(Metric Tons)	
Offshore and deep-sea fisheries .	119,880	113,595
Inner coastal fisheries	144,023	132,525
Outer coastal fisheries	36,854	32,286
Fish culture	49,972	48,640
Total	350,729	327,046

catch, and the addition of 12 tuna long-line vessels constructed under a loan extended by the Taiwan Joint Commission on Rural Reconstruction (JCRR). Increases in coastal fisheries were due to good runs of fish and the growth of a motorized fleet of small vessels. The drop in production from fish culture was the result of the summer drought and the cold weather in the spring which killed many fish.

Two of Taiwan's new 210-ton tuna long-line vessels sail on their maiden voyage.

Taiwan (Contd.):

Artificial Hatching of Carp: In July 1963, three species of Chinese carp (Hypophthalmichthys molitrix, Aristichthys nobilis, and Ctenopharyngodon idellus) were given pituitary hormone injections to stimulate spawning. The majority of the eggs obtained from the hormone-treated fish were fertilized and hatched normally and the young fish obtained by that method grew normally. It appears that this may be an economical way to solve the difficult problem of hatching carp. Chinese carp fingerlings had to be imported from Hong Kong in past years.

Artificial Hatching of Mullet: The grey mullet (Mugil cephalus) is an important pond fish in Taiwan, but fingerlings for stocking local ponds must be captured in coastal water, and the supply is often inadequate. In December 1963, a team of fish culturists tried to fertilize eggs obtained from ripe mullet captured off the southern coast of Taiwan. The male and female mullet were first given hormone injections. The eggs obtained by stripping were fertilized with milt from the male and hatched in 60 hours. However, all the fry thus obtained died in 2 or 3 days. The experiment will be continued in late 1964 when mullet start their spawning migration off the southern coast of Taiwan. (T. P. Chen, Chief, Fisheries Division, Joint Commission on Rural Reconstruction, Taiwan.)

Note: See Commercial Fisheries Review, April 1963 p. 74.

U. S. S. R.

NEW SERIES OF FREEZER-TRAWLERS UNDER CONSTRUCTION IN DENMARK:

The M/S Grumant, the first of the new series of four identical freezer-trawlers ordered from a Copenhagen shipyard by V/O Sudoimport, of Moscow, was launched December 18, 1963. The contract for the 4 vessels amounts to a total of Kr.95 million (US$13.7 million), and calls for delivery in 1964. The M/S Grumant was built as a refrigerator ship to dress and freeze catches taken aboard from accompanying trawlers. However, it also may be operated as a stern trawler. Specifications are as follows: length between perpendiculars 91 meters, breadth 16 meters, depth to upper deck 8.6 meters, deadweight (approximate) 2,550 metric tons, draft (approximate) 5.52 meters, speed on loaded trials 14.0 knots. The Grumant is driven by a 6-cylinder Diesel engine developing 3,530 horsepower at 200 r.p.m.; auxiliary power is provided by three 6-cylinder and one 3-cylinder Diesel engines.

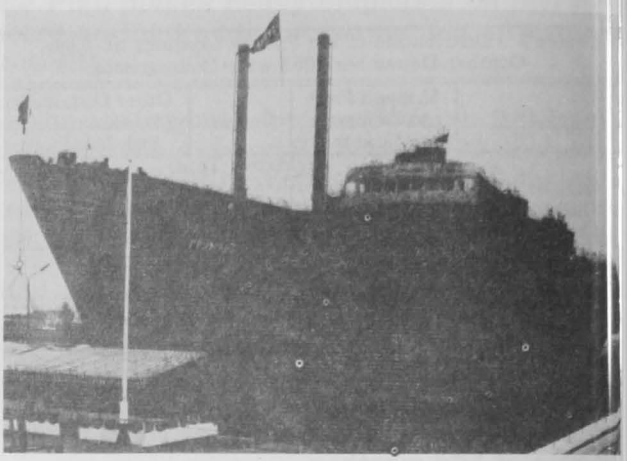

Fig. 1 - Bow view of M/S Grumant at construction dock.

The M/S Golfstrim, the second vessel of the new series, was launched on January 16, 1964.

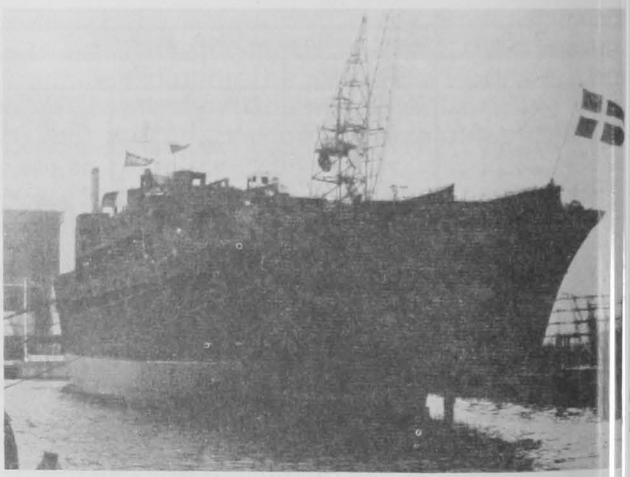

Fig. 2 - Stern of M/S Grumant. Note chute for hauling aboard trawl catches.

An earlier series of 4 identical vessels was delivered by the Copenhagen shipyard to V/O Sudoimport in November 1962 and January, June, and September 1963. The first series of four vessels had identical specifications to the M/S Grumant and M/S Golfstrim except that the individual tonnage of the earlier vessels was given as 2,600. It was also stated that the first series of vessels would freeze fish only and not do any trawling.

U.S.S.R. (Contd.):

The M/S Grumant has propulsion machinery as well as the refrigerating plant located amidships, with large refrigerated cargo holds fore and aft. The entire superstructure is arranged amidships. The stern includes a large chute for taking catches aboard.

The rigging consists of two pairs of self-supporting derrick posts. On the superstructure, there is a self-supporting combined signal and radar mast. The derricks (four 3-ton and two 7-ton) are served by four 3-ton and two 5-ton winches. The deck machinery also includes an anchor winch, two 3-ton warping winches, and one 15-ton trawl winch.

Construction time for the M/S Grumant, from keel laying to the assembly of the final section, was only 15 working days. This was 4 days faster than the 19-day record set in constructing the M/S Vitrus Bering, of the first series, in June 1962. The M/S Grumant was built in five main sections--keel, section forward of mast, bow, stern and superstructure--which were welded ahead of time, held in the section warehouse, and then assembled in drydock. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, January 22, 1964.)

See Commercial Fisheries Review, Sept. 1962 p. 71.

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NEW POLISH-BUILT FACTORYSHIP DELIVERED:

A well known Copenhagen ship and engine builder announced on December 2, 1963, that one of its engine licensees, a shipyard in Gdansk, Poland, had delivered the first of a series of 11 factory vessels (a new type known as B-64) to the Soviet fishing fleet.

The new vessel is intended to fulfill the function of a factory-base ship on the Atlantic grounds in close cooperation with fishing fleets. In addition to processing and storing fish, the factoryship will (1) supply fishing fleets with oil, water, fishing gear, and provisions; (2) render technical assistance to fishing units; (3) render social and medical service to fishing vessel crews; and (4) command the whole fishing fleet while operating on the fishing grounds.

The dimensions of the vessel are: length (o.a.-all) 542 feet, breadth 69 feet, depth to main deck 31 feet, depth to shelter deck 41 feet, deadweight tonnage 10,000 metric tons, gross tonnage 9,250 tons, and net tonnage 3,660 tons.

The vessel is driven by a 5-cylinder Diesel engine which develops 6,250 horsepower at 115 r.p.m. Service speed was reported as about 14 knots.

The vessel has holding areas with the following capacity: cold-storage holds 10,530 cubic meters, provisions chambers 300 tons, fuel oil tanks 46,660 cubic meters, fresh water tanks 1,900 cubic meters, oil tanks 200 cubic meters, and cod-liver oil tanks 230 cubic meters.

The vessel has a shelter-deck design with a long forecastle, superstructures fore and aft, and single compartment unsinkability. Processing is carried out between decks. Fresh fish is received on the vessel in net bags (floating cod ends) that are pulled up the stern ramp by two-ton winches. Catches may also be transferred from fishing vessels alongside by derricks of 5-ton and 10-ton capacity. Fuel oil and water for fishing vessels are carried in deep tanks and double bottom tanks. The stern upper-deck superstructure has space for an airplane or a helicopter. The hull is reinforced for navigation in ice. All holds are equipped to store frozen fishery products at -25° C. (-13° F.). Both the mooring and anchoring appliances are adapted to anchor the vessel in deep water. Special aids will allow simultaneous mooring of four fishing vessels alongside the mothership. It has accommodations for 248 persons in single, 2- and 4-berth air-conditioned cabins. The vessel is equipped to provide medical service to fishing fleet crews. The vessel carries 2 salt-water evaporators with a total capacity of 100 tons per day to provide fresh water for a fishing fleet.

The vessel's refrigeration equipment has the capacity to : (1) freeze 100 tons of fish per day in blast-freezing tunnels; (2) produce 20 tons of flake ice per day; (3) maintain a temperature of -25° C. (-13° F.) in all holds; (4) maintain appropriate temperatures in provisions chambers; and (5) maintain required air-conditioning.

Two processing rooms on the main deck can handle 200 tons of fish per day. Six fully mechanized processing lines are designed to produce fish fillets, herring preserves, and

U.S.S.R. (Contd.):

salted herring. Fish-processing equipment includes filleting machines and canning machinery. The 3 herring processing lines have a capacity of 50 tons each 22 hours. There is a fish reduction unit with daily capacity of 100 tons. The cod-liver oil plant can produce 5 tons of oil daily. Fish products are mechanically conveyed from the processing rooms to storage holds. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, January 15, 1964.)

United Arab Republic

FISH CANNING:

The only important fish cannery in the United Arab Republic is located near the mouth of the river Damietta (branch of the Nile) on the Mediterranean Coast in the town of Ezbet el Borg. The cannery, which became fully operative late in the spring of 1962, includes a can manufacturing section and a fish meal and oil processing unit. At present, the plant is concentrating on sardine canning. From September to November, the Mediterranean sardine season, the factory receives sardines directly from fishing vessels arriving at the company's dock. During the rest of the year, fresh sardines are trucked from Suez.

The factory is fully equipped to handle all stages of sardine canning. The canning equipment was manufactured and installed by a Japanese firm. Japanese technicians assisted at the initial pilot production, but present operations are under the supervision and maintenance of Egyptian engineers working in the plant. All operations are done by machine, except for cutting the fish and filling the cans which are manual. The plant employs about 400 full-time workers. This includes 300 women who process the fish on the production lines.

Canned sardine production during fiscal year 1964 is expected to reach 15,000 metric tons or about 7 million 4.4-oz. cans, compared with 2.5 million cans in FY 1963. The large increase in sardine production is expected because of the smoothing out of earlier production difficulties, and to the fact that facilities formerly devoted to crab and shrimp canning will be available for work on sardines.

The plant processes "musa," a small fish taken along with sardines. Production figures are inexact because "musa" is considered a byproduct of the sardine industry, but the manager expected that about 1 million 4.4-oz. cans of "musa" would be processed during FY 1964 for retailing on the local market at 5 piasters (11.5 U.S. cents) per can.

Although sardines are canned chiefly for domestic consumption, small amounts are being exported to Ghana, the Congo, and Kuwait. No increase in those exports is expected in the immediate future.

A total of 750,000 3.5-oz. cans of shrimp were produced during FY 1963. Shrimp are not being processed this year. The company has been exporting about 500,000 cans of shrimp each year to East Germany, and will continue to do so until stocks are exhausted. The resumption of shrimp production is not planned unless a firm export market develops.

The cannery produced 30,000 7-oz. cans of crab during FY 1963. No crab production was reported for FY 1964. All crab production is consumed locally.

The company will process 100,000 2-oz. cans of anchovies during FY 1964.

The plant management is considering importing frozen tu from Japan for canning. Negotiations for machinery are un way, and the plant laboratory is conducting feasibility resea If arrangements are successful, the factory plans to produce 300,000 3-1/2-ounce cans and 200,000 7-1/2-oz. cans of tun annually.

According to the plant management, the possibility of e porting canned shrimp to the United States is being discus with a shellfish company in Mississippi. The Mississippi company would supply the empty cans, and then buy the ca shrimp packed at the Egyptian factory.

Retail prices on the local Egyptian market are:

Item	Unit	Price	
		(Piasters 1/)	(U.S. Cen
Shrimp	3.5-oz. can	15	34.5
Crab	7.0-oz. can	20	46.0
Sardine	4.4-oz. can	5.5	12.7
Musa	4.4-oz. can	5	11.5

1/One Egyptian piaster equals US$0.023.

The Damietta cannery is well organized and managed. T equipment on the premises is well maintained. Eliminatio hand operations by introduction of more automatic machine would make the processing more economical, but such expa sion must await the availability of foreign exchange. (Unite States Consulate, Port Said, January 24, 1964.)

United Kingdom

FISHERY LOANS INTEREST RATES REVISED:

The British White Fish Authority announc that effective November 16, 1963, their rat of interest on loans for fishing vessels of more than 140 feet, new engines, nets and would be as follows: on loans for more tha years but not more than 10 years, $5\frac{5}{8}$ perc (increase $\frac{1}{8}$ percent); on loans for more th 10 years but not more than 15 years, $5\frac{5}{8}$ p cent (increase $\frac{1}{4}$ percent); on loans for mo than 15 years but not more than 20 years, percent (increase $\frac{1}{4}$ percent).

The rates on loans made before Novem 16 are unchanged.

Note: See Commercial Fisheries Review, January 1964 p. 7

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TRAWLER FISHERMEN GET MORE PAY AND ADDITIONAL PAID HOLIDAYS:

More pay and additional paid holidays f British trawler fishermen were issues a- greed upon at a meeting in London of the N tional Joint Industrial Council which repre sents vessel owners and unions in the Brit fishing industry. The new pay agreement w to become effective November 25, 1963. T fishermen are getting an extra one shilling

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4 U. S. cents) on the basic rates, and three ore paid holidays bringing the annual holi- y leave up to 24 days.

After the meeting, an employee spokes- n who is also National Fishery Officer of Transport and General Workers' Union GWU) stated that the leave agreement was ong the best negotiated in British indus- . A Fleetwood official of TGWU described increase as not being as much as they had pected but that it was a step in the right di- ction.

At Aberdeen, an official of the Aberdeen shing Vessel Owners' Association said the creased rate will cost trawler owners there other £20,000 to £25,000 (US$56,000 to 0,000), or about £250 ($700) per vessel. He ded that the fishermen had wanted 28 days ave but that under the new agreement they uld get 24 days leave with pay.

Vessel owners in Lowestoft were expected hold a meeting before the pay increases came effective in order to discuss the im- ications of the decisions made at the No- mber London meeting.

At Hull, the pay increase will affect about 00 fishermen. Also, about 2,500 workers ployed either on the Hull Fish Market or dock-processing establishments were to a shorter working week with increased imum rates of pay. Effective on April 6, 4, the working week will be reduced from hours to 42 hours. This was based on eements negotiated between the Hull Fish rchant's Protection Association and Union presentatives. New minimum pay rates e to be effective in the first full pay week lowing November 11, 1963. Minimum pay es for men 20 years of age and over were e increased by seven shillings (98 U. S. nts), with proportionate increases for ths and boys. Separate classifications of lled and unskilled for women have been mbined, and the new rate for women 20 ars of age and over will be £6 10 shillings 8.20) a week, with proportionate increases those under 20 years of age. (Fishing ws, November 15, 1963.)

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XING-FISH-AT-SEA TESTS CARRIED T BY TRAWLER:

The British trawler St. Britwin was slated return to her home port of Hull in December 1963, following a fishing trip in which fish-boxing tests aboard the vessel were carried out. On this experimental trip the vessel also carried aboard, in addition to her normal crew, members of the White Fish Authority's Industrial Development Unit who were sponsoring the boxing-fishing-at-sea tests.

There have been occasional experiments in fish boxing aboard distant-water trawlers but these have been on a relatively small scale and have had as their primary aim an assessment of the quality of boxed fish. Now, as the scope of the boxing at sea is becoming enlarged, the purpose of this bigger scale work is to gain practical experience of what is entailed both at sea and in port unloading operations.

It is stressed, however, that on this occasion, neither the type of box to be used nor the method of marketing, involving as it will sample weighing, will necessarily be the final procedure to be adopted.

The present practice of conventional distant-water trawlers is to stow catches in ice in the fish hold but a report on the subject has pointed out advantages which the extension of the boxing technique would give.

Boxing fish at sea, it was stated, besides cutting out considerable intermediate fish handling, would have the further advantage of preventing the earlier and later parts of a vessel's catch being accidentally mixed during unloading.

In discussing the present boxing experiments, the head of the Industrial Development Unit expressed appreciation of the help which the Torry Research Station, the Humber Laboratory of the Department of Scientific and Industrial Research, and others were giving on the tests.

"One of the advantages of boxing fish," he said, "is that it enables fish to be displayed in more or less the order in which it has been caught." (Fishing News, November 15, 1963.)

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NEW FROZEN FISH THAWING UNIT:

A new thawing plant operating at Grimsby, England, is an essential part in a plan to freeze fish at sea and then thaw and fillet ashore to meet specific requirements. The goal is an end-product with all the physical characteristics of fresh fish in prime condition.

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The new thawing plant was designed to accommodate the 100-pound (42 by 21 by 4-inch) blocks of whole fish now being produced by certain freezer-trawlers. The

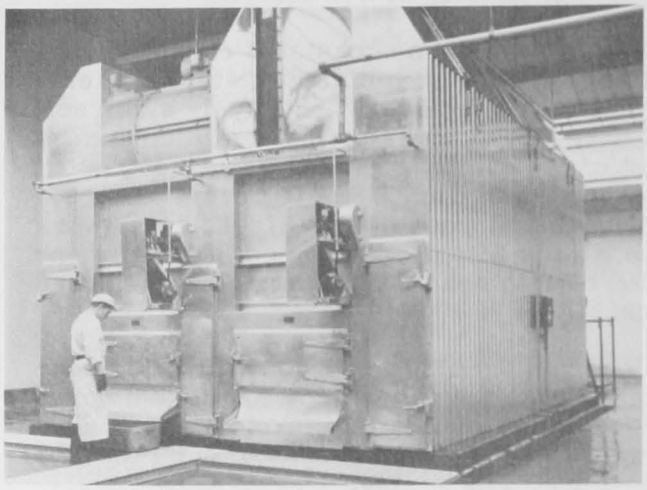

Fig. 1 - New frozen fish thawing unit operating in Grimsby.

thawing unit is, in effect, a large box (16 by 26 feet at the base), fitted at each end with entry doors and flap-sealed horizontal openings for the entry and removal of fish. It contains an insulated thawing chamber and the high velocity fans, heater units, and humidifiers of the thawing equipment. The thawing chamber is lined with zinc-sprayed, rust-proofed steel sheeting, and is equipped with twin five-tier noncorrosive endless rubber belts which carry the fish.

The whole fish blocks are fed on to the moving belts by roller conveyors. The fish

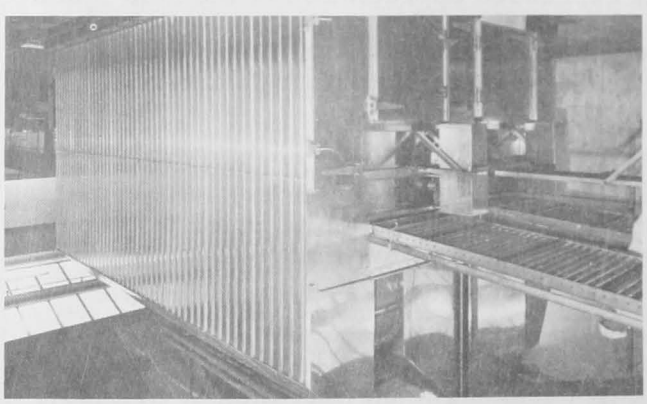

Fig. 2 - Shows the twin roller conveyors by which 100-pound frozen fish blocks enter the thawing chamber. Housed in the upper half of the structure are high velocity fans, and equipment regulating heat and humidity.

blocks are thawed in four hours by a combination of high velocity air, temperature, and humidity--all critically regulated, integrated, and timed. After thawing, the fish blocks emerge as individual fish ready for filleting. The unit can produce 1 to $1\frac{1}{2}$ tons of thawed fish per hour.

Fig. 3 - Frozen blocks of whole fish entering thawing unit.

The thawing unit's cycle speed of 4 hours represents a belt speed of 5 inches per minute. This can be varied to suit blocks of greater or lesser thickness than four inches.

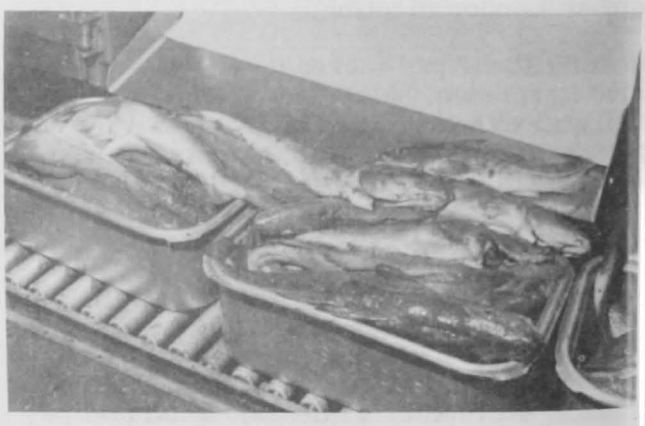

Fig. 4 - After four hours of treatment by carefully regulated temperature, humidity, and high-velocity air, the fish blocks emerge from the thawing unit as individual fish ready for filleting.

It is claimed that the new thawing unit preserves the molecular structure of fish tissue, prevents scale damage, and preserves natural color.

The new thawing plant belongs to one of Britain's largest fishery firms. In using the hot-air method of thawing, it contains refinements not previously found in equipment of this type. At the same time, it reverses a

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end towards dielectric thawing already in se in the British fishing industry.

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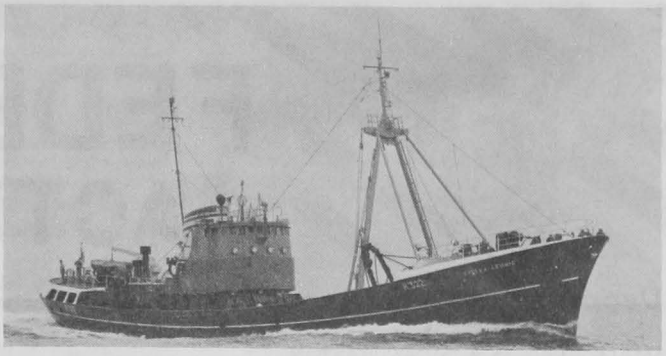
RAWLER "STELLA LEONIS" WINS LVER COD TROPHY FOR 1963:

The 1963 winner of the Silver Cod Trophy Great Britain was the 190-foot trawler ella Leonis which landed 39,556 kits 53,784 pounds) of fish valued at £161,500 S$452,200) in 1963. The vessel made 17 stant-water trips and was at sea for 335 ys in 1963. The skipper of the Stella onis is only 33 years old, although he has years of trawling experience.

The Silver Cod Trophy is presented an- ually to the British distant-water vessel ith the largest catch for the year. In 1962, e winner of the trophy was the Somerset Maugham with landings of 46,560 kits (6,518,400 pounds) valued at £146,182 (US$409,130). The record for the competition, which started 10 years ago, is held by the Kirkella, which landed 46,589 kits or 6,522,460 pounds.



Silver Cod Trophy winner in 1963. The Stella Leonis is fitted for starboard fishing only. Accommodations are provided amidships and aft for 30 persons. The fish-storage hold has a capacity of 18,170 cubic feet. The vessel is powered by a 1,800-horsepower Diesel engine.

Note: See Commercial Fisheries Review, April 1963 p. 78.

SALT WATER CONVERSION BY MARINE WILDLIFE

How do sea mammals, sea birds, turtles, and marine iguanas which live on rocky ocean islands completely lacking in fresh water manage to thrive without this basic necessity? Many of the animals have special salt glands, which secrete a saline solution five times more concentrated than blood and twice as salty as sea water. Thus sea water is used and the excess salt eliminated via those glands. (Sea Secrets, April 1963.)

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