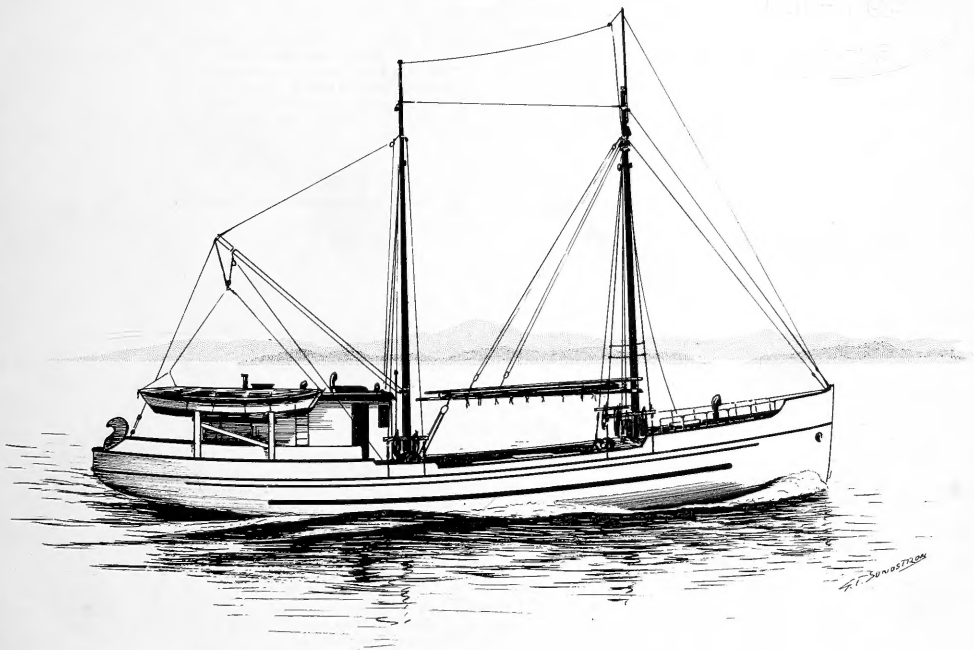


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COMMERCIAL FISHERIES **REVIEW**

HALIBUT SCHOONER

PACIFIC COAST



Vol. 16, No. 6

JUNE 1954

FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.



COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries
prepared in the BRANCH OF COMMERCIAL FISHERIES

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Mailed free to members of the fishery and allied industries. Address correspondence and requests to the: Director, Fish and Wildlife Service, U. S. Department of the Interior, Washington 25, D. C.

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CONTENTS

COVER: A typical West Coast halibut schooner. A large United States and Canadian fleet of these vessels sailed for the North Pacific halibut fishing grounds in mid-May. A treaty between the United States and Canada provides for the preservation of the halibut fishery of the Northern Pacific Ocean and Bering Sea. The International Pacific Halibut Commission, the regulatory agency established by the treaty, regulates the areas to be fished, establishes quotas for certain areas, and establishes nursery areas where fishing is prohibited. The Commission appears to be successfully achieving its purpose--the gradual rebuilding of the halibut supply to a higher level of productivity. The type of gear used to fish for halibut is depicted on page 60 of this issue.

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COMMERCIAL FISHERIES REVIEW

June 1954

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FREEZING AND COLD STORAGE OF PACIFIC NORTHWEST FISH AND SHELLFISH

Part III - Storage Characteristics of Six Species of Oily Fish

By M. Heerdt, Jr.* and M. E. Stansby**

ABSTRACT

In storage at 60 to 160 F., pilchard (*Sardinops caerulea*) and eulachon (*Thaleichthys pacificus*) that were block frozen and ice glazed and albacore tuna sticks (*Germo alalunga*) that were wrapped in cellophane became slightly rancid in from 0 to 90 days, sablefish steaks (*Anoplopoma fimbria*) that were wrapped in cellophane became slightly rancid in from 90 to 180 days, and herring (*Clupea pallasii*) and silver smelt (*Hypomesus pretiosus*) that were block frozen and ice glazed became slightly rancid in from 180 to 270 days.

INTRODUCTION

Oily fish have the reputation of quickly becoming rancid in frozen storage. Even if properly packaged, some species become rancid in from 60 to 90 days, particularly if stored above 10° F. Their high content of partially unsaturated oils is usually considered as the primary reason for the rapid onset of rancidity.

This paper, the third in a series on the freezing and storage characteristics of Pacific Northwest fish and shellfish, reports on a study made on one marine species that spawns in fresh water and on five strictly marine species, all of which were oily fish.

The following were the species studied: pilchard (*Sardinops caerulea*), eulachon (*Thaleichthys pacificus*), albacore tuna (*Germo alalunga*), 1/ sablefish (*Anoplopoma fimbria*), herring (*Clupea pallasii*), and silver smelt (*Hypomesus pretiosus*).

SOURCE AND HISTORY OF THE SAMPLES

PILCHARD: The pilchard, purchased from a reduction plant at Bay City, Washington, came from a lot of fish that had been seined from the coastal waters of the Pacific Ocean off Grays Harbor. These fish were caught during cool weather, iced within 12 hours, and maintained in ice until dressed and frozen. Two days elapsed from the time the fish were captured until they were put into the freezer.



Fig. 1--Filling the aluminum pans and loading the pan rack.

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1/Also known as *Thunnus germo*.

EULACHON: The eulachon were obtained near Kelso, Washington, during their February spawning migration up the Cowlitz River, a tributary of the Columbia River. They were kept at the prevailing out-of-doors temperature without ice while in transit to Seattle and upon arrival there. These fish were about 2 days out of water before being put into the freezer.

ALBACORE TUNA: Three 15-pound albacore tuna were obtained from a Seattle wholesale fish dealer. They had been held in ice for about 4 or 5 days. It is believed that these were troll-caught fish from the coastal waters off the State of Washington. Streaks of color indicative of viscera burn were present in the belly cavity of these fish, but the surrounding flesh was not discolored. These tuna were dressed, quartered, cut in sticks, packaged, and put into the freezer on the day of purchase.

SABLEFISH: The sablefish were taken by otter trawl from the waters west of Vancouver Island. These fish had been dressed heads-off and then iced for 10 days while in transit to Seattle. After being re-iced overnight at Seattle, the fish were definned, washed, steaked, packaged, and put into the freezer.

HERRING: Seine-caught herring were obtained directly from a fishing boat. These fish were taken in Hood Canal and transported un-iced overnight to Seattle. They were about 24 hours out of water before being put into the freezer.

SILVER SMELT: The silver smelt were seined from the waters along the east side of Whidby Island. These fish were iced in transit to Seattle and re-iced upon arrival there. They were about three days out of water before being put into the freezer.

PREPARATION OF SAMPLES FOR STORAGE

GENERAL PROCEDURE: In the preparation of the samples for storage, the fish were first dressed. If the resulting dressed fish were too large to be conveniently packaged, they were cut into pieces of appropriate size.

Two series of samples were then packaged. The first, a test series, was put up to show how long the fish would keep if prepared, packaged, and stored by ordinary commercial methods in use at the time that the study was made. The second, a control series, was put up under special conditions that were thought would maintain the original quality of the control series for the duration of the test period. The purpose of the control series was to provide a standard against which any loss of quality in the test series could be measured.

The preceding two paragraphs give the general procedure used in the preparation of the samples for storage. The specific details of this procedure are given in the following four subsections.

Dressing and Cutting the Fish for Test Samples: The size and nature of the fish influenced the dressing and cutting procedure. The tuna were dressed by the removal of the heads, fins, tails, and viscera. They were then divided longitudinally into quarters, and the backbones were discarded. Each quarter was cut into sticks 1 to 1½ inches in diameter and about 7 inches in length. The sablefish, which were dressed when purchased, were washed and steaked. The pilchard, eulachon, and herring were dressed with heads off and viscera removed and then washed. The silver smelt were left whole.

Dressing and Cutting the Fish for Controls: Fish for the control samples were dressed and cut exactly as for the test samples, with the exception that the tuna quarters, dressed pilchard, and dressed herring were cut into 1½-inch lengths.

Preparation of Test Samples for Storage: When the test series were planned, consideration was given to the fact that the storage life of a particular species of fish depends greatly upon the methods of preparation, packaging, and storage used. Fish can be held for a long time with minimum loss of quality if, for example, the individual fish are frozen in a block of ice and stored at a very low temperature. Obviously, such a method is not practical. What is needed is information on how long the fish will keep if prepared, packaged, and stored by ordinary commercial methods. For this reason only practical low-cost commercial methods in common use were employed in handling the test samples.

The test samples of pilchard, eulachon, herring, and silver smelt were prepared by carefully laying the fish side by side, two layers deep into rectangular aluminum pans until each contained about 5 pounds of fish (fig. 1). Once filled, each pan was covered with a tight-fitting lid and subjected to rapidly moving air at -20° F. for about $2\frac{1}{2}$ hours during which time the fish froze into a unit mass or block conforming to the shape of the pan (fig. 2). The pans were then immersed in water at 32° F. As each block thawed slightly, came free from the pan, and was lifted from it, the water adhering to the block froze into a protective glaze covering all of the surface. These glazed blocks were loosely packed into fiberboard cases for storage. At intervals of 90 days the blocks were removed from the cases, reglazed in water, and repacked. At no time did the glaze become so thin as to expose the fish.

Each sample of tuna and sablefish was wrapped tightly in a single sheet of MSAT^{2/}/cellophane. The wrapped samples were packed into rectangular aluminum pans, each of which had a capacity of 5 pounds. After the pans were covered with tightly fitting aluminum lids, they were held for at least $2\frac{1}{2}$ hours at -20° F. in a stream of rapidly moving air. The samples, which were hard frozen, were then transferred from the pans to five-pound, two-piece, folding waxed cartons.

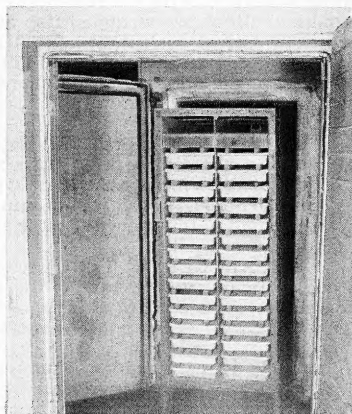


Fig. 2--Loaded pan rack partially removed from the freezer.

Preparation of Control Samples for Storage: As fresh fish for use as controls were not consistently available, it was necessary to use packaged controls. In this study the controls were prepared by one of the most effective methods available for preserving frozen fish; that is, they were vacuum packed in hermetically-sealed cans prior to being frozen. Although not always commercially practical, this method has been used by frozen-food laboratories to prolong the time over which experimental samples will retain their original fresh qualities.

The control samples were packed in $\frac{1}{2}$ -pound flat cans in one of three ways as follows: (1) the $1\frac{3}{8}$ -inch lengths of herring, pilchard, and tuna were packed tightly on end; (2) the sablefish steaks were packed flat, two deep; and (3) the eulachon and silver smelt were packed curled into circles. The cans were then sealed under 15 inches of vacuum, held for $2\frac{1}{2}$ hours in rapidly moving air at -20° F. to hard freeze their contents, and finally transferred to open wooden boxes, which were placed in frozen storage.

STORAGE CONDITIONS

Since frozen storage facilities were not available at the laboratory, commercial facilities were used. The temperature of storage ranged from 6° to 16° F.

^{2/}"MSAT" means moisture-vapor proof, heat sealing, anchored coating, transparent.

ORGANOLEPTIC EXAMINATION

Objective chemical and physical tests have not proven entirely successful in the determination of frozen-fish quality; instead, the organoleptic factors of palatability and appearance are usually considered the best criteria. All of the samples were therefore examined organoleptically for changes in odor, flavor, texture, and color by a test panel. In each test this panel was made up of at least eight people experienced in making organoleptic determination.

GENERAL PREPARATION OF FISH FOR ORGANOLEPTIC EXAMINATION:

The samples were prepared for organoleptic examination by the test panel after 0, 90, 180, and 270 days of storage. (The number 0 indicates that the sample was examined before being placed in storage). About 5 pounds (one block) of the ice-glazed or cellophane-wrapped fish and 8 to 10 cans of the vacuum-packed controls were examined at each interval. All samples were thawed at room temperature in moving air from an electric fan. The only fish that required dressing after being thawed were the silver smelt. They were headed and eviscerated at this time because storage in the round was believed to result in a product having better quality.

SALTING AND BAKING: Both the thawed test samples and the thawed control samples were immersed in a six-percent salt solution for five minutes to bring out the natural flavor of the fish. Upon being removed from the solution, the samples were drained, baked for 20 minutes on cooky sheets in an oven set at 350° F., and then immediately served to the test panel.

ORGANOLEPTIC TEST: After observing color changes, if any, and noting the odor, flavor, and texture of the sample, each panel member assigned to the test sample and to the control sample one of the following ratings: VG for very good (highest quality), G for good (some loss of original quality but no indication of rancidity), F for fair (slightly rancid), P for poor (rancid and barely edible), and U for unacceptable (very rancid). Numerical values of 4, 3, 2, 1, and 0 were assigned to VG, G, F, P, and U, respectively. The average of the resulting scores gave a single final numerical score that could be changed back to the equivalent alphabetical rating.

RESULTS AND DISCUSSION

The results of the organoleptic examinations appear in table 1.

Time in frozen storage at 50° to 150° F	Quality Rating/											
	Pilchard		Eulachon		Albacore tuna		Sablefish		Herring		Silver smelt	
Days	Ice-glazed block	Control in tin	Ice-glazed block	Control in tin	Cellophane wrapped	Control in tin	Cellophane wrapped	Control in tin	Ice-glazed block	Control in tin	Ice-glazed block	Control in tin
0	G	G	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG
90	P	F	F	F	F	VG	G	VG	G	VG	G	VG
180	P	F	F	F	F	VG	F	G	G	G	G	VG
270	P	F	F	P	F	VG	F	G	F	G	F	F

1/VG = Very good (highest quality)
 G = Good (some loss in original quality but no indication of rancidity)
 F = Fair (slightly rancid)
 P = Poor (rancid and barely edible)
 U = Unacceptable (very rancid)

TEST SAMPLES: Each species appeared to have its own storage characteristics, as follows:

Pilchard: Pilchard that had been block frozen apparently were not suitable for storage, for they became poor (rancid and barely edible) in from 0 to 90 days. The cut surfaces, in particular, darkened and became rancid in this initial storage period. The rancidity did not markedly increase thereafter.

Eulachon: These eulachon had an oily flavor that was objectionable to some of the tasters and that was difficult to distinguish from rancid flavors. They became

definitely rancid after 180 days of storage. (Even though frozen eulachon apparently tend to become slightly rancid in from 0 to 90 days, it is interesting to note that they are acceptable to the retail market if sold and consumed promptly after being frozen.)

Albacore Tuna: Of the six oily fish studied, albacore tuna had the most unique storage characteristics. The test samples wrapped in cellophane became slightly rancid between 0 and 90 days of storage; yet for unknown reasons they did not become progressively more rancid between 90 and 270 days of storage. By the end of 180 days, however, the light meat had become somewhat gray at the surface and the dark meat had become brown. The control samples remained unchanged throughout the entire 270 days of storage.

Sablefish: Sablefish steaks, cellophane wrapped, became darkened and discolored (yellow) in appearance and fair (slightly rancid) in quality in from 90 to 180 days of storage. These steaks had average storage qualities.

Herring: Herring, block frozen and ice glazed, remained good in quality until between 180 and 270 days of storage, but the cut surfaces darkened gradually during this period. A few rust spots could be seen on the skin of the herring after 270 days of storage. These herring appeared to have above-average storage qualities.

Silver Smelt: Silver smelt, block frozen and ice glazed, remained good in quality until between 180 and 270 days of storage, although yellow discoloration became evident in the belly cavities between 90 and 180 days of storage. The silver smelt appeared to have above-average storage qualities.

CONTROL SAMPLES: Of the six species of fish packed as controls, only the albacore tuna remained unchanged for the entire 270 days. The silver smelt declined from very good to fair between 180 and 270 days; the sablefish and herring declined from very good to good between 90 and 180 days; and the eulachon and pilchard declined from very good and good to fair during 0 to 90 days of storage.

CONCLUSIONS

- (1) Dressed eulachon and dressed pilchard--block frozen, ice glazed, and stored at 6° to 16° F.--had poor storage characteristics. They became slightly rancid and rancid, respectively, in from 0 to 90 days, and both were rancid and barely edible after 270 days.
- (2) Albacore tuna sticks wrapped in cellophane and stored at 6° to 16° F. showed good inherent storage characteristics. Although they became slightly rancid in from 0 to 90 days, they were still only slightly rancid after 270 days.
- (3) Sablefish steaks wrapped in cellophane and silver smelt and dressed herring--block frozen, ice glazed, and stored at 6° to 16° F.--also showed good storage characteristics. Although the sablefish steaks became slightly rancid in from 90 to 180 days and the herring and silver smelt in from 180 to 270 days, all three were still only slightly rancid after 270 days.

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Progress on Projects, May 1954

FREEZING FISH AT SEA--NEW ENGLAND: Work on the restoration of the Delaware is progressing very satisfactorily. A number of the items specified in the contract have now been completed. However, some of the major repair items are not proceeding as rapidly as at first anticipated, and it is now believed that the full 75 days estimated by the contractor for completion of the work will be needed. On this basis, the repairs should be finished around mid-June.

(Boston)

* * * * *

COMPOSITION OF FISH: (a) Analysis of the first lot of ten species of fish caught incidental to shrimp trawling by vessels from Gulf Spring, Mississippi, was completed. The whole fish was analyzed in each case. The results are shown in the table.

Proximate Composition of Ten Species of Miscellaneous Fish (Whole fish) Caught By Shrimp Trawlers from Gulf Spring, Miss.

Common Name	Species Scientific Name	Moisture	Protein	Fat	Ash
		Percent	Percent	Percent	Percent
Butterfish	<u>Poronotus tricanthus</u>	75.0	16.0	5.6	2.9
Catfish, sea ^{1/}	<u>Galeiethys felis</u>	72.3	15.4	4.7	6.7
Croaker	<u>Micropogon undulatus</u>	77.5	14.2	1.3	6.1
Lizardfish	<u>Snyodus faetens</u>	74.5	18.7	1.7	4.7
Menhaden ^{2/}	<u>Harengula pensacolatae</u>	68.9	18.5	4.6	7.1
Mullet, ground	<u>Menticirrhus sp.</u>	75.5	15.7	5.1	3.6
Porgy	<u>Stenotomus caprinus</u>	73.4	17.2	1.9	7.4
Sea robin	<u>Prionotus sp.</u>	73.3	16.8	2.8	6.7
Spot	<u>Leiostomus xanthurus</u>	78.0	14.7	1.7	5.1
White trout	<u>Cynoscion arenarulus</u>	77.5	15.8	2.8	3.5

^{1/} Smaller of two local marine species, and little used as a pan fish.

^{2/} Called menhaden locally; similar to a regular menhaden in shape but lacking characteristic markings.

(College Park)

* * * * *

(b) The proximate analysis of three white bass was completed. These fish were caught in the southern part of Lake Winnebago, Wisconsin, in July 1953. The results are shown in the table:

Proximate Composition of Edible Portion White Bass (<u>Lepibema chrysops</u>) (Results are the average of three samples of fish)			
Length	27.7 cm	Fat	2.3 percent
Weight	330 gm.	Protein	18.0 percent
Moisture	78.8 percent	Ash	0.99 percent

* * * * *

(Seattle)

FEDERAL SPECIFICATION FOR FISHERY PRODUCTS: The proposed revision of Federal specification PP-S-316a, "Shrimp, Raw and Cooked; Chilled and Frozen," was completed and submitted to industry for review.

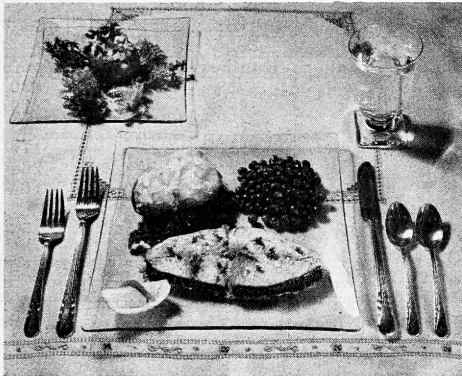
(Washington, D. C.)



HALIBUT ADDS VARIETY TO YOUR MENU

The annual halibut harvest from the deep waters of the North Pacific is now arriving at markets throughout the country. United States and Canadian west

coast fishing fleets began fishing for halibut in mid-May. The largest of the flounder or flatfish family, halibut have been taken as large as 9 feet and weighing almost 500 pounds. Halibut is normally marketed as steaks or slices.



Homemakers can add variety to their menus during the summer months ahead by serving halibut, one of the finest food fishes. Its white flaky meat is lean and firm.

Now is the time to enjoy the many delectable dishes you can prepare with this excellent fish. The home economists of the Service recommend Chinese Fried Halibut as a savory, economical, and easily prepared main dish.

CHINESE FRIED HALIBUT

2 pounds halibut steaks or fillets	1 cup sugar	1 cup pineapple chunks, drained
1 teaspoon salt	1-1/3 cups water	1-1/2 teaspoons water
1/4 cup flour	3 chicken bouillon cubes	1-1/2 teaspoons soy sauce
1/2 cup vinegar	1 large green pepper, cut into strips	3 tablespoons cornstarch

Sprinkle both sides of halibut with salt; roll in flour. Place fish in a heavy frying pan which contains about $\frac{1}{8}$ inch of fat, hot but not smoking. Fry at a moderate heat. When fish is brown on one side, turn carefully and brown other side. Cooking time about 10 minutes, depending on thickness of fish. Drain on absorbent paper. Combine vinegar, sugar, water, bouillon cubes, green pepper and pineapple; simmer for 10 minutes. Combine soy sauce, water and cornstarch. Add gradually to hot sauce and cook until thick, stirring constantly. Serve over fish. Serves 6.



TRENDS AND DEVELOPMENTS

Additions to the Fleet of U. S. Fishing Vessels

A total of 65 vessels of 5 net tons and over received their first documents as fishing craft during February 1954--31 more than in February 1953. Florida west coast led with 14 vessels, followed by the Florida east coast, Louisiana, and Virginia with 9 vessels each, reports the Bureau of the Customs.

Vessels Obtaining Their First Documents as Fishing Craft, February 1954

Section	February		Two months ending with February		Total 1953
	1954	1953	1954	1953	
	Number	Number	Number	Number	
New England	1	-	1	2	20
Middle Atlantic	-	-	-	-	19
Chesapeake	11	5	19	9	83
South Atlantic	12	4	17	12	116
Gulf	32	15	67	34	264
Pacific	7	5	11	9	164
Great Lakes	1	2	2	2	7
Alaska	1	3	4	5	53
Hawaii	-	-	-	-	3
Total	65	34	121	73	729

Note: Vessels have been assigned to the various sections on the basis of their home port.



California

SARDINE CATCH AT ALL-TIME LOW IN 1953/54: The 1953/54 California sardine (pilchard) fishing season was the poorest on record, the final report of the Marine Fisheries Branch of the California Department of Fish and Game reveals. The six-months season ended February 1. Total cannery landings were just over 2,600 tons. This was even less than the 1952/53 landings, which totaled 3,600 tons.

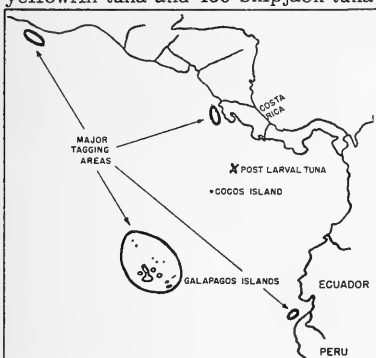
In 1951/52, the last season in which the State's dwindling sardine supply yielded catches of any size, total landings were 127,000 tons. Peak catches in the 1930's and early 1940's once ran well over 500,000 tons.

About 17 tons of this year's catch was canned for pet food. The rest was processed for human consumption.

The reduction of whole sardines into fish meal and oil was completely banned by the Fish and Game Commission this year as a conservation measure. Reduction is the only phase of the sardine industry over which the Commission now has legal control, according to the April Outdoor California, a Department of Fish and Game publication.

* * * * *

TUNA TAGGED BY CLIPPER "SARATOGA" (Cruise C-1-54): A total of 695 yellowfin tuna and 439 skipjack tuna were tagged with type "F" and "G" tags by California Fish and Game biologists on the tuna clipper Saratoga during a 12-week cruise.



M/V Saratoga tuna tagging cruise (C-1-54), Jan. 18-Apr. 10, 1954.

The vessel operated in the Gulf of Guayaquil off the Galapagos Islands, Gulf of Papagayo and the coast of Southern Mexico, returning to San Diego, California, on April 10.

Several night-light collections were made, one of which yielded 8 postlarval yellowfin tuna ranging in size from 19 mm. to 27 mm. These small fish were taken the night of March 22, 1954, at latitude $6^{\circ}56' N.$, longitude $84^{\circ}29' W.$

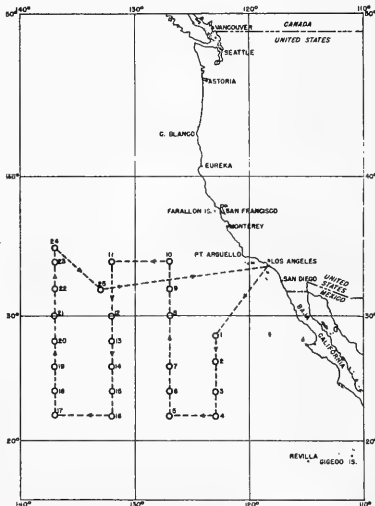
Other biological collections were made throughout the trip and are in the process of being identified.

* * * * *

LONG-LINE ALBACORE TUNA FISHING IN EASTERN NORTH PACIFIC DIS-APPOINTING ("N. B. Scofield," Cruise 54-S-1 and 2): Only one albacore tuna was caught by long lines in two recent cruises in the eastern north Pacific Ocean by the California Department of Fish and Game research vessel N. B. Scofield.

The first cruise lasted 33 days and was completed at Los Angeles on February 6 with four agencies cooperating: California Department of Fish and Game, Scripps Institution of Oceanography, Oregon Fish Commission, and the South Pacific Investigations of the U. S. Fish and Wildlife Service. The cruise was made to explore the winter distribution of albacore in the eastern part of the north Pacific Ocean and to study simultaneously the oceanography of the region as related to the occurrence of albacore.

A total of 25 stations were occupied (fig. 1). At most of the stations 50 baskets of Japanese-style long-line fishing gear were set, fishing to a maximum depth of 600 feet, stretched end to end for a distance of 7 miles. Also, at each station a water sample cast to a depth of 3,250 feet was made, in addition to a plankton tow to determine the amount of food present and a bathythermograph cast to determine the temperature to a depth of 900 feet.



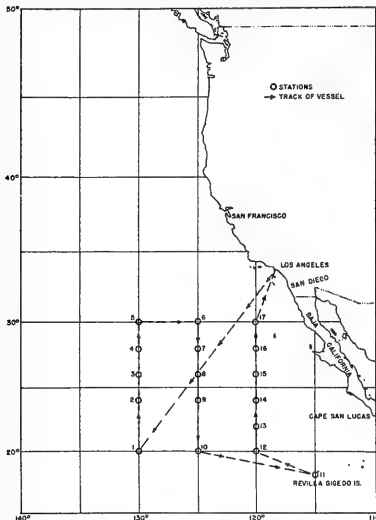
N. B. Scofield cruise 54-S-1, Jan. 4-Feb. 6, 1954. Indicates the location of the 25 stations occupied and fished with Japanese-type long lines.

While the vessel was running between stations, the direction and velocity of the surface currents were determined through use of the Geomagnetic Electrokinetograph (GEK).

One albacore was taken at station 15, latitude 24° N., longitude 132° W.--the only one taken during the entire cruise. A total of 31 big-eyed tuna was taken at 8 stations, but no real concentrations of these fish were encountered. Dolphin were taken in the southern part of the area. Blue sharks were taken in large numbers in the northern part of the area--132 at one station. Two large swordfish were caught. Lancetfish (*Alepisaurus*) were captured at most stations.

Satisfactory results were obtained in determining the maximum fishing depth of the long line through the use of chemical sounding tubes.

The second cruise, completed April 6, covered an area bounded by latitude 20° N., latitude 30° N., longitude 120° W., and longitude 130° W. and Clarion Island of the Revilla Gigido Island Group, Mexico (fig. 2). The Scripps Institution of Oceanography provided oceanographic equipment and one technician. The South Pacific Investigations of the U. S. Fish and Wildlife Service provided essential plankton equipment and shoreside analysis of samples.



N. B. Scofield cruise 54-S-2, March 8-April 6, 1954.
Indicates location of stations fished by long lines.

Since no albacore were caught or seen during the cruise it appears that either (1) they were not in the area, or (2) if present found in insignificant numbers.

The following is a brief description of the long-line fishing gear used on the cruise; 25 baskets with 5-fathom float lines, 25 baskets with 15-fathom float lines; dropper length 1 fathom; leader length 1 fathom; hooks per basket 11, anchor hooks 2. Fishing activities at each station were as follows: 50 baskets were set at daybreak; baiting pattern, alternate baskets of squid and sardines; allowed to soak for 6 hours and then retrieved.

A total of 756 baskets (8,328 hooks) was fished. The catch by species: big-eyed tuna 13, yellowfin tuna 5, spearfish 4, sharks 379, other fish 29, total 430 fish.

Oceanographic observations were made at each station and plankton tows were made at all but two stations using the standard 200-meter oblique tow. Bathythermograph casts were made on station and between stations as time permitted.

* * * * *

ABALONE INVESTIGATIONS IN CHANNEL ISLANDS BY "YELLOWFIN" (Cruise 54-Y-3): a 16-day cruise to carry on research of the abalone was completed at Los Angeles on March 11 by the California Department of Fish and Game research vessel Yellowfin. Investigations were made in all of the Channel Islands--Santa Cruz, Santa Rosa, San Miguel, Santa Catalina, Santa Barbara, San Nicholas, and Cortes Bank. The goal of the cruise was to inspect the areas utilized by the commercial abalone divers; to explore for possible new abalone areas; to test new equipment and methods; to collect samples and carry on such other studies of the abalone as feasible.

Approximately 80 dives were made with over 40 hours' total time spent under water. As a general observation, there appeared to be much more sea life around the islands than were found during last year's abalone cruise. There was a greater

abundance of fish noted, especially the sheepshead, kelp bass (of all sizes), perch, and rockfish. The best territory for abalone was found at San Miguel Island at Tyler Cove. Here the abalone (*H. rufescens*) were found in fairly large quantities in commercial sizes. The quality of the meat appeared good, and the area was not too difficult to work. Abalone in this area appeared to be fast growing, which contrasted with most abalone found on the other islands.

Underwater pictures were filmed of a beach seine in operations.

Dives were made at Cortez Bank. As far as known, this would appear to be the first time any underwater exploration has been made of the area. Only a dozen or so abalone were found, all of the pink abalone (*H. corrugata*). The bottom was fairly level; in most places it was covered with small rocks (basketball size) and ridged by shallow ravines in which an occasional lobster could be observed. Plant life seemed to be limited to few varieties. Most of the bottom was covered with a red coraline, which grew to a height of about two feet; extensive areas of eel grass; and a seaweed with a short, two- to three-foot holdfast and long, flat leaves.

The area abounded in fish--sheepshead, perch (several species), seniorita, croakers (spotfin), cabezon, rockfish, and kelp bass. Samples of red coral were also found. In all, an area of approximately one-quarter square mile was investigated on Cortez Bank.



Cans--Shipments for Fishery Products, January-February 1954



Total shipments of metal cans for fish and sea food during January-February 1954 amounted to 8,434 short tons of steel (based on the amount of steel consumed in the manufacture of cans), compared to 7,910 short tons for the same period last year. The increase in shipments of metal cans this year is attributed to a bigger tuna pack in California.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.



Federal Purchases of Fishery Products

PURCHASES OF FRESH AND FROZEN FISH BY DEPARTMENT OF THE ARMY, MARCH 1954: For the military feeding of the U. S. Army, Navy, Marine Corps, and Air Force, the Army Quartermaster Corps in March 1954 purchased fresh and frozen fishery products amounting to 1,370,904 pounds, valued at \$638,146 (see table).

Purchases of Fresh and Frozen Fishery Products by Department of the Army (March and the First Three Months of 1953)							
QUANTITY				VALUE			
March		January-March		March		January-March	
1954	1953	1954	1953	1954	1953	1954	1953
Lbs.	Lbs.	Lbs.	Lbs.	\$	\$	\$	\$
1,370,904	1,329,751	5,121,127	4,370,957	638,146	764,181	2,247,156	2,470,426

This was 3.1 percent greater in volume than February purchases, but 16.5 percent lower in value.

Army Quartermaster Corps purchases of fresh and frozen fish during the first three months in 1953 totaled 5,121,127 pounds (valued at \$2,247,156), 17.2 percent higher in quantity but 9.1 percent less in value as compared with the similar period a year earlier.

Prices paid for fresh and frozen fishery products by the Quartermaster Corps in March averaged 46.5 cents per pound as compared with 41.8 cents in February.

In addition to the purchases of fresh and frozen fishery products indicated above, the Armed Forces generally make some local purchases which are not included in the above figures. Therefore, actual purchases are somewhat higher than indicated, but it is not possible to obtain data on the local purchases made by military installations throughout the country.



Fishery Products Marketing Prospects, April-June 1954

CONSUMPTION AND RETAIL PRICES: The per-capita civilian consumption of fishery products in the United States during the winter of 1954 was somewhat lower than a year earlier. Preliminary indications are that reductions occurred in both fresh and processed commodities. Supplies were not as large as in the winter of 1953, mainly because stocks of the processed products were lower at the beginning of the year. Retail prices of fishery products during the first quarter of 1954, judging from wholesale prices in the principal markets, averaged about equal to those of the same period last year. During the next few months total civilian per-capita consumption of fish and shellfish probably will continue a little below the rate of a year earlier. Retail prices of these products this spring are expected to average close to those of the spring of 1953.

CATCH: The volume of fish and shellfish landed at the major commercial fishing ports during January-March totaled about as much as in the same part of last year. Landings will be expanding seasonally during April-June, reaching the peak level for the year in late spring or early summer.

FREEZINGS AND HOLDINGS: Commercial freezings of fishery products in the Continental United States during the first quarter totaled 27.4 million pounds, more than 5 percent larger than a year earlier. Freezing operations will continue to increase seasonally during the next few months.

Cold-storage stocks of frozen fishery products in the Continental United States at the end of March totaled over 104 million pounds, about 7 percent less than a year earlier. Holdings of most frozen fish were smaller this year, but those of the shellfish group--particularly scallops and shrimp--were much larger. Total stocks are now approaching their seasonal low point.

CANNED FISH: Supplies of canned fishery products during the winter of 1954 were somewhat below those for the same months of last year. Because of the smaller packs in 1953 of most of the popular canned fish species other than tuna, indicated carryover stocks at the packer level this January 1 were well below those of a year earlier. Supplies are expected to continue less than the comparable 1953 level at least until the 1954 packs of canned fish start moving to market in late summer.

Current prospects point to another large pack of canned tuna this year, but the outlook for a large canned salmon pack is not favorable because of the probable smaller catch of salmon. Landings in the Puget Sound area of Washington State are not expected to reach last year's total because 1954 is considered an "off-cycle" year for the pink salmon run there. The catch in Alaska probably will fall below the

1953 level because conservation measures have been put into effect this year in an attempt to restore the seriously depleted salmon resources there. Under this conservation program, several areas in Alaska have been completely closed to commercial salmon-fishing activity; in other areas, the length of the commercial fishing season has been reduced or the quantity of fishing gear permitted to be used has been severely restricted.

FOREIGN TRADE: Imports of edible fishery products during January and February were somewhat larger than a year earlier as a result of the heavier receipts of both canned fish and frozen fish fillets. Prospects for the next few months are that receipts of fishery products from foreign countries will continue to run a little ahead of those of last spring. Exports of edible products, on the other hand, were somewhat below those of early 1953. Current indications point to a continued lower level of exports through midyear than a year earlier because of the relatively small domestic supply of the types of canned fish which are popular in our foreign markets.

This analysis appeared in a report prepared by the Bureau of Agricultural Economics, U. S. Department of Agriculture, in cooperation with the U. S. Fish and Wildlife Service, and published in the former agency's April 30, 1954, release of The National Food Situation (NFS-68).



Florida

FISHERIES TRENDS, 1953: Florida fisheries production in 1953 showed a decided decrease from 1952, the Service's Fishery Marketing Specialist in that State reports. The decrease was obviously due to lighter menhaden production which dropped about 60 million pounds. However, the total value was strongly enhanced by a 3-million pound increase in shrimp landings.

Catches of food fish decreased considerably in 1953 despite the general abundance of fish, due principally to unfavorable market conditions. This was especially true for mullet and Spanish mackerel.

Of major importance in Florida during 1953 was the firm establishment of Tampa as a shrimp port. The landings of shrimp at Tampa in 1953 were greater than at any other port in the State.

Landings of shrimp during 1953 were more than 46.8 million pounds, according to preliminary figures. Approximately 27.8 million pounds of the total were landed from the Campeche banks. Landings in 1952 totaled 43.8 million pounds. The important development in 1953 was the rapid increase of shrimp production from the Campeche banks. In 1951 landings from this area amounted to about 7 million pounds; in 1952 nearly 23 million pounds.

Ex-vessel shrimp prices had remained fairly stable through 1952 until December. By the end of December prices had risen from 56 cents a pound for headless shrimp ex-vessel to 70 cents a pound. During May 1953 the dock prices soared to \$1.00 a pound for a short period. The primary reason for the rise was the lack of production locally and the particularly low production in Texas because of bad weather.

Shrimp processing in 1953 increased substantially over 1952 and the number of plants doubled. This indicated that the demand for consumer-sized packages was very good and that advertising was effective.

The increased shrimp production spurred boat-building activities in all sections of the State. New boatyards were opened and old yards were renovated to fill the orders for shrimp trawlers. Boat building in Florida has been advancing at a fast pace since 1951.

Gear Research and Development

UNDERWATER LISTENING TESTS FOR SHRIMP: Preliminary tests to determine if commercial varieties of shrimp, such as the pink shrimp (Penaeus duorarum), produce any characteristic sounds were carried out recently aboard the Service's gear research vessel Pompano operating out of Key West, Florida.

Using a 20-foot flat shrimp trawl, the Pompano caught about 100 pink shrimp (25-35 count) on the Key West fishing grounds during the nights of March 17 and March 22, 1954. Immediately following capture, the shrimp were placed in a wooden tank set up on the stern of the vessel where they were kept alive in fresh circulating sea water.

During the period March 18-24, a hydrophone was inserted in the tank with the shrimp at various times of the day and night, but nothing particularly significant was heard on the earphones of the listening equipment. On the evening of March 24, some pieces of chicken liver, chopped up fine, were dropped in the tank with the shrimp, which until then had not been fed anything. When the listening equipment was turned on about two hours later, numerous clickings, gratings, and sharp rasping sounds were heard. Upon inspecting the tank, many of the shrimp were seen to be feeding on pieces of liver, and it was apparent that the sounds were caused by this feeding activity. Three tape recordings of the sound were made that night, and about six more were obtained during the next ten days.

Two weeks after capture, on March 30, about 40 of the shrimp remained alive in the tank in good condition despite a severe buffeting they had received while the Pompano made the 150-mile trip from Key West to Miami. After that, however, they began to die at an increasing rate until only one remained alive on April 4.

The sounds attributed to the shrimp are well above the level of background noise usually encountered in the sea, and most of the energy seems to be concentrated in a frequency band between 3,000 and 5,000 cycles per second. Although the observations to date have been only of a qualitative nature, these tests indicate that there are good possibilities of utilizing these sounds for locating beds of shrimp by means of passive listening devices.

A detailed frequency analysis of the shrimp sounds will be made in the near future at the Service's Coral Gables electronics laboratory in cooperation with the University of Miami Marine Laboratory at Coral Gables, the official research agency of the Florida State Board of Conservation.

Note: Also see Commercial Fisheries Review, November 1953, p. 32.



Gulf Exploratory Fishery Program

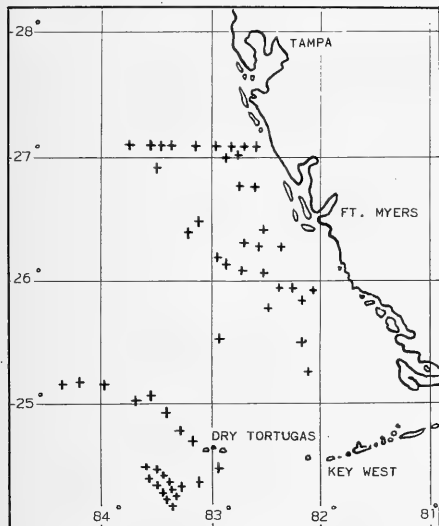
RED SHRIMP GROUNDS DISCOVERED IN GULF BY "OREGON" (Cruise 22): Catches of red shrimp at rates of over 100 pounds per one-hour tow were made in the depth range of 200 fathoms southwest of Dry Tortugas by the Service's exploratory fishing vessel Oregon. This was part of a bad-bottom trawling survey which included 62 trawling stations in depths of 3 to 375 fathoms between Tampa and the southeastern edge of the continental shelf. The Oregon departed Pascagoula, Miss., on March 31 and returned on April 23.

Additional exploratory drags in the immediate area of Dry Tortugas in depths of 170 to 250 fathoms yielded catches of approximately 180 pounds per two-hour drag. During one of these drags the trawl "hooked-up" on an undetected obstacle, buckling

the port trawling davit and puncturing a fuel tank. Temporary repairs were made in the lee of Loggerhead Key but it was not possible to try larger commercial-type trawls on these grounds.

The majority of the 62 trawling tows were made inside of 25 fathoms between Tampa and Cape Sable. No indications of commercially valuable concentrations of shrimp were found. Drags between 5

and 15 fathoms generally showed a few pink-grooved shrimp present, but catches all ran under 15 pounds per hour using a 40-foot trawl.



Approximate locations of shrimp-trawl drags.

port call at Brownsville, Texas, was planned for May 30. Major objectives of the cruise are: (1) cross the Gulf of Mexico on or near the 92nd meridian from the coast of Louisiana to the Gulf of Campeche and make long-line sets for tuna on this course across the Gulf; (2) to make a small number of exploratory drags with shrimp trawls near the northern edge of the Campeche Bank in areas of poor bottom for shrimp trawling; (3) drags in 200- to 250-fathoms for red shrimp in the southern Gulf of Campeche approximately 50 miles off the Mexican coast; (4) carry out offshore long-line fishing for tuna on the route to Brownsville, Texas, from the Gulf of Campeche.



North Atlantic Fishery Investigations

INCREASE PREDICTED IN 1954 HADDOCK CATCH ON GEORGES BANK: A slight increase in haddock landings from Georges Bank is predicted for 1954 (based on the "haddock year" from February 1, 1954, to January 31, 1955) by the Woods Hole Laboratory of the U. S. Fish and Wildlife Service. Total landings of 74.4 million pounds will be caught if the amount of fishing is the same as in 1953. Large haddock will exceed scrod haddock for the first time since 1950.

The increase in landings will be caused in part by the savings effect of the large mesh used under the haddock regulation during the last few months of 1953 and the lower mortality from fishing during 1953 caused by a decrease in the amount of fishing that year.

Bottom conditions were generally unsuited for trawling and drags were not made at 37 scheduled stations due to indications of coral and rock. Moderate to large numbers of loggerhead sponge were found throughout this range and four trawls were severely damaged due to overloading sponge. In some localities catches of loggerheads reached 6,000 pounds in a half-hour drag using a 40-foot trawl.

A single set of 25 baskets of Japanese long-line gear baited with squid was made off the southwest edge of the continental shelf. The resulting catch was two 9-foot silk sharks and one spearfish.

The *Oregon* was due to leave Pascagoula on May 4 and work in the western Gulf of Mexico and the Gulf of Campeche, returning to Pascagoula on June 16. A

Haddock landings of 70.9 million pounds from Georges Bank during 1953 were within 4 percent of the amount predicted by the U. S. Fish and Wildlife Service early last year.



North Pacific Exploratory Fishery Program

OTTER-TRAWLING TESTS IN PRINCE WILLIAM SOUND BY "JOHN N. COBB"
SHOW POOR RESULTS (Cruise 18): Exploratory otter-trawl fishing was carried out during February, March, and April of 1954 in Prince William Sound, Alaska, by the Exploratory Fishing Section of the U. S. Fish and Wildlife Service. From the standpoint of commercial fishing possibilities all catches were poor. No commercially important populations of bottom fish were found. This survey was made with the exploratory fishing vessel John N. Cobb which sailed from Seattle on February 15 and returned there on April 16.

The gear used was a standard West Coast otter trawl with a five-inch (stretched mesh measure) cod end. A total of 102 one-hour tows was made in and near Prince William Sound. These tows were made in Orca Bay, Port Gravina, Port Fidalgo, Valdez Arm, Port Valdez, Port Wells, Montague Strait, the area near the center of the Sound, and outside the Sound off Hinchinbrook and Montague Islands to a distance of 30 miles offshore. Some parts of the Sound were found to have bottoms too hard and irregular to be suitable for otter trawling.

Small numbers of English sole, Dover sole, cod, sablefish, and starry flounder were caught in many of the drags. King crabs were caught occasionally; the best drag took 43 legal-sized males in the soft-shell state in Montague Strait. A few halibut caught in many of the tows were released alive after being measured. Several drags were made with a shrimp beam trawl in Port Fidalgo, Port Gravina, Orca Bay, and Simpson Bay, to secure information to assist in planning future work in the area. The best beam-trawl drag caught 154 pounds of shrimp in a one-hour tow. Although the beam-trawl drags produced indications of shrimp, extensive exploration will be required to determine if shrimp exist in commercial quantities in the area.



Pacific Oceanic Fisheries Investigations

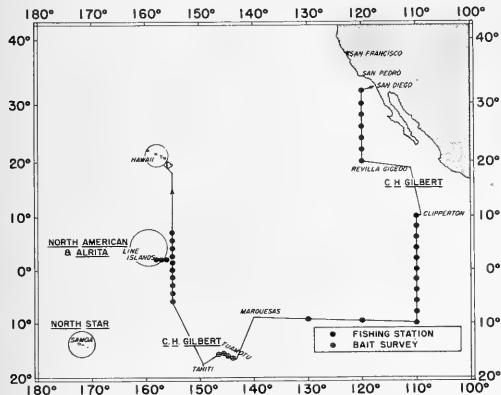
TUNA AND LIVE BAIT PLENTIFUL NEAR MARQUESAS ISLANDS--"CHARLES H. GILBERT" (Cruise 15): A plentiful supply of live bait and tuna schools were sighted near the Marquesas Islands by the Service's research vessel Charles H. Gilbert on a 67-day cruise completed at Honolulu on April 26. Many other observations of practical and scientific significance were made on the 8,500-mile survey and fishing voyage.

The vessel fished long-line gear south across the equator about 1,200 miles off the Central American coast. Good catches of large fish were made between 5° N. latitude and the equator. Turning west the vessel then sailed for the islands of French Oceania, the Marquesas, Tuamotus, and Tahiti.

The Marquesas, which have been called the forgotten islands, are a seldom-visited group about 2,000 miles southeast of Hawaii. The rugged volcanic islands have numerous small bays where large quantities of a sardine-like fish of ideal size for live tuna bait were found. Not only was there plenty of the live bait, which is in almost continuous short supply in Hawaii, but the ocean around the Marquesas con-

tained numerous tuna schools. As many as 20 large schools were sighted within one hour and those which were close enough to be seen jumping were identified as 10- to 30-pound yellowfin.

The next islands which the Charles H. Gilbert visited were the Tuamotus between the Marquesas and Tahiti. These are all low coral atolls and an intensive search of the lagoons of four of the largest produced no live bait.



Charles H. Gilbert cruise 15, February 18 to April 26, showing fishing stations and bait survey locations.

on the island. This field station was inspected and found to be operating satisfactorily. Records from this station were collected and will be analyzed in order to supply fishermen operating in this area with current information on fishing conditions.

The best catch of yellowfin tuna along 110° W. longitude was taken at $3^{\circ}44'$ N. latitude. This was a catch of 4.7 tuna per hundred hooks averaging about 160 pounds each. Nearly as good catches were taken at other latitudes between 5° N. and 1° S. latitude. Also along this same longitude at $7^{\circ}8'$ S. a record catch of about 4 tons of big-eyed tuna was made. This consisted of 38 fish averaging well over 200 pounds each.

The yellowfin tuna fishing along 155° W. longitude was poor; the maximum catch being only 3.5 tuna per hundred hooks at $0^{\circ}25'$ N. latitude and again at $2^{\circ}55'$ N. latitude. The fishing at 155° was not nearly as good as that being found by the North American in the vicinity of Christmas Island at about 157° W. longitude.

In the vicinity of the equator at 110° W. longitude very strong easterly subsurface currents were evident from the drift of the long line and from the behavior of the plankton net. In addition, the catches of plankton consisted of much larger quantities of crustacean fish food than have ever been taken farther west along the equator. The role of these currents in the productivity of this area warrants more investigation.

Among the biological data collected were careful observations on the specific differences among five kinds of Pacific spearfishes. These observations show clear-cut differences among all of these species and it is hoped will bring about an end to the confusion in the naming of Pacific marlins. In addition, six specimens of a new species of pelagic sting ray were captured and preserved for further studies.



Pacific Salmon Investigations

COLUMBIA RIVER 1953 SOCKEYE SALMON RUN LARGEST IN HISTORY: The Columbia River sockeye or red (blueback) 1953 salmon run of 374,900 fish is the largest recorded since counting began at Bonneville Dam in 1938, according to the Service's Branch of Fishery Biology. These runs have improved almost phenomenally. The fact that 83.1 percent of the fish were accounted for between Bonneville Dam and Rock Island Dam indicates good survival and minimum straying. It indicates also that the reservoir at McNary Dam does not have a major effect upon the homing ability of sockeye salmon.

* * * * *

PINK SALMON INCREASE IN CALIFORNIA WATERS: Of interest in connection with last summer's marine disappearance of pink salmon in Alaska are reports from the California Department of Fish and Game biologists which indicate that last summer trollers caught unprecedented numbers of these fish in waters off northern California. Attention was drawn to them when some of the larger specimens were brought in for identification. These weighed nine pounds and were larger than those in the commercial catches in British Columbia and Alaska. There was no way to approximate the number of pinks in the area as the smaller fish were thrown back. However, the fish were reported to be common, the Service's Branch of Fishery Biology reports.

Formerly, the pink has been called the "lost salmon" when found in southern waters where it is considered to be out of its natural range. In the past the pink salmon has been newsworthy as it reached points farther south in California: San Lorenzo in 1916, Santa Monica in 1928, and La Jolla in 1946. A considerable number of pinks was reported from California streams in 1937, particularly in the Ten Mile and Garcia Rivers where great numbers were said to be spawning; positive identification of these fish, however, was not possible.



Shrimp Production for South Atlantic and Gulf States, 1953

A preliminary tabulation of data collected by the various State conservation agencies indicates that the catch of shrimp in the South Atlantic and Gulf States set

Table 1 - Shrimp (heads on) Production for South Atlantic and Gulf States
By Months and States, 1953^{1/}

Month	North Carolina ^{2/}	South Carolina	Georgia ^{3/}	Florida	Alabama	Mississippi & Louisiana	Texas
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
January	-	-	-	3,582,144	291,186	3,909,780	3,314,463
February	-	-	-	2,905,193	32,466	1,982,295	2,239,123
March	-	1,848	-	4,408,996	140,385	2,371,950	3,587,676
April	-	15,792	7,560	3,177,407	140,196	5,317,515	2,496,203
May	-	23,595	138,096	3,530,813	305,046	13,174,880	3,406,953
June	-	326,899	265,104	2,297,037	653,751	13,341,090	4,473,464
July	-	710,048	353,605	4,122,345	748,356	8,095,080	6,604,324
August	-	944,684	276,096	3,165,937	100,212	10,951,920	8,886,419
September	-	891,902	189,504	4,597,077	585,060	10,353,105	8,642,186
October	-	741,814	662,088	5,436,737	542,798	15,612,660	10,021,777
November	-	455,574	234,360	4,511,713	492,922	9,419,260	7,459,168
December	-	94,707	31,752	5,123,145	380,020	6,472,515	4,313,341
State Totals	4,711,750,000	4,206,863	2,158,165	46,858,594	4,412,398	101,002,150	65,445,097

^{1/}Preliminary.

^{2/}Data not available by months.

^{3/}Based on sales of prepaid tax stamps instead of actual landings.

^{4/}Based on an estimate derived from Fishery Market News Service records of daily landings.

Note: As reported by respective state agencies. Original data in barrels; converted to heads-on shrimp on basis of 210 pounds per barrel (equivalent to 125 pounds heads-off shrimp). To convert heads-on data to headless shrimp, multiply by .595.

a new record during 1953 (table 1). The totals reported by these agencies show landings of 235.8 million pounds, compared with the catch of 223.9 million pounds in 1952 (the previous record year). September again was the month of highest production, followed by October; February and March were the months of lowest production.

Louisiana, Texas, and Florida continued as the leading shrimp-producing states in 1953 (table 2). Louisiana showed the largest increase over 1952 production, and

State	1953 ^{1/}	1952 ^{1/}	1951
	Lbs.	Lbs.	Lbs.
North Carolina	2/ 11,750,000	8,712,600	8,199,500
South Carolina	4,206,863	4,072,300	3,730,500
Georgia	3/ 2,158,165	5,991,000	7,608,000
Florida	46,858,594	44,025,200	37,988,700
Alabama	4,412,398	6,208,500	6,356,200
Mississippi and Louisiana	101,002,150	89,903,900	93,192,900
Texas	65,445,097	65,025,600	64,346,300
Total	235,833,267	223,939,100	221,422,100

1/Preliminary.
 2/Based on an estimate from Fishery Market News Service records of daily landings.
 3/Based on sales of prepaid tax stamps.

Note: As reported by respective state agencies. Original data in barrels; converted to heads-on shrimp on basis of 210 pounds per barrel (equivalent to 125 pounds heads-off shrimp). To convert heads-on data to headless shrimp, multiply by .595.

North Carolina and Florida recorded smaller increases. Shrimp landings in Texas during 1953 were about the same as the previous year.



South Atlantic Fisheries Trends, 1953

NORTH CAROLINA; Shrimp: The most important occurrence in North Carolina's fishing industry in 1953 was the very successful shrimp season. The Commercial Fisheries Division of North Carolina has reported the catch to have been over 14,000,000 pounds (heads on), compared to the 1952 estimate of 8,000,000 pounds. The phenomenal harvest began with an early open season. Beginning at 12:01 a. m. on May 11, fishermen were allowed to catch brown-spotted shrimp, a species which is taken by fishermen in large quantities only at night--mostly in Bogue, Core, and the lower part of Pamlico Sounds. During the first week of the season catches were only fair. The big strike started early on Monday May 18. From that time until late in June, when brown-spotted shrimp disappear from Carolina waters, over 3,000,000 pounds (heads on) were brought in by the trawlers, reports the Service's Fishery Marketing Specialist in the area.

Brown-spotted shrimp is one of three commercial species in North Carolina waters. The other two, commonly called the brown shrimp and the white shrimp, are taken in commercial quantities in North Carolina after the early brown-spotted shrimp season is over. In 1953 the heavy catches of the early season continued into the summer and fall harvests, especially in the Pamlico Sound region. With a mild autumn the shrimp season lasted longer than usual; even at year's end offshore trawlers were still bringing in profitable catches.

Ex-vessel shrimp prices also were higher than they had ever been. In 1952 Carteret County fishermen started the season with a price of 20 cents per pound, heads on; in 1953 the season's starting price was 30 cents, and remained consistently at a higher level than the previous year.

Hard Crabs: The hard-crab fishermen also benefited by high prices in 1953. Due to a scarcity of hard crabs in areas to the north for a short time in March, dealers were paying \$10.50 per 100-pound barrel (with some purchases even higher), compared with \$3 to \$4 a barrel a year earlier. With the high price as an incentive, production of hard crabs was spurred to a higher level than the year previous, according to State inspectors.

River Herring: Also outstanding in its abundant harvest was the herring or alewife fishery of the Albemarle region. In many instances there were more herring than the processing plants could use and the fishermen were restricted as to the amount they could bring in. The State Commercial Fisheries Division estimated the harvest at about 24,000,000 herring--twice their estimate for the year before.

Other Food Fish: The production of food fish in general, however, was far below that of 1952. This was a result of fishing effort being withdrawn from finfisheries and applied to shrimp, and not of a marked decline in the abundance of fish.

Menhaden: During November and December, especially during the latter month, tremendous schools of menhaden were reported off the North Carolina coast. However, unfavorable weather kept catches down close to that of an average successful season.

Oysters: The hurricane in August caused a high mortality rate in the oyster beds. The North Carolina Commercial Fisheries Division reported the 1953 production as 43,000 tubs (State) below that of 1952.

Clams: 1953 was a poor season for clams. As in the case of finfish, the fishermen were lured to shrimping by the heavy shrimp harvests and good prices. Clamming is hard work and men will not engage in it if other kinds of fishing are more profitable. In 1953 clams were imported from Long Island Sound to enable some clam dealers to meet their contracts with soup canning companies.

Scallops: This is a comparatively small fishery concentrated in Carteret County. Scallops were plentiful and production was greater than that in recent years.

Legislation: Legislative action directly affecting the fishing industry in North Carolina included a ban on night shrimping. Fishing for shrimp during open season is now allowed 24 hours a day except on Sunday. During the past three seasons the Conservation and Development Board has by a special act made it possible for shrimpers to trawl at night but now this special permission is no longer necessary.

In 1952 (due to a clerical error) the State tax on shrimp was abolished by the State legislature. In 1953 this tax was re-instated. Also re-instated are the taxes on scallops, clams, and crabs; and the tax on oysters was extended to include those taken from private grounds. These regulations became effective January 1, 1954.

SOUTH CAROLINA: Shrimp: More shrimp were produced in South Carolina waters in 1953 than during either of the two years previous. However, in the fall of 1953 the sounds and rivers in Beaufort County were opened to shrimp trawling for the first time since World War II. The South Carolina shrimp catch (heads off) by months for the past five years, as reported to the South Carolina Division of Commercial Fisheries, is given in the table on the following page.

Legislation: Legal action pertaining to South Carolina fisheries in 1953 affected the crabbing industry. By resolution of the Wildlife Resources Commission, crab trawling was allowed with a five-inch mesh tail bag in sounds and bays in January, February, and the first half of March (also in December 1952). This resolution came about primarily as a result of experimental trawling by the Bears Bluff Laboratories. The Director of the Laboratory made the following comments to the Commission on

the resolution allowing crab trawling with a 5-inch mesh bag: "As a direct result of the opening of this crab trawling, an average of 165,792 pounds of crabs were caught each month. This resulted in a monthly average of \$502.40 in direct severance tax to the State of South Carolina. Each month \$12,434.40 worth of crabs were

Month	1953	1952	1951	1950	1949
	(Pounds)				
January.....	-	13,969	-	-	27,900
February.....	-	-	-	-	-
March.....	4,158	20,001	60,000	-	57,687
April.....	11,648	9,941	4,800	1,970	63,585
May.....	47,197	172,726	3,483	211,723	393,188
June.....	252,701	202,704	35,890	357,231	569,126
July.....	581,808	260,334	224,192	605,083	448,467
August.....	553,013	266,693	303,854	671,908	449,261
September.....	612,236	553,480	716,580	862,206	652,982
October.....	476,193	484,497	569,068	664,224	512,229
November.....	271,175	189,086	123,850	302,580	433,110
December.....	56,373	57,466	30,546	22,900	191,918
Total.....	2,866,502	2,230,897	2,072,263	3,699,825	3,799,453

sold across the docks in Beaufort County. Of this amount, \$9,947.52 a month went to the fishermen and \$2,486.88 a month went to the crab dealers. Apparently 25 boats operated more or less continuously during the crabbing season and 50 fishermen, three net men, and four dealers made their living from this crab business.... The use of the five-inch mesh trawl net has practically eliminated the catching of small fish and shrimp and, as near as we can gather, less than 1,000 pounds of marketable fish have been taken during the crab season in the crab trawl nets. Therefore, in our opinion, the opening of the crab-trawling season has not been in anyway harmful to South Carolina, and certainly, if our economic calculations are correct, it has been of great advantage not only to the fishermen but to the State as a whole."

GEORGIA: Shrimp: The Georgia shrimp industry was cited by many of its members as having had an unusually good year in 1953. However, when the production figures are tallied it may be found that the good year was due primarily to high prices received for shrimp rather than to unusually high catches. In 1952 the total as tallied by the U. S. Army Engineers, Savannah, Ga., (not final production figures) was about 5,700,000 pounds, heads on. For 1953 the total reported was 5,659,000 pounds, with a few firms still to be heard from. Although not complete, these figures can be used as an indicator. Thus the 1953 shrimp landings may be only slightly above 1952. However, in 1952 the fishermen received an average of 28 cents a pound (heads on) for their catches and it is believed the 1953 average will be about 35 cents a pound heads on.

Although several firms reported handling more shrimp in 1953 than during the year previous, there were at least a half dozen fewer companies producing or handling shrimp.

Hard Crabs: Hard crabs, another major sea-food industry in Georgia, especially in the Brunswick area, had steady production but the total may fall below that of 1952. Although for a short time in the spring prices paid to fishermen were higher than usual, the average for the year was about the same or only slightly higher than in 1952. The method of catch, especially in Glynn County, changed considerably. Most of the Brunswick area crab fishermen turned from trot lines to crab pots, which has extended this type of fishing to a more year-round occupation.

New Products: Some new products appeared in Georgia sea-food plants. A St. Simons Island plant began producing breaded, uncooked fish sticks and fillets, and

a Brunswick freezer put out a 12-oz. package of frozen cooked crab meat au gratin (experimental only).

Legislation: The General Assembly enacted a law that states: "From and after July 1, 1953, it shall be unlawful for any person to operate any boat or vessel while fishing for shrimp or fish by use of nets upon any of the tidal or salt waters of the State without first obtaining a license." No provision was made for a license fee, but the license can be suspended or cancelled when the holder is convicted of violating any of the laws of the State pertaining to fishing with nets. Also, during 1953 State taxes on shrimp and crabs were repealed.



Wholesale Prices, April 1954

Due mainly to substantially lower prices for fresh haddock and fresh and frozen shrimp, wholesale prices of edible fish and shellfish declined from March to April. The trend for most salt-water fish and shellfish items included in the index was down as the Lenten season came to a close in mid-April. Major exceptions were the exceptionally high prices for certain fresh-water fish for the Hebrew holidays. The over-all edible fish and shellfish (fresh, frozen, and canned) wholesale index

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, April 1954 and Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices/ (\$)		Indexes (1947-49=100)						
			Apr. 1954	Mar. 1954	Apr. 1954	Mar. 1954	Feb. 1954	Apr. 1953			
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)								105.7	2/107.5	107.2	98.9
Fresh & Frozen Fishery Products:								109.9	112.2	114.1	99.4
Drawn, Dressed, or Whole Finfish:								112.0	2/111.4	116.5	81.8
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.08	.09	76.6	95.4	119.8	50.6			
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.31	.31	94.9	97.0	94.9	94.4			
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.54	.56	120.2	125.8	115.2	107.9			
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.98	.65	241.7	161.1	151.2	105.3			
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	1.58	.63	318.5	126.4	148.6	101.1			
Lake trout, domestic, No. 1, drawn, fresh	Chicago	lb.	.81	.65	166.0	133.2	131.1	79.9			
Yellow pike, L. Michigan, rnd., fresh	New York	lb.	.55	2/.63	129.0	2/146.6	140.7	51.0			
Processed, Fresh (Fish & Shellfish):								111.1	114.9	112.6	123.3
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.28	.33	95.3	113.1	132.7	81.7			
Shrimp, lge. (26-30 count), headless, fresh or frozen	New York	lb.	.69	.72	109.1	113.0	101.2	137.5			
Oysters, shucked, standards	Norfolk	gal.	4.75	4.75	117.5	117.5	120.6	117.5			
Processed, Frozen (Fish & Shellfish):								99.4	110.5	108.3	115.3
Fillets: Flounder (yellowtail), skinless, 1-lb. pkg.											
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.38	.38	98.2	98.2	103.4	115.7			
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.33	.34	102.2	105.1	111.4	78.1			
Shrimp, lge. (26-30 count), 5-lb. pkg.	Boston	lb.	.29	.29	117.8	117.8	114.8	112.0			
	Chicago	lb.	.57	.73	88.0	113.0	104.5	134.2			
Canned Fishery Products:								99.6	100.4	96.9	98.2
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	case	18.70	18.70	99.1	99.1	93.9	104.4			
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	case	14.20	14.20	102.4	102.4	102.4	92.4			
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans/cs.	New York	case	8.20	8.70	87.3	92.6	87.3	79.3			

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/Revised.

was 105.7 percent of the 1947-49 average (see table)--1.7 percent less than the March index, but 6.9 percent above a year earlier.

The seasonal increase in groundfish landings that takes place at this time of the year in the New England fishery was responsible for the 19.7 percent drop from March to April in the ex-vessel price at Boston for offshore drawn large haddock. Large price increases for most fresh-water fish caused the drawn, dressed, or whole finfish subgroup index for April to rise 0.5 percent over March and 36.9 percent above April last year.

Lower prices for fresh haddock fillets and shrimp in April accounted for the 3.3 percent drop from March in the fresh processed fish and shellfish index, and this subgroup index was 9.9 percent lower than in April 1953.

The large drop in frozen shrimp prices from March to April was to be expected in view of the large inventories reported in recent months and the outlook for increased production. Frozen haddock fillet prices were down also while other products included under the subgroup remained unchanged from March to April. This April's index for the frozen processed fish and shellfish subgroup was down 10.0 percent from the March level and down 13.8 percent under a year earlier.

Canned Maine sardines enjoyed a good market all through the winter and early spring because of the failure of the California sardine fishery this season. But in order to clean out stocks on hand before the new Maine sardine season got under way, dealers in April lowered their prices for this canned product. All other canned items in the canned fishery products subgroup were quoted in April at the same level as in March. Canned pink salmon stocks were cleaned up as far as volume sales were concerned. Demand for canned tuna continued good. Compared with a year earlier, the April index for the canned fishery products subgroup was up 1.4 percent--tuna and sardine prices were higher and salmon prices were lower.



U. S. Foreign Trade in Edible Fishery Products

FEBRUARY 1954: United States imports of fresh, frozen, and processed edible fish and shellfish in February 1954 amounted to over 55 million pounds (valued at \$14.7 million), according to the February United States Foreign Trade, a Department of Commerce publication (see table). This was less by 6.5 percent in quantity and 2.7 percent in value than January imports.

UNITED STATES FOREIGN TRADE IN EDIBLE FISHERY PRODUCTS, FEBRUARY 1954 WITH COMPARISONS						
Item	Feb. 1954		Feb. 1953		Year 1953	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 Lbs.	Million \$	1,000 Lbs.	Million \$	1,000 Lbs.	Million \$
IMPORTS:						
Fish & shellfish: Fresh, frozen, & processed 1/	55,432	14.7	45,542	12.8	724,656	193.2
EXPORTS:						
Fish & shellfish: Processed 1/ only (excluding fresh and frozen)	2,428	0.8	6,498	1.6	58,920	14.4

1/ Includes pastes, sauces, clam chowder and juice, and other specialties.

Source: United States Foreign Trade (Trade by Commodity), Summary Report FT 930, Feb. 1954, U. S. Department of Commerce.

U. S. exports of processed fish and shellfish (excluding fresh and frozen) in February amounted to 2.6 million pounds (valued at \$0.8 million), lower by 43 percent in quantity and 20 percent in value from January imports.



International

FOREIGN TRADE

CANADIAN-UNITED STATES ECONOMIC COMMITTEE ADVOCATES EXTENDED TRADE: Assurance of continued U. S. -Canadian cooperation in the changing climate of world trade is the outcome of the first meeting of the Joint U. S. -Canadian Committee on Trade and Economic Affairs, held in Washington, D. C., on March 16.

The purpose of the meeting was to provide an opportunity for United States and Canadian Ministers to examine the trade and economic problems that are common to both countries, the U. S. Department of State announced in a March 17 news release.

The Ministers noted that the flow of trade between Canada and the United States is greater than that between any other two countries. They discussed various aspects of present trade relations and agreed on the desirability of avoiding any action which would interfere with this trade from which the two countries derive such great benefits.

Since the common economic problems of Canada and the United States can be solved with greatest success in a world where the volume of trade is steady and increasing and where exchange arrangements are of a kind to facilitate such growth, consideration was given throughout the discussions to the need for action towards freer trade and payments on a broad front. It was agreed that few things would contribute more to the well-being and stability of the free nations of the world than a forward move in this direction. The need for such progress seemed all the greater at a time when many Western countries are faced with the necessity of supporting effective defense programs over a long period.

The United States and Canadian Ministers found encouragement in many of the economic developments that have taken place over the past year. They noted that the gold and dollar reserves of other countries generally have been rising; that there has been a marked improvement in the internal economic stability of many countries; and that these favorable developments have made possible some relaxation of import restrictions. Nevertheless, it was agreed that the recovery to economic health has not progressed equally for all countries. What is needed, it was concluded, is the creation of a more flexible system of trade and payments throughout the world which would offer greater resilience to changing circumstances and which would contribute dynamically towards rising standards of living. It was agreed that much of the necessary preparation for such an advance has already been accomplished by the work of the Commission on Foreign Economic Policy in the United States, by the proposals of the Commonwealth Economic Conference, and by discussions within the Organization for European Economic Cooperation.

In the meantime, it was agreed that it is essential that pressing, but possibly temporary, economic problems should not be solved by expedients which might make more difficult the advance on a broad front that was held to be necessary. One immediate problem which received close consideration was that raised by the accumu-

lation of large agricultural surpluses. Special incentives and favorable weather conditions have operated in varying degrees to enlarge these surpluses. The Ministers of both countries recognized that if surpluses were to be disposed of without regard to the impact on normal trade, great damage might be done not only to the commerce of Canada and the United States but also to the world economy. The Ministers reaffirmed that it is the continuing policy of their respective governments, in disposing of agricultural surpluses abroad, to consult with interested countries and not to interfere with normal commercial marketings. They stated that it is their settled intention that any extraordinary measures that might be adopted to reduce surpluses should result in greater consumption and should augment, and not displace, normal quantities of agricultural products entering into world trade.

In advancing toward a freer system of world trade and payments, it was agreed that existing international organizations would continue to play an important role. The valuable work already done by the International Monetary Fund, the International Bank, and the Contracting Parties of the General Agreement on Tariffs and Trade, was recognized. Ministers noted with satisfaction the arrangements which have recently been made within the Fund to enable its resources to be used more effectively. Acknowledgement was also made of the useful service that has been performed by GATT in developing a code of commercial conduct and in providing a forum where multilateral tariff agreements could be negotiated and where the problems of commercial policy could be discussed.

It was appreciated that it is for countries whose currencies are now inconvertible to decide when and under what circumstances they might wish to make them convertible. It was also realized that enlightened economic policies on the part of the United States and Canada will materially contribute to establishing and maintaining broader freedom of trade and payments throughout the world. Because of the importance of that objective, the United States and Canadian Ministers warmly welcomed the evidence of a desire in many countries to take decisive steps toward the restoration of a broad area of convertibility, and expressed a willingness to do their part to help in making such a movement successful.

Note: See Commercial Fisheries Review, May 1954, p. 41.

DEVELOPMENTS IN INTERNATIONAL LAW OF INTEREST TO FISHERY INDUSTRIES

Some of the current problems of the United States in the field of international law and some recent developments were the subject of an address by Herman Phleger, the Legal Adviser of the Department of State, before the Pennsylvania Bar Association at Harrisburg, Pa., on January 22, 1954.

Several sections of this speech are of general interest to the fishery and allied industries. The portions of the speech dealing with the Continental Shelf Doctrine follow:

"The Continental Shelf Doctrine: Since 1945 several interesting developments have taken place in this field. The 83d Congress of the United States passed two public laws. One gave to the abutting states jurisdiction over the seabed and its resources under territorial waters (Pub. Law 31, approved May 22, 1953). The other provided for federal jurisdiction and control over the seabed and its subsoil between the outer limits of territorial waters and the outer limits of the continental shelf (Pub. Law 212, approved August 7, 1953). This latter Act provides that it shall be construed in such manner that the character as high seas of the waters above the outer Continental Shelf and the right to navigation and fishing therein shall not be affected.

"Subsequent to the United States proclamations in 1945, several countries have made far-reaching claims to jurisdiction over extensive areas of seabed and subsoil,

and even the waters, of the high seas for one or more purposes. For example, a number of countries claim the right unilaterally to control fishing on the high seas in areas contiguous to their coasts but which have historically been fished by nationals of other states or in which other nations have a real interest. Korea and Japan are engaged in a controversy over Korea's right to exclude nationals of other countries from fishing in large areas off her coasts. England and Iceland are in a controversy over Iceland's claims to exclusive fishing rights off her coasts.

"The International Court of Justice recently handed down a decision in the Anglo-Norwegian fisheries case. Japan and Australia are having a dispute over the rights of Australia to control pearl fisheries on the seabed off her coast, and this has been submitted to the ICJ for decision. The subject is one of increasing importance as a source of international controversy, and it is significant and heartening that there is a growing tendency to submit these disputes to the ICJ for decision.

"The Fisheries Articles (drafted by the International Law Commission) are designed to promote both the freedom of high-seas fisheries and international cooperation in conserving such fisheries. The Assembly postponed consideration of these items until the International Law Commission completes its work on all of the various phases of the regime of the high seas and territorial waters.

"The United States' position, as you know, is that the historic doctrine of freedom of fishing in the high seas must be maintained. The present draft by the Commission accords generally with this view.

That portion of the speech discussing the International Law Commission follows:

"International Law Commission: The United Nations body charged with the codification and progressive development of international law is the International Law Commission, a subordinate organ of the General Assembly. The Commission, which meets for several months annually, is composed of fifteen eminent international lawyers and jurists.

"Its conclusions and recommendations are reported annually to the General Assembly for consideration. At the session of the Assembly which terminated its work in December (1953), three major projects of the Commission were discussed in the Assembly's Legal Committee.

"One of these projects is a comprehensive set of articles on Arbitral Procedure. The object of the articles would be to provide a uniform code of arbitration and to eliminate, so far as possible, the past tendency of countries fearing defeat before an Arbitral Tribunal to block and frustrate the arbitration. As the Commission stated, the project is part codification and part development. The Assembly has requested the member states to consider the articles during the next two years and supply their comments and suggestions, so that the Assembly may consider the project again at its 1955 Session.

"The other two projects of the Commission, consisting of draft articles on the continental shelf and high-seas fisheries, are integral parts of a larger project of codifying and developing all of the various aspects of international law relating to the regime of the high seas and territorial waters.

"The United States has a vital interest in both of these projects. In this connection, you may recall the two Presidential Proclamations of September 28, 1945. One proclaimed the jurisdiction and control of the United States over the natural resources of the subsoil and seabed of the continental shelf beneath the high seas contiguous to the coasts of the United States. In the other it was stated that the United States considers it proper alone or with other states concerned to establish fishery conservation zones in areas of the high seas contiguous to the coasts of the United States

wherein fishing activities have been or in the future may be developed and maintained on a substantial scale. In such zones fishing operations would be subject to the regulation and control of the one or more nations having a real interest in developing and maintaining the fisheries in the zone."¹

The report of the U. N. International Law Commission on the international law of the high seas, incorporated in which was the international law relating to the continental shelf and fishery resources of the high seas, is of considerable interest. The Commission has studied these matters since 1949 and submitted a report at the last session of that the General Assembly which ended in December 1953. Pertinent parts of the International Law Commission report follow:

CHAPTER III - REGIME OF THE HIGH SEAS

I. Introductory

58. At its first session held in 1949 the Commission elected Mr. J. P. A. Francois as special rapporteur to study the question of the regime of the high seas. At its second session held in 1950 the Commission considered a report (A/CN.4/17) of Mr. Francois on the subject. In the report of the Commission submitted the same year to the General Assembly, at its fifth session, ^{1/} the Commission surveyed the various questions falling within the scope of the general topic of the regime of the high seas such as nationality of ships, safety of life at sea, slave trade, submarine telegraph cables, resources of the high seas, right of pursuit, right of approach, contiguous zones, sedentary fisheries, and the continental shelf. On the basis of a second report of the special rapporteur (A/CN.4/42) most of these questions were reviewed at the third session in 1951 at which, in addition, the Commission adopted draft articles on the continental shelf and the following subjects relative to the high seas: resources of the sea, sedentary fisheries, and contiguous zones.^{2/}

59. At its fifth session, the Commission examined once more, in the light of comments of governments, the provisional draft articles adopted at the third session. Final drafts were prepared on the following questions: (i) continental shelf; (ii) fishery resources of the high seas; (iii) contiguous zones. For reasons explained below in paragraph 71, the question of sedentary fisheries has not been covered in a separate article or articles. It is hoped that the other questions relating to the high seas may, in the course of the next few years, receive further study with the view to being embodied in drafts to be finally submitted to the General Assembly. The result will be the codification of the law covering the entire field of the regime of the high seas as well as proposals for the further development of that part of international law.

60. In its work on the subject the Commission derived considerable assistance from a collection, in two volumes, published in 1951 and 1952 by the Division for the Development and Codification of International Law of the Legal Department of the United Nations and entitled "Laws and Regulations on the Regime of the High Seas."

^{1/}Official Records of the General Assembly, Fifth Session, Supplement No. 12 (A/1315).

^{2/}See the report of the Commission on its third session, Official Records of the General Assembly, Sixth Session, Supplement No. 9 (A/1838), Chapter VII and Annex.

II. The Continental Shelf

A

Draft Articles on the Continental Shelf

61. As stated above in paragraph 58, at its third session held in 1951 the Commission adopted draft articles, with accompanying comment, on the continental shelf. ^{1/} Subsequent to the third session the special rapporteur reexamined these articles in the light of observations received from the following governments: Belgium, Brazil, Chile, Denmark, Egypt, Ecuador, France, Iceland, Israel, Netherlands, Norway, Philippines, Sweden, Syria, Union of South Africa, United Kingdom of Great Britain and Northern Ireland, United States of America, Yugoslavia....

62. The Commission adopted, at its 234th meeting, the following draft articles on the continental shelves.

Article 1

As used in these articles, the term "continental shelf" refers to the seabed and subsoil of the submarine areas contiguous to the coast, but outside the area of the territorial sea, to a depth of two hundred metres.

Article 2

The coastal State exercises over the continental shelf sovereign rights for the purpose of exploring and exploiting its natural resources.

Article 3

The rights of the coastal State over the continental shelf do not affect the legal status of the superjacent waters as high seas.

Article 4

The rights of the coastal State over the continental shelf do not affect the legal status of the airspace above the superjacent waters.

Article 5

Subject to its right to take reasonable measures for the exploration of the continental shelf and the exploitation of its natural resources, the coastal State may not prevent the establishment or maintenance of submarine cables.

Article 6

1. The exploration of the continental shelf and the exploitation of the natural resources must not result in any unjustifiable interference with navigation, fishing or fish production.
2. Subject to the provisions of paragraph 1 and 5 of this article, the coastal State is entitled to construct and maintain on the continental shelf installations necessary for the exploration and exploitation of its natural resources and to establish safety zones at a reasonable distance around such installations and to take in these zones measures necessary for their protection.
3. Such installations, though under the jurisdiction of the coastal State, do not possess the status of islands. They have no territorial sea of their own and their presence does not affect the delimitation of the territorial sea of the coastal State.
4. Due notice must be given of any such installations constructed, and due means of warning of the presence of such installations must be maintained.
5. Neither the installations themselves, nor the said safety zones around them may be established in narrow channels or on recognized sea lanes essential to international navigation.

Article 7

1. Where the same continental shelf is contiguous to the territories of two or more States whose coasts are opposite to each other, the boundary of the continental shelf appertaining to such States is, in the absence of agreement between those States or unless another boundary line is justified by special circumstances, the median line every point of which is equidistant from the base lines from which the width of the territorial sea of each country is measured.
2. Where the same continental shelf is contiguous to the territories of two adjacent States, the boundary of the continental shelf appertaining to such States is in the absence of agreement between those States or unless another boundary line is justified by special circumstances, determined by application of the principle of equidistance from the base lines from which the width of the territorial sea of each of the two countries is measured.

Article 8

- Any dispute which may arise between States concerning the interpretation or application of these articles should be submitted to arbitration at the request of any of the parties.
63. While adhering to the basic considerations which underlay the articles provisionally adopted in 1951, the Commission has now departed in various respects from its preliminary draft. It did so having regard to replies received from Governments; the views enunciated on the subject by writers and learned societies; and its own study and discussion of the problems involved. The nature of these changes is indicated below in connection with the comments on the articles as finally adopted.

B

Comments on the Draft Articles

(i) The Concept of the Continental Shelf as Used in The Articles

64. In defining, for the purpose of the articles adopted, the term "continental shelf" as referring "to the seabed and subsoil of the submarine areas

contiguous to the coast, but outside the area of the territorial sea, to a depth of two hundred metres," the Commission abandoned the criterion of exploitability adopted in 1952 in favor of that of a depth of two hundred metres as laid down in article 1 of the present draft. The relevant passage of article 1 as adopted in 1951 referred to the area "where the depth of the superjacent waters admits of the exploitation of the natural resources of the seabed and subsoil." Some members of the Commission favored the retention of the text adopted in 1951 for the reason, *inter alia*, that it is more in accordance with the purpose of the draft not to adopt a fixed limit for the continental shelf but to let the territorial extension of the exercise of the powers given the coastal States depend on the practical possibilities of exploitation. The Commission, following the considerations adduced by the special rapporteur in the light of observations of certain governments, has come to the conclusion that the text previously adopted does not satisfy the requirement of certainty and that it is calculated to give rise to disputes. On the other hand, the limit of two hundred metres—a limit which is at present sufficient for all practical needs—has been fixed because it is at that depth that the continental shelf, in the geological sense, generally comes to an end. It is there that the continental slope begins and falls steeply to a great depth. The text thus adopted is not wholly arbitrary for, as already stated, it takes into account the practical possibilities, so far as they can be foreseen at present, of exploration and exploitation. Such unavoidable element of arbitrariness as is contained in that text is mitigated by the rule formulated below in paragraph 66 which covers to a large extent the case of those States whose waters surrounding the coast reach a depth of two hundred metres at a very short distance from the coast.

65. While adopting, to that extent, the geographical text of the continental shelf as the basis of the juridical concept of the term, the Commission in no way holds that the existence of the continental shelf in its geographical configuration as generally understood is essential for the exercise of the rights of the coastal State as defined in these articles. Thus, if, as is the case in the Persian Gulf, the submarine areas never reach the depth of two hundred metres, that fact is irrelevant for the purposes of article 1. The limit there laid down is the maximum limit. It does not rule out from the operation of the articles shallow submarine areas which are contiguous to the coast and which do not attain the depth of two hundred metres. The Commission considered the possibility of adopting a term other than "continental shelf" seeing that in this respect as well as in the cases referred to in the following paragraph it departed from the strict geological connotation of the term. However, it was considered that, in particular, the wide acceptance of that term in the literature counselled its retention.

66. Similarly, while adhering in general to the geographical description and characteristics of the continental shelf, the Commission envisages the possibility and the desirability of reasonable modifications, in proper cases, of the text thus adopted. Thus although the depth of two hundred metres as a limit of the continental shelf must be regarded as the general rule, it is a rule which is subject to equitable modifications in special cases in which submerged areas, of a depth less than two hundred metres, situated in considerable proximity to the

coast are separated by a narrow channel deeper than two hundred metres from the part of the continental shelf adjacent to the coast. Such shallow areas must, in these cases, be considered as contiguous to that part of the shelf. It would be for the State relying on this exception to the general rule to establish its claim to an equitable modification of the rule. In case of dispute, it must be a matter for arbitral determination whether a shallow submarine area falls within the rule as here formulated. Some such modification of the general rule is necessary in order to meet the objection that the mechanical reliance on the geological notion of the continental shelf may result in an inequality of treatment of some States as compared with others.

67. The expression "continental shelf" does not imply that it refers exclusively to continents in the current connotation of that term. It covers also the submarine areas contiguous to islands.

(ii) The Nature of the Rights of the Coastal State

68. While article 2 as provisionally formulated in 1951 referred to the continental shelf as "subject to the exercise by the coastal State of control and jurisdiction for the purpose of exploring it and exploiting its natural resources," the article as now formulated lays down that "the coastal State exercises over the continental shelf sovereign rights for the purpose of exploring and exploiting its natural resources." The formulation thus adopted takes into account the views of those members of the Commission who attached importance to maintaining the language of the original draft and those who considered that the expression "rights of sovereignty" should be adopted. In adopting the article in its present formulation the Commission desired to avoid language lending itself to interpretations alien to an object which the Commission considers to be of decisive importance, namely safeguarding the principle of the full freedom of the superjacent sea and the air-space above it.

69. On the other hand, the text as now adopted leaves no doubt that the rights conferred upon the coastal State cover all rights necessary for and connected with the exploration and the exploitation of the natural resources of the continental shelf. These rights comprise full control and jurisdiction and the right to reserve exploitation and exploration for the coastal State or its nationals. Such rights include jurisdiction in connection with suppression of crime.

70. The Commission decided, after considerable discussion, to retain the term "natural resources" as distinguished from the more limited term "mineral resources." In its previous draft the Commission only considered mineral resources, and certain members proposed adhering to that course. The Commission, however, came to the conclusion that the products of sedentary fisheries, in particular to the extent that they were natural resources permanently attached to the bed of the sea, should not be outside the scope of the regime adopted and that this aim could be achieved by using the term "natural resources." It is clearly understood, however, that the rights in question do not cover so-called bottom-fish and other fish which, although living in the sea, occasionally have their habitat at the bottom of the sea or are bred there. Nor do these rights cover objects such as wrecked ships and their cargoes (including bullion) lying on the seabed or covered by the sand of the subsoil.

71. Neither, in the view of the Commission, can the exclusive rights of the coastal State be exercised in a manner inconsistent with existing rights of nationals of other States with regard to sedentary fisheries. Any interference with such rights, when unavoidably necessitated by the requirements of exploration and exploitation of natural resources, is subject to rules of international law insuring respect of the rights of aliens. However, apart from the case of such existing rights, the sovereign rights of the coastal State over its continental shelf cover also sedentary fisheries. It may be added that this was the reason why the Commission did not think it necessary to retain, among the articles devoted to the resources of the sea, an article on sedentary fisheries. The Commission envisaged the possibility that shallow areas rendering possible the exploitation of sedentary fisheries may exist outside the continental shelf. However, that possibility was considered to be at present too theoretical to necessitate separate treatment.

72. The rights of the coastal State over the continental shelf are independent of occupation, actual or fictional, and of any formal assertion of those rights.

73. The Commission does not deem it necessary to elaborate the question of the nature and of the legal basis of the sovereign rights attributed to the coastal State. The considerations relevant to this matter cannot be reduced to a single factor. In particular, it is not possible to base the principle of the sovereign rights of the coastal State exclusively on recent practice, for there is no question, in the present case, of giving the authority of a legal rule to a unilateral practice resting solely upon the will of the States concerned. However, that practice itself is considered by the Commission to be supported by considerations of legal principle and convenience. In particular, once the seabed and the subsoil have become the object of active interest of States with the view to the exploration and exploitation of their resources, it is not practicable to treat them as *res nullius*, i. e., capable of being acquired by the first occupier. It is natural that coastal States should resist any such solution. Moreover, in most cases the effective exploitation of natural resources must depend on the existence of installations on the territory of the coastal State. Neither is it possible to disregard the phenomenon of geography whether that phenomenon is described as propinquity, contiguity, geographical continuity, appurtenance or identity of the submarine areas in question with the non-submerged contiguous land. All these considerations of general utility provide a sufficient basis of the principle of sovereign rights of the coastal State as now formulated by the Commission. As already stated that principle is in no way incompatible with the principle of the freedom of the sea.

74. While, for the reasons stated, as well as having regard to practical considerations, the Commission has been unable to countenance the idea of the internationalization of the submarine areas comprised in the concept of the continental shelf, it has not discarded the possibility of the creation of an international agency charged with scientific research and guidance with the view to promoting, in the general interest, the most efficient use of submarine areas. It is possible that some such body may be set up within the framework of an existing international organization.

(iii) The Sovereign Rights of the Coastal State and the Freedom of the Seas and of the Air Space above them

75. Some of the principal articles on the continental shelf as formulated by the Commission are devoted to the provision of safeguards of the freedom of the seas in relation to the sovereign rights of the coastal State over the continental shelf.

Thus articles 3 and 4 lay down that the rights of the coastal State over the continental shelf do not affect the legal status of the superjacent waters as high seas or of the air space above the superjacent waters. These articles, which are couched in categorical terms, are self-explanatory. For the articles on the continental shelf are intended as laying down the regime of the continental shelf only as subject to and within the orbit of the paramount principle of the freedom of the seas and of the air space above them. No modifications or exceptions from that principle are admissible unless expressly provided for in the various articles.

76. The same considerations apply to the seabed. Although the seabed is subject to the sovereign rights of the coastal State, for the purpose of the exploration and exploitation of its natural resources, the principle of the freedom of the seas and its legal status must be respected, in that sphere, in as much as the coastal State must not prevent the establishment or maintenance of submarine cables by nationals of other States. That provision is designed to prevent either arbitrary prohibition or discrimination against foreign nationals. It is not otherwise intended to impair the right of the coastal State to take measures reasonably necessary for the exploration of the continental shelf and the exploitation of its natural resources. At a previous session the Commission considered whether this provision ought to be extended to pipelines on the continental shelf. Such pipelines might necessitate the installation of pumping stations which might interfere with the exploitation of the subsoil even more than cables. However, the question was considered too remote to require regulation for the time being.

77. While articles 3 and 4 lay down in general terms the basic rule of the unaltered legal status of the superjacent sea and the air above it, article 6 applies that basic rule to the main manifestations of the freedom of the seas, namely, the freedom of navigation and fishing. Paragraph 1 of that article lays down that the exploration of the continental shelf must not result in any unjustifiable interference with navigation, fishing or fish production. It will be noted, however, that what the article prohibits is not any kind of interference but only unjustifiable interference. The manner and the significance of that qualification were the subject of prolonged discussion in the Commission. The progressive development of international law, which takes place against the background of established rules, must often result in the modification of those rules by reference to new interests or needs. The extent of that modification must be determined by the relative importance of the needs and interests involved. To lay down, therefore, that the exploration and exploitation of the continental shelf must never result in any interference whatsoever with navigation and fishing might result in many cases for rendering somewhat nominal both the sovereign rights of exploration and exploitation and the very

purpose of the articles as adopted. The case is clearly one of assessment of the relative importance of the interests involved. Interference, even if substantial, with navigation and fishing might, in some cases, be justified. On the other hand, interference even on an insignificant scale would be unjustified if unrelated to reasonably conceived requirements of exploration and exploitation of the continental shelf. While, in the first instance, the coastal State must be the judge of the reasonableness--of the justification--of the measures adopted, in case of dispute the matter must be settled on the basis of article 8 which governs the settlement of all disputes regarding the interpretation of application of the article.

78. The same considerations apply and explain the provisions of article 6, in paragraphs 2-5, relating to installations necessary for the exploration and exploitation of the continental shelf as well as of safety zones round such installations and the measures necessary to protect them. They, too, are subject to the overriding prohibition of unjustified interference with freedom of fishing and navigation. Although the Commission did not consider it essential to specify the size of the safety zones, it believes that, generally speaking, a radius of five hundred metres is sufficient for the purpose. With regard to notice to be given, in accordance with paragraph 4 of article 6, of "installations constructed," the obligation in question refers primarily to installations already completed. There is in principle no duty to disclose in advance plans relating to contemplated construction of installations. However, in cases in which the actual construction of provisional installations is likely to interfere with navigation, due means of warning must be maintained in the same way as in the case of installations already completed and, as far as possible, due notice must be given.

79. With regard to the general status of installations it has been thought useful to lay down expressly, in paragraph 3 of article 6, that they do not possess the status of islands and that the coastal State is not entitled to claim for the installations any territorial waters of their own or to treat them as relevant for the delimitation of territorial waters. In particular, they cannot be taken into consideration for the purpose of determining the base-line. On the other hand, the installations are under the jurisdiction of the coastal State for the purpose of maintaining order and of the civil and criminal competence of its courts.

80. While generally the Commission, by formulating the test of unjustifiable interference, thought it advisable to eliminate any semblance of rigidity in adapting the existing principle of the freedom of the sea to what is an essentially novel situation, it thought it desirable to rule out expressly any right of interference with navigation in certain areas of the sea. These areas are defined in paragraph 5 of article 6 as narrow channels or recognized sea lanes essential to international navigation. They are understood to include straits in the ordinary sense of the word. The importance of these areas for the purpose of international navigation is such as to preclude, in conformity with the tests of equivalence and relative importance of the interests involved, the construction therein of installations or the maintenance of safety zones even if such installations or zones are necessary for the exploration or exploitation of the continental shelf.

(iv) Delimitation of the Boundaries of the Continental Shelf

81. In the matter of the delimitation of the boundaries of the continental shelf the Commission was in the position to derive some guidance from proposals made by the Committee of experts on the delimitation of territorial waters. In its provisional draft the Commission, which at that time was not in possession of requisite technical and expert information on the matter, merely proposed that the boundaries of the continental shelf contiguous to the territories of adjacent States should be settled by agreement of the parties and that, in the absence of such agreement, the boundary must be determined by arbitration *ex sequo et bono*. With regard to the boundaries of the continental shelf of States whose coasts are opposite to each other, the Commission proposed the median line--subject to reference to arbitration in cases in which the configuration of the coast might give rise to difficulties in drawing the median line.

82. Having regard to the conclusions of the Committee of experts referred to above, the Commission now felt in the position to formulate a general rule, based on the principle of equidistance, applicable to the boundaries of the continental shelf both of adjacent States and of States whose coasts are opposite to each other. The rule thus proposed is subject to such modifications as may be agreed upon by the parties. Moreover, while in the case of both kinds of boundaries the rule of equidistance is the general rule, it is subject to modification in cases in which another boundary line is justified by special circumstances. As in the case of the boundaries of coastal waters, provision must be made for departures necessitated by any exceptional configuration of the coast, as well as the presence of islands or of navigable channels. To that extent the rule adopted partakes of some elasticity. In view of the general arbitration clause of article 8, referred to below in paragraphs 86 *et seq.* no special provision was considered necessary for submitting any resulting disputes to arbitration. Such arbitration, while expected to take into account the special circumstances calling for modification of the major principle of equidistance, is not contemplated as arbitration *ex sequo et bono*. That major principle must constitute the basis of the arbitration, conceived as settlement on the basis of law, subject to reasonable modifications necessitated by the special circumstances of the case.

83. Without prejudice to the element of elasticity implied in article 7, the Commission was of the opinion that where the same continental shelf is contiguous to the territories of two adjacent States, the delimitation of the continental shelf between them should be carried out in accordance with the same principles as govern the delimitation of the territorial waters between the two States in question.

84. It should, however, be noted that certain members of the Commission considered that it would be premature to apply for the purpose of delimiting the continental shelf the principles drawn up by the Committee of experts on the delimitation of territorial waters, since those principles have not yet been discussed by the Commission. In their opinion, the proper course would be to provide that the boundaries of the continental shelf contiguous to the territories of two or more States should be determined by agreement between the States concerned;

and that in the absence of such agreement, the resultant dispute between them should be settled by one of the appropriate procedures for the peaceful settlement of disputes.

85. It is understood that the use of the term "territorial sea," as distinguished from "territorial waters" in article 7, is provisional and that the question of terminology to be used in this and other cases in the drafts prepared by the Commission will be determined when the Commission adopts its final draft on the regime of territorial waters. Reference may also be made in this connection to paragraph 108 below to the provisional use of the term "base line."

(v) Arbitral Settlement of Disputes

86. Unlike the preliminary draft, the final draft as now proposed contains a general arbitration clause providing that any disputes which may arise between States concerning the interpretation or application of the article should be submitted to arbitration at the request of any of the parties. The clause thus adopted covers, in addition to any boundary disputes connected with article 7, all disputes arising out of the exploration or the exploitation of the continental shelf.

87. In the view of the Commission there are compelling reasons which render essential a clause of this nature. As already stated (see above, paragraph 68 *et seq.*) the articles on the continental shelf represent an attempt to reconcile the established principles of international law governing the regime of the high seas with the recognition of the rights of the coastal State over the continental shelf. Any such reconciliation, based as it must be on the continuous necessity of assessing the relative importance of the interests involved, must leave room for a measure of elasticity and discretion. Thus, it must often remain a question for subjective appreciation, with the consequent possibility of disputes, whether--in the words of paragraph 1 of article 6--the measures taken by the coastal State for the exploration and exploitation of the continental shelf constitute "unjustifiable" interference with navigation or fishing; whether, according to paragraph 2 of that article, the safety zones established by the coastal State are at a "reasonable" distance around the installations; whether, in the words of paragraph 5 of that article, a sea lane is a "recognized" sea lane and whether it is "essential to international navigation;" or whether the coastal State, in preventing the establishment of submarine cables, is in fact acting within the spirit of article 5 which makes such action permissible only if necessitated by "reasonable" measures for the exploration and exploitation of the continental shelf. The new regime of the continental shelf, unless kept within the confines of legality and of impartial determination of its operation, may constitute a threat to the overriding principle of the freedom of the seas and to peaceful relations between States. For these reasons it seems essential that States which are in dispute concerning the exploration or exploitation of the continental shelf should be under a duty to submit to arbitration any disputes arising in this connection. It is for this reason that the Commission, although it does not propose the adoption of a convention on the continental shelf, thought it essential to establish the principle of arbitration.

88. Certain members of the Commission were opposed to the insertion in the draft of a clause on

compulsory arbitration on the grounds that there was no reason for imposing on States one only of the various measures laid down in current international law, and particularly, in Article 33 of the Charter of the United Nations, for the pacific settlement of international disputes. They also pointed out that the insertion of such a clause would make the draft unacceptable to a great many States. Certain members raised the further objection that such a clause would give any contracting State the right to take action on any pretext against the other contracting States by a unilateral request to international tribunals, thus increasing the possibility in present circumstances of putting pressure on the weaker States and in effect curtailing their independence.

89. The provision for arbitration as laid down in article 8 does not exclude any other procedure agreed upon by the parties as a means of the formal settlement of the dispute. In particular, they may agree, in matters of general importance, to refer the dispute to the International Court of Justice.

90. In as much as the articles on the continental shelf cover generally its exploration and exploitation, arbitration referred to in article 8 must be regarded as applying to all disputes arising out of the exploration or exploitation of the continental shelf and affecting the international relations of the State concerned. This will cover, for instance, disputes arising in connection with the existence of common deposits situated across the surface boundaries of the submarine areas, a problem which has arisen in some countries in the relations of owners of adjoining oil deposits.

C

Action Recommended in Respect of the Draft Articles on the Continental Shelf

91. The Commission recommends to the General Assembly to adopt by resolution this part of the report and the draft articles on the continental shelf incorporated therein.

III. Fisheries

92. The question of fisheries, under the title of Resources of the Sea, has been under consideration by the Commission as part of the general topic of the regime of the high seas. Reference is made to the introductory paragraphs of this chapter for a survey of the treatment of this subject by the Commission.

93. At its third session in 1951 the Commission adopted provisionally the articles on resources of the sea. During the fifth session the Commission reconsidered these articles in the light of observations sent by the following countries: Belgium, Brazil, Chile, Denmark, Ecuador, France, Iceland, Netherlands, Norway, Philippines, Sweden, Syria, Union of South Africa, United Kingdom of Great Britain and Northern Ireland, Yugoslavia. . . . The Commission discussed the revision of these articles at its 206th to 210th meetings.

94. The Commission adopted, at its 210th meeting, the following three draft articles covering the basic aspects of the international regulation of fisheries:

Article 1

A State whose nationals are engaged in fishing in any area of the high seas where the nationals of other States are not thus engaged, may regulate and control fishing activities in such areas for the

purpose of protecting fisheries against waste or extermination. If the nationals of two or more States are engaged in fishing in any area of the high seas, the States concerned shall prescribe the necessary measures by agreement. If, subsequent to the adoption of such measures, nationals of other States engage in fishing in the area and those States do not accept the measures adopted, the question shall, at the request of one of the interested parties, be referred to the international body envisaged in article 3.

Article 2

In any area situated within one hundred miles from the territorial sea, the coastal State or States are entitled to take part on an equal footing in any system of regulation, even though their nationals do not carry on fishing in the area.

Article 3

States shall be under a duty to accept, as binding upon their nationals, any system of regulation of fisheries in any area of the high seas which an international authority, to be created within the framework of the United Nations, shall prescribe as being essential for the purpose of protecting the fishing resources of that area against waste or extermination. Such international authority shall act at the request of any interested State.

95. In adopting these articles the Commission adhered in substance to the provisional draft of the articles formulated at its third session in 1951. In their main aspect both drafts go beyond the existing law and must be regarded to a large extent as falling within the category of progressive development of international law. The existing position of international law is, in general, that regulations issued by a State for the conservation of fisheries in any area of the high seas outside its territorial waters are binding only upon the nationals of that State. Secondly, if two or more States agree upon regulations affecting a particular area, the regulations are binding only upon the nationals of the States concerned. Thirdly, in treaties concluded by States for the joint regulation of fisheries for the purpose of their protection against waste and extermination, the authority created for the purpose has been, as a rule, entrusted merely with the power to make recommendations, as distinguished from the power to issue regulations binding upon the contracting parties and their nationals.

96. It is generally recognized that the existing law on the subject, including the existing international agreements, provides no adequate protection of marine fauna against extermination. The resulting position constitutes, in the first instance, a danger to the food supply of the world. Also, in so far as it renders the coastal State or the States directly interested helpless against wasteful and predatory exploitation of fisheries by foreign nationals, it is productive of friction and constitutes an inducement to States to take unilateral action, which at present is probably illegal, or self-protection. Such inducement is particularly strong in the case of the coastal State. Once such measures of self-protection, in disregard of the law as it stands at present, have been resorted to, there is a tendency to aggravate the position by measures aiming at or resulting in the total exclusion of foreign nationals.

97. The articles as now adopted by the Commission are intended to provide the basis for a solution of the difficulties inherent in the existing situation.

Article 3 imposes upon States the "duty to accept, as binding upon their nationals, any system of regulation of fisheries in any area of the high seas which an international authority, to be created within the framework of the United Nations, shall prescribe as being essential for the purpose of protecting the fishing resources of that area against waste or extermination." Moreover, it is provided there that "such international authority shall act at the request of any interested State" - i.e., whether a coastal or any other State. Certain members of the Commission were opposed to the adoption of the text of article 3, on the ground that there was no real need for the creation of an international authority, since fisheries could be regulated, as in the past, by means of agreements between States. They contended that the proposal to give an international authority power to issue regulations binding on the nationals of States was in conflict with the basic principles of international law.

98. The system proposed by the Commission projects, in the first instance, the interest of the coastal State which is often most directly concerned in the preservation of the marine resources in the areas of the sea contiguous to its coast. Obviously, if only the nationals of that State are engaged in fishing in these areas, it can fully achieve the desired object by legislating in respect of its nationals and enforcing the legislation thus enacted. If nationals of other States are engaged in fishing in a given area - whether coastal or otherwise - it is clear that the concurrence of those States is essential for the effective adoption and enforcement of the regulations in question. Article 1 provides therefore that in such cases "the States concerned shall prescribe the necessary measures by agreement." Article 3 is intended to provide effectively for the contingency of the interested States being unable to reach agreement. In such cases, the regulations are to be issued, with binding effect, by the international authority envisaged in that article. Similarly, if subsequent to the adoption of measures of protection by the agreement of the interested States, nationals of other States engage in fishing in the area in question and if their States are unwilling to accept or respect the regulations thus issued, the international authority provided for in article 3 is empowered to declare the regulations to be binding upon the States in question and their nationals.

99. As stated, the system thus formulated by the Commission does not differ substantially from that provisionally adopted by the Commission at its third session. Thus it was laid down, in article 2, that a permanent international body competent to conduct investigations of the world's fisheries and the methods employed in exploiting them "should also be empowered to make regulations for conservatory measures to be applied by the States whose nationals are engaged in fishing in any particular area where the States concerned are unable to agree among themselves." It is significant of the present state of opinion and of the widely felt need for the removal of what is felt by many to be a condition approaching anarchy that in the replies sent by governments no opposition was voiced against the proposal then advanced by the Commission.

100. The Commission, in adopting these articles, was influenced by the view that the prohibition of abuse of rights is supported by judicial and other authority and is germane to the situation covered

by these articles. A State which arbitrarily and without good reason, in rigid reliance upon the principle of the freedom of the seas, declines to play its part in measures reasonably necessary for the preservation of exploitable or often essential resources from waste exploitation, abuses a right conferred upon it by international law. The prohibition of abuse of rights in so far as it constitutes a general principle of law recognized by civilized States, provides to a considerable extent a satisfactory legal basis for the general rule as formulated in article 3. To that extent it may be held that that article is not altogether in the nature of a drastic departure from the principles of international law. In fact the Commission deems it desirable that pending the general acceptance of the system proposed in article 3 enlightened States should consider themselves bound, even if by way of a mere imperfect legal obligation, to act on the view that it may be contrary to the very principle of the freedom of the seas to encourage or permit action which amounts to an abuse of a right and which is apt to destroy the natural resources whose preservation and common use have been one of the main objects of the doctrine of the freedom of the sea. This is so although the Commission is of the opinion that the articles adopted fall generally within the category of development of international law.

101. Reference may be made in this connection to article 2 which lays down that, in any area situated within one hundred miles from the territorial sea, the coastal State or States are entitled to take part on an equal footing in any system of regulation, even though their nationals do not carry on fishing in the area. This provision is considered to safeguard sufficiently the position of the coastal State. Such protection of its interests is equitable and necessary even if, for the time being, its nationals do not engage in fishing in the area. On the other hand, the right to participate, on a footing of equality, in any system of regulation agreed upon by other States, does not imply a right to prevent or hinder its operation. The same applies to any system of regulations which may be decided upon by the international authority in conformity with article 3. In view of the wide powers conferred upon the latter, the Commission considered it unnecessary to entertain in detail the proposal, put forward at its third session and advanced one more at its present session, to entrust the coastal State itself with the right to issue regulations of non-discriminatory character binding upon foreign nationals in areas contiguous to its coast.

102. With respect to the action which may appropriately be taken by the General Assembly in the matter of the part of the present report incorporating the final draft of articles on fisheries, the Commission recommends: (a) that the General Assembly adopt that part of the report and the draft articles by resolution; and (b) that it enters into consultation with the Food and Agriculture Organization of the United Nations with a view to the preparation of a draft convention incorporating the principles adopted by the Commission.

103. The Commission believes that the general importance and the recognized urgency of the subject matter of these articles warrant their endorsement by a formal act of approval on the part of the General Assembly. Considerable time must elapse before a convention on the lines here proposed is adopted and widely ratified. In the meantime it seems advisable that the General Assembly should

lend its authority to the principles underlying these articles. In particular, endorsement should be given to the view that where a number of interested States have agreed on a system of protection of fisheries any regulations thus agreed upon should not, without good reason, be rendered nugatory by the action or inaction of a single State. The problem underlying these articles is one of general interest and the Commission believes that an authoritative statement of the legal position on the subject, both de lege lata and de lege ferenda, by the General Assembly is indicated as a basis of any future regulations which may be adopted.

104. While the articles adopted by the Commission contain the general principles for the protection of fisheries, it is clear that only a detailed convention or conventions can translate these principles into a system of working rules. It is probable that that object may be achieved on a regional basis rather than by way of a general convention. Conventions concluded in the past for the protection of fisheries have been, as a rule, on a regional basis. The International Convention for the North West Atlantic Fisheries of 6 February 1949, which establishes an International Commission for the North Atlantic Fisheries assisted by panels for sub-areas and national advisory committees, and the proposed International Convention for the High Sea Fisheries of the North Pacific Ocean, approved in draft by the Tripartite Fisheries Conference at Tokyo on 14 December 1951, provide recent instructive examples of such regulations. Account would also have to be taken of the existence and experience of regional bodies such as the Indo-Pacific Fisheries Council, the Regional Fisheries Council for the Mediterranean and the Latin American Fisheries Council. The matter is of a technical character; as such it is outside the competence of the Commission. A specialized body, such as the Food and Agriculture Organization of the United Nations, would seem to be most suitable for the purpose. Accordingly, the Commission recommends that, concurrently with its approval of the articles on Fisheries, the General Assembly should enter into consultation with the Food and Agriculture Organization with a view to investigating the matter and preparing drafts of a convention or conventions on the subject in conformity with the general principles embodied in the articles.

IV. Contiguous Zone

105. As part of the work on the regime of the high seas the Commission adopted at its 210th meeting the following single article on contiguous zone:

On the high seas adjacent to its territorial sea, the coastal State may exercise the control necessary to prevent and punish the infringement, within its territory or territorial sea, of its customs, immigration, fiscal or sanitary regulations. Such control may not be exercised at a distance beyond twelve miles from the base line from which the width of the territorial sea is measured.

106. The article thus adopted is identical, but for the words reproduced in italics, with that formulated by the Commission at its third session. Apart from some qualifications and reservations, the principle underlying that article has encountered no opposition on the part of the governments which have since made observations on the subject (see annex to this report). The Commission believes that principle to be in accordance with a

widely adopted practice. International law does not forbid States to exercise a measure of protective, preventive, or punitive jurisdiction for certain purposes over a belt of water contiguous to its territorial sea. States have shown no disposition to challenge the exercise by other States of a limited jurisdiction of that nature. Certain members of the Commission were, however, opposed to the inclusion of this article in the draft, on the ground that it had no direct connection with the regime of the high seas and, moreover, that several governments in their observations had also put forward the view that the article in question should be examined in connection with the discussion of territorial waters.

107. There has been no general agreement as to the extent of the contiguous zone for the purposes as defined above. The Preparatory Committee of the Hague Codification Conference of 1930 proposed that the breadth of the contiguous zone be fixed at twelve nautical miles measured from the coast. While it is possible that in some cases that limit may be insufficient having regard to technical developments in the speed of vessels and other wise, the Commission believes that, on the whole, that limit approximates most closely to general practice as acquiesced in by States.

108. It must be noted that, in the article as now formulated, the contiguous zone of twelve miles is described as measured from the base line forming the inner limit of the territorial sea. In the article as proposed in 1951 the Commission referred to twelve miles as measured "from the coast." This change of formulation is not intended as an expression of view as to the nature of the base line forming the inner limit of the territorial sea. However, as in the case of the territorial sea, it is convenient to refer to the base line as being the more precise indication.

109. In adopting the limit of twelve miles for the exercise of the protective rights of States within the contiguous zone, the Commission does not intend to prejudice, in any direction, the results of its examination of the question of the territorial sea and of its limits.

110. Certain members of the Commission opposed the inclusion in the draft of the article on the contiguous zone, on the ground that it prejudged the question of the outer limit of territorial waters. They pointed out that by taking as the base line the inner limit of the territorial waters, the article tended to restrict the width of these waters—a point on which the Commission had not yet taken any decision.

111. It is understood that the term "customs regulations" as used in this article refers not only to regulations concerning import and export duties but also other regulations concerning the exportation and importation of goods. In addition, the Commission thought it necessary to amplify the formulation previously adopted by referring expressly to immigration—a term which is also intended to include emigration.

112. The rights of the coastal State within the contiguous zone do not include rights in connection with security or fishing rights. With regard to the latter the Preparatory Committee of the Codification Conference of 1930 found that the replies of governments disclosed no sufficient measure of agreement on the subject. The Commission considers that in that respect there has been no change in the position. The question may become less urgent

and more amenable to a solution if the proposals of the Commission relating to fisheries and contained in paragraphs 92 et seq. of the present report are adopted by States.

113. The exercise of the rights of the coastal State, as here formulated, within the contiguous zone does not affect the legal status of the sea outside the territorial sea or of the air space above the contiguous zone. Air traffic may necessitate the establishment of an air zone over which the

coastal State may exercise control. However, this question is outside the subject of the regime of the high seas.

114. As the Commission has not yet adopted draft articles on the territorial sea, it recommends the General Assembly to take no action with regard to the article on the contiguous zone, the report having already been published (article 23, paragraph 1(a) of the Commission's Statute).

UNITED NATIONS FOOD AND AGRICULTURE ORGANIZATION

FISHERIES TECHNICAL AID, 1953: A resume of progress in fisheries technical assistance by the Fisheries Division of FAO in the year ending February 15, 1954, was submitted by the Chief Technical Assistance Officer in Rome on February 18 to the Director of the Fisheries Division. The report follows:

Brazil: Recruitment of a master fisherman has been advanced to April, and a fishery biologist and fishery technologist, who are also included in the 1954 program, will be recruited for assignment in July.

British Guiana: The Government Fisheries Officer of British Guiana, who is working on an FAO fellowship on inland fisheries and fish culture, visited FAO Headquarters in Rome in January, and after a short visit to the fish-culture project near Calcutta, has arrived in Thailand. In addition to studying the fishery program being developed there by the FAO/ETAP expert, he attended meetings of the Indo-Pacific Fisheries Council in February.

Ceylon: The Acting Minister of Commerce, Trade and Fisheries has presented a brass plate to the owner of the first local-type Ceylonese fishing boat ever to have an engine installed in it, amid manifestations of enthusiasm. This engine was one of three 10 hp. Diesel engines provided by FAO, and installed in local fishing craft in 1952/53.



A Danish-built 22-foot fishing boat used in Ceylon's bonito fishing with excellent results.

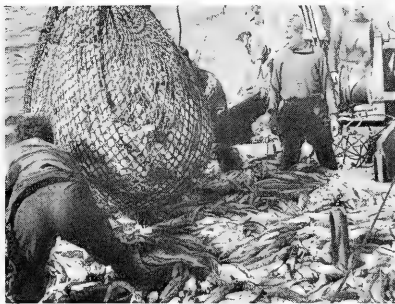
These engines are now being formally made over to the Ceylon Government so that the fishermen may exercise their option to purchase on advantageous terms. In connection with the small craft mechanization program, the Colombo Plan is following up the pioneer work for FAO by importing about 40 small engines suitable for local craft. Additional engines are being imported through commercial channels in response to the growing demand among fishermen. Meanwhile, one of the Danish-built 22-foot boats imported has had excel-

lent results in bonito fishing, the season for which began in December; a second boat will join in this activity as soon as possible.

The Icelandic expert has been giving regular training to assistant marine engineers. This work is combined with a program of routine overhaul and repair of machinery in various fishing vessels operated by the Department of Fisheries for which these engineers are responsible.

At the request of the Government, the fishery economist who was to have been recruited for service in July has been deferred, and a fish culture biologist for work on brackish and fresh-water fish production is asked for instead.

Chile: In addition to the fishery technologist whose assignment is due to begin in July on handling and distribution problems, a fishery engineer



Hauling in the catch on a Chilean trawler.

will be required in April to start a program of small-craft mechanization and work on improved gear.

The final report of the fishery biologist and the marketing economist are being reviewed in Rome. One fellow is engaged in courses of study. An economic and legal advisor to the Chilean Bureau of Fisheries, after a period of study at FAO Headquarters in Rome, is now working in Sweden.

Colombia: The reconnaissance survey of fish-culture possibilities has been deferred at the request of the Colombian Government.

Costa Rica: Recruitment is in progress for a shrimp biologist to work on a coordinated program in both Costa Rica and Panama.

Dominican Republic: Within a period of eight months a total of 15 fish ponds have been constructed; and not only has stocking material been obtained from a corresponding project in Haiti, but reproduction of carp and tilapia have been successfully achieved. Growth has been satisfactory, and the first marketing trials of carp in December were very encouraging. A second propagation and administrative center is planned, and rough release in natural waters which has been so successful in Haiti will be carried out this year. Further development work will go hand in hand with training local personnel.

Ecuador: The report by the Argentine specialist on his fishery technology mission in Ecuador has been sent to the Government. This work will be followed up in the second half of 1954 by the assignment of a fishery technologist who will assist the Government in establishing a fish-curing station on a pilot-plant scale. An Ecuadorean fishery scientist has begun working under an FAO/ETAP fellowship at the Fishery Laboratory of the French Government at La Rochelle.

Egypt: A visit was paid to Egypt during February by the FAO Director of the Fisheries Division and the Regional Fisheries Officer for the Near East. During the visit problems requiring attention under the FAO/ETAP Program in 1954 were clarified. An inland fishery and fish-culture biologist and a fishery statistician are being recruited for service in the second half of the year.

Finland: One fellow has completed his studies in the United States and Canada on fishery administration and fish-meal manufacture. Two fellows are at present studying in the United States, one on inland fishery biology and the other on fish-hatchery management. Two more fellows will begin work this year. The project concerned with the development of the fish meal and oil industry has been deferred.

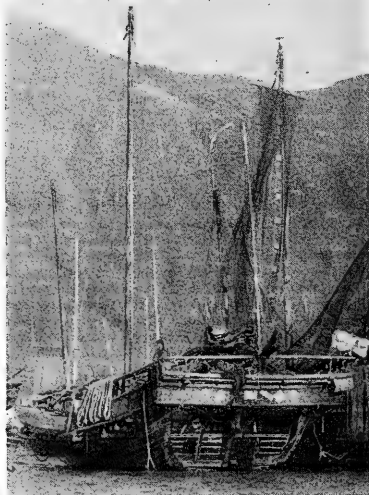
Guatemala: The reconnaissance survey on inland fishery problems which was in this year's program has been deferred at the request of the Government.

Haiti: With the completion of the fish propagation and administrative center, the success of carp and tilapia appears to be assumed, both from the production and marketing points of view. The pond fish-culture program was initiated and developed during 1953. Continued interest is shown by private farmers in building ponds in different parts of the country. The present program consists in training staff of the administrative center, extension work among fish farmers, and a continuation of the rough release program which has proved very successful.

Honduras: The Government has now requested a more detailed survey of the possibilities of fish culture than the brief reconnaissance previously

planned to be carried out this year. It is planned that an expert will be assigned in the second half of the year for a period of six months.

Hong Kong: A Training Center on fish marketing will be conducted in July and August 1954, jointly by the Hong Kong Government and FAO,



Big tail junk or "Tam Kok" junk at Tai O, fishing port, west of Lan Tau Island, Hong Kong.

for fisheries officers from member countries of the Indo-Pacific Fisheries Council. In addition to courses of lectures on the principles of fish marketing, a study will be made of the methods and organization of the Hong Kong Cooperative Fish Marketing Scheme.

India: A report on the development of the inland fisheries of West Bengal has been issued. A Norwegian naval architect has been working for the last six months in Bombay, Saurashtra, and Kutch. Some 19 fishing ports outside Bombay were visited, and on-the-spot advice was given to fishery officers and fishermen themselves on motorization problems; trials were carried out with recently-installed engines to obtain data for use in future work in this area. The architect is moving on to Madras State where he has been joined by an Icelandic fishery engineer whose program includes development of small craft mechanization and fishing gear improvements on both coasts of this State. A second fishery engineer will be assigned for work in Saurashtra in the second half of this year.

Iran: The proposals for conducting a fishery exploratory survey in the Persian Gulf jointly with the U. S. Operations Mission to Iran matured too late for action in the current fishing season. However, it is hoped to design this survey during the entire next fishing season, starting about October

and extending through to the following May. A fishery engineer will be assigned to this project by FAO/ETAP at that time.

Iraq: An inland fisheries biologist will be assigned in April to study the effects of the great irrigation barrages on the migratory movements of food fish. He will be joined in the second half of the year by a hydraulic engineer with experience in the design and construction of fish passes and ladders.

Israel: A report on marine fisheries has been issued, and another on inland fisheries and fish culture will be released shortly.

Liberia: Programs on fish curing and exploratory fishing were to be carried out until the end of March 1954. Plans for continuing the work of the fishery engineer now on sick leave are being discussed with the Government.

Mexico: A draft agreement has been dispatched for the consideration of the Mexican Government, which will provide for a Fisheries Training Center for Latin America in the second half of the year. Courses will be given, primarily for fishery administrators, fishery biology, technology, and economics.

Pakistan: A combined report of the fishing boat design work will be issued shortly. This report will reproduce the lines of existing Pakistan sailing craft, and provide designs based on those of a new motor fishing craft of a type in the local tradition.

Panama: The work on shrimp biology carried out in 1952/53 will be continued in 1954. The biologist will also work in Costa Rica on closely allied problems of shrimp populations.

Paraguay: A fishery biologist will be assigned to carry out a general survey of the inland fisheries resources during the second half of 1954.

Saudi Arabia: The appointment of a commercial fishery consultant is being deferred at the request of the Government which wants instead a fishing gear technologist to assist in the commercial development of the country's fisheries through a newly-created fishery Government sponsored corporation.

Thailand: The Chinese expert continued the many-sided program of work in three fields: assistance in developing four inland fishery stations; technical training of Thai fishery officers; and assisting in the development of brackish and freshwater fish culture and of an extension fishery service in this field.

Turkey: A U. S. specialist continues to advise the Turkish Government on its program of marine fishery research. The Icelandic expert has been helping the Meat and Fish Office to make the most effective use of existing fish refrigeration and ice-making plants, and is advising the Office on its program of new fish cold-storage construction. Another U. S. specialist has made several trips in fishing craft belonging to the Meat and Fish Office; actual fishing has, however, been restricted to surface trolling due to lack of other fishing gear and equipment. It is hoped that purse seines will soon be available to enable intensive work on the stocks of mackerel and anchovy in the Black Sea, which will be fished more intensively in the future in connection with the proposed fish meal and oil plant at Trabzon. The Norwegian fishery economist has completed a general survey of the fishery industry and of the fishery activities of the Meat and Fish Office, and is now formulating advice to increase its effectiveness in the discharge of its responsibility for catching, processing, and distributing fish, and its administration.

One fellow in fish-processing methods is now working in Norway; a second in fishery biology is working at the inland fishery biology laboratory at Lowestoft, England; and a third in fish refrigeration will be working in Denmark in the spring of 1954.

Yugoslavia: A report of the Canadian fish refrigeration technologist has been transmitted to the Government. A Danish fish-curing specialist completed his assignment in January and his report will soon be transmitted to the Government. He advised several fish-processing plants, generally on improved methods, and in particular he showed how a new outlet could be found for hitherto unutilized resources of sprats available in some quantity for a short season by smoking and then canning.

One fellow has recently completed his studies on fish canning in Germany, Denmark, Morocco, and other countries.

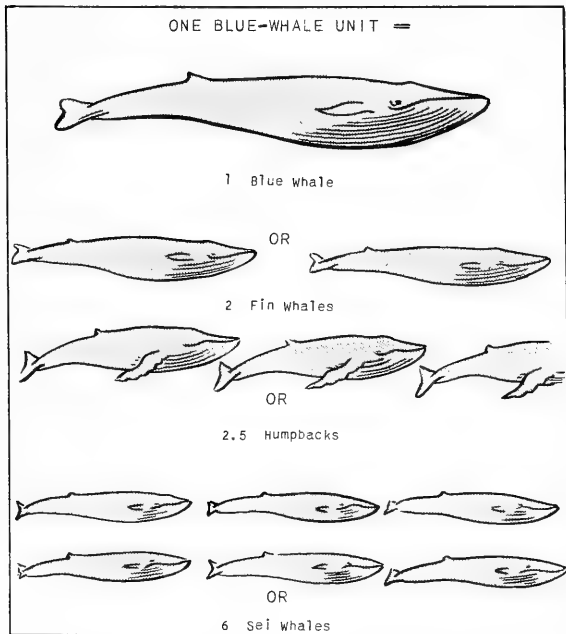
FAO FISHERIES PROGRAM FOR 1954: It is planned to provide the services of 37 fishery experts and to hold two training centers in the program which has been budgeted for the year 1954. Thirty fellows will also be studying, eleven of whom were already awarded fellowships in 1953. The experts include: 9 in inland fisheries and fish culture, 5 in marine fishery biology, 3 experts and both training centers in fishery economics, and 20 experts in the various fields of fishery technology (food handling and processing 6; fishery engineering and gear technology 13; naval architecture 1).

WHALING

ANTARCTIC SEASON CATCH, 1953/54: The 1953/54 Antarctic pelagic (open-sea) catch of baleen whales, which began on January 2, 1954, and ended on March 18, resulted in a total catch of 15,439 blue-whale units,^{1/} according to the March 29 **Foreign Crops and Markets** of the Department of Agriculture. Thus, the total catch during the 76-day hunting period, 2 days longer than in the preceding season, nearly

^{1/}One blue-whale unit = 1 blue whale, or 2 fin whales, or 2.5 humpback whales, or 6 sei whales (see figure). Thus, the actual number of whales taken during a season is far greater than the indicated number of units. In 1952/53, for example, the catch in blue-whale units was 14,855 whereas the total number of whales killed totaled more than 28,000.

reached the maximum catch quota of 15,500 units (formerly 16,000) established by international agreement. The total catch was only 61 blue-whale units less than the maximum catch quota. During the 1952/53 season, which closed March 16, the catch reached only 14,855 units.



A total of 17 factory ships and about 206 catcher boats were engaged in the pelagic operations. Participating countries and the number of factory ships employed by each were: Norway 9, the United Kingdom 3, Japan 2, and the Soviet Union, the Netherlands, and the Union of South Africa 1 each.

Production of whale oil from the 1953/54 catch should be somewhat larger than last year, assuming that the yield of whale oil per blue-whale unit has remained approximately the same. In the 1952/53 Antarctic pelagic season, 16 factory ships produced nearly 352,000 short tons of whale oil from a total catch of 14,855 blue-whale units. Total production of whale oil in 1953, including that produced by South Georgia shore stations and output of other areas of the world, is estimated at 420,000 short

tons. Sperm whale oil produced during the 1952/53 Antarctic operations totaled some 21,000 short tons while world production approximated 50,000 tons.

The length of the Antarctic pelagic whaling season is determined largely by the rapidity of the catch. The final day, however, is designated by the Committee of International Whaling Statistics and constitutes a forecast (of 4 days this season) as to when the allowable quota will have been attained.

Total whale-oil production by the pelagic expeditions in the 1953/54 season was 1,973,000 barrels, against 1,882,431 barrels during the 1952/53 season; the 9 Norwegian expeditions produced about 929,077 barrels, which is 200,000 barrels more than that of the seven Norwegian expeditions which participated last year. The Norwegian whaling companies have sold their production at an average price of £68 per long ton (US\$78.68), and the value of the catch is some £10.5 million (US\$29.5 million), reports the Norwegian Information Service.

This season it was expected that, as a result of the employment of many new boats, the catch per whale boat per day would show some increase. The actual increase, from 114.5 barrels to 172.2 barrels per day, was greater than had been hoped for.

Whale-oil prices rose sharply the first part of 1954, but the Norwegians did not benefit as they had sold their entire 1953/54 production at the prevailing prices before the season opened. The prices on this year's catch were lower than for the previous season. However, this was more than offset by the increased production with the result that the total value of the catch was up about 20 percent or between 25 and 35 million kroner (US\$3.5 to 4.9 million) above 1952/53.

PACIFIC SCIENCE ASSOCIATION

EIGHTH PACIFIC SCIENCE CONGRESS HELD IN THE PHILIPPINES: The Eighth Pacific Science Congress of the Pacific Science Association was held at the University of the Philippines, Quezon City, November 16-28, 1953. The Congress was sponsored by the Republic of the Philippines and the National Research Council of the Philippines.

Oceanography items discussed were as follows:

The Congress noted with interest that the oceanographers attending the Congress propose to establish an Oceanographic Institute of the Pacific.

The Congress strongly supported the proposal, recently examined by the special UNESCO meeting of consultants on oceanography, to create a legally constituted inter-governmental organization for oceanographic research in the Indo-Pacific region.

The Congress urged member countries (a) to exert every means to develop research programs upon which may be based sound policies for increased development and wise use of marine resources; (b) to develop the fullest international co-operation in the management of marine resources so that they may be maintained permanently.

The Congress drew attention to the following types of oceanographic study which can be maintained at a small cost, and whose results when correlated with other available data can provide large returns: (a) Daily observations of surface sea water temperature and salinity which can be made at light stations, and by commercial shipping lines. The work may be extended to daily observations of the nutrient and respiratory elements, and the state of the sea. (b) Study of specific organisms of academic or economic interest in the locality. There are many species which have been taxonomically described, but whose life history, habits, and economic value are unknown.

TRADE AGREEMENTS

ITALO-SOVIET AGREEMENT PROTOCOL FOR 1953/54 INCLUDES SOME FISHERY PRODUCTS: A new protocol to the Italo-Soviet trade agreement of December 11, 1948, was signed in Rome on October 27, 1953, and is operative from that date to October 26, 1954. Commodities to be furnished by the U. S. S. R. to Italy include klipfish and crab meat. No fishery products are included in the list of commodities to be furnished by Italy to U. S. R.

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GREEK-NORWEGIAN AGREEMENT INCLUDES FISH: The Greek-Norwegian Trade Agreement which expired on December 31, 1952, remained tacitly in force throughout 1953 pending the resumption of negotiations for its renewal. On January 24, 1954, a Protocol was signed in Athens extending the agreement to December 31, 1954, and most of the original agreement will continue in effect throughout 1954.

During 1953 Greece imported from Norway frozen fish valued at 60,000 kroner (US\$8,400); and salted cod, smoked herring, and canned fish valued at 3,132,474

kroner (US\$438,000). There were no Norwegian imports of fishery products from Greece in 1953, according to a March 10 U. S. Embassy dispatch from Athens.



Australia

CANNED SALMON FROM DOLLAR AREA SOURCES: The Australian Government has announced, in connection with its proposal to purchase canned salmon, that token import licenses and allocations will be granted for canned salmon from dollar area sources, according to information received April 26, 1954, from the Australian Embassy in Washington. Instructions inviting application for import licenses for canned salmon of dollar area origin were recently released in Australia.

United States firms interested in selling canned salmon should contact Australian importers or make connection through their Australian representative. Importers able to qualify for import licenses will be permitted to purchase canned salmon from dollar sources.

No information was available on the quantity of salmon involved.



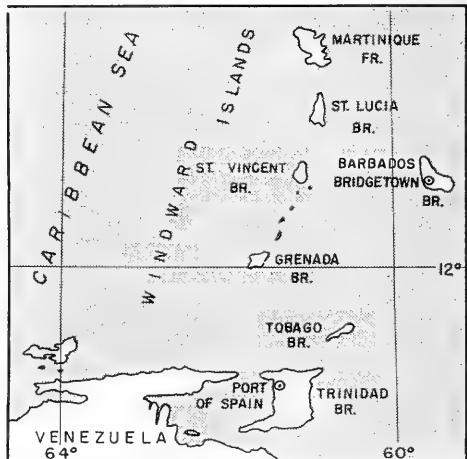
Barbados Island (British West Indies)

STATUS OF THE FISHERIES: The total catch of the fisheries of Barbados Island in 1952 amounted to 9,211,650 pounds, valued at B\$1,381,747, (US\$806,153), reports a U. S. consular dispatch from Barbados. This is an increase of 45 percent in volume and value as compared with 1951 landings of 6,359,760 pounds, valued at B\$953,964 (US\$556,572). For the period from January to June 1953, the total landings at the Bridgetown market alone totaled 14,892,750 pounds, valued at B\$2,233,912 (US\$1,303,332).

The increasing catch is attributed to the introduction of the gill net and wire lines to the fishermen of the Island in 1951. Also, Government assistance to the industry became necessary in May 1942, when many boats were lost, and the sum of £800 (US\$2,240) was first granted by the Legislature to start a loan scheme. Additional sums have since been made available, and the scheme is working well. The Government has also provided "hauling up" facilities and a tractor for this purpose.

The main immediate need of the industry is adequate cold-storage facilities and a quick-freezing plant, which are being discussed. Also, with a deep-sea trawler and proper gear, great progress could undoubtedly be made toward the solution of an important basic problem.

Note: Values converted on the basis of B\$1.714 equals US\$1.00.



Ceylon

FISH PLANT: The Ceylon Fisheries Department is soon to launch a large-scale fish factory--backed by aid from Canada under the Colombo Plan.

A "streamlined" factory is planned, on the lines of those in Canada, at an estimated cost of over Rs 1 million (US\$211,000). The factory will be built with Canadian materials and the inner plan will be made on Canadian technical advice. The Ceylonese Fisheries Department will increase its output of shark-liver oil in the new factory, and among its byproducts will be fish meal, fish fertilizer, liquid fish meal, dried fish, and skin products. Other functions will include the canning of porpoise fish--expected to find a ready market outside Ceylon, reports The Fishing News (March 26), a British fishery periodical.

The factory will be erected near the proposed 500-ton cold-storage plant, to be financed by the Canadian Government under the Colombo Plan.

A number of Ceylonese are being sent to Canada for training in fish canning.



Canada

FRASER RIVER 1953 SOCKEYE SALMON RUN LARGEST SINCE 1917: The 1953 Fraser River sockeye run was the largest since 1917 and the escapement to spawning grounds was the largest since 1913. The spawners were well distributed and should provide an increased run in 1957, although the over-all escapement picture was not without its disappointments. Approximately half of the large escapement on the late Stuart run died without spawning. This was due principally to its early arrival when water temperatures were too warm. It was not determined whether Hell's Gate, past regulations, or nature had been responsible for the unusually early timing of the late Stuart migration, according to the Director of the International Pacific Salmon Fisheries Commission.

It was pointed out that early 1954 June and July races of sockeye will be at their lowest ebb of annual production in the four-year cycle period, and may not produce more than 1,000,000 fish. Such a run, divided between the fishermen of two countries, and allowing one out of five to escape, will not permit profitable fishing. The industry must rely on August and September fishing and fortunately the Stellako and Adams River runs migrating at that time give every indication of an increase in volume over the runs of these races in 1950.

The success of the 1954 sockeye salmon fishery on the Fraser River, British Columbia, will depend almost entirely on the Adams River run, reports the January Trade News of the Canadian Department of Fisheries.

The surprise of last year's runs was the large number of Chilco fish, which were unexpected. It had been determined, however, that a large percentage of these fish were five-year-olds produced by the heavy spawning in 1948. Another feature of 1953 was the welcome rejuvenation of the Quesnel runs. From an original brood year escapement of 20,000 fish, the run this year amounted to approximately 500,000, of which 105,000 escaped the fishery to successful spawning.

The Director warned that the Commission would require from 1,000,000 to 1,500,000 fish from the 1954 Adams River run for spawning purposes. After this number had been assured for reproduction the remainder, regardless of the size of the run, could be taken by the fisheries.



Colombia

FISHERY TRENDS, 1953: The Colombian fish canning industry reported improved sales by the end of 1953, although it suffered from the January 1953 regulation which removed canned fish from the prohibited list of imports but subject, of course, to a heavy duty. The principal cause for the improvement was an August 20 decree which permitted a very substantial reduction in duties on imports of rectangular tin cans used for packing fish. The former duties on the cans alone accounted for 10 percent of the final cost of the product, the U. S. Embassy at Bogota points out in a March 5 dispatch.

The fishing grounds off Santa Marta and the Guajira peninsula are reported to be heavy with albacore tuna, bonito, and bluefin tuna which are understood to be stragglers from the South Atlantic current as it enters into the Gulf of Mexico.

Efforts during 1953 by a Barranquilla fish canning factory to obtain government approval for foreign vessels to fish off Colombia's Atlantic coast were unsuccessful. Pending fishing legislation (which would permit foreign vessels to fish in Colombian waters dividing the catch with local canneries or frozen-food processors and obtaining a Colombian export license for the fish sold outside of Colombia) has been opposed by small-scale fishing companies. Fish canneries in Barranquilla and Santa Marta are interested in increasing their supply of fish to meet the large domestic demand. Since local fishermen use antiquated methods and equipment and are unable to provide a sufficient amount of fish to meet the demand, the canneries have been interested in contracting the services of a purse seiner from a company in the United States.

In April a U. S. fish cannery sent a tuna bait boat to explore the fishing possibilities off Colombia's Atlantic coast. The results of the exploration were inconclusive due to the unseasonal heavy winds which caused high seas and made a survey impossible. No other exploratory work by a foreign firm was done during the remainder of the year.



Cuba

NEW FISH PROCESSING TERMINAL: A fishing "terminal" is to be erected on the docks at Havana, Cuba, where shrimp and fish will be processed for export, according to the March 5 issue of The Fishing News, British fishery periodical.



Denmark

FISH-MEAL EXPORTS HIGHER IN 1953: The value of Danish fish-meal exports soared to 13.5 million kroner (US\$1,958,000) in 1953, compared with 5.5 million kroner (US\$797,500) in 1952--an increase of almost 150 percent, according to a Reuter Copenhagen message. In weight these exports totaled 12,400 metric tons, or more than half of the total Danish production of 23,200 metric tons.

Britain took 1.9 million kroner (US\$276,000) of Danish fish meal in 1953. The Netherlands was the main customer with 5.2 million kroner (US\$754,000) followed by the United States with 4.7 million kroner (US\$681,000), reports The Fishing News (March 26), a British fishery periodical.

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GOVERNMENT LOANS FOR FISHERIES: Loans to Danish fisheries in the amount of 3 million kroner (US\$420,000) can be granted over a three-year period from Danish Treasury funds under a bill adopted by the Folketing on March 23. Under the legislation, loans can be granted for "starting and expansion or modernization and rationalization of Danish enterprises engaged in breeding or catching of fish or in preservation, trade processing, and transportation of Danish fish and fish products, or to enterprises which manufacture auxiliary products for fisheries and the fisheries industry." One third of the total appropriation is to be used in each of the three fiscal years commencing with 1954/55.

The loans carry interest of 5 percent per annum. A limit of 15 years is set for amortization, with details regarding each loan to be established by the Minister of Fisheries. Security requirements are also to be established for each loan at the discretion of the Minister.

Loans bearing 3.5 percent interest and 25-year amortization totaling 5 million kroner (US\$700,000) have been granted for identical purposes under 1950 legislation providing for use of Marshall counterpart funds and are now entirely consumed.

This new legislation continues on a reduced scale the Marshall counterpart fund legislation, a March 23 U. S. Embassy dispatch from Copenhagen states. The relatively cheap money thereby made available for activities which enjoy no particular privileges in the commercial banks is of importance as a direct financial aid, and orders resulting therefrom may be useful for certain manufacturing industries.

The Minister declared in a speech on the legislation that more emphasis would be placed on loans to fresh fish breeding ponds. As pond brook trout has recently become an important Danish export to the United States, the move may aid in accelerating this type of export.



Ecuador

U. S. INTERESTS ORGANIZE FISHERY FIRM: United States fishery interests formed a new fishing company in Ecuador during February. The firm will fish, process, and sell "shrimp, shellfish and other marine species," according to the articles of incorporation. So far as is known, the new concern has not as yet obtained a concession from the Ecuadoran Government to pursue these activities in Ecuadoran waters, a March 26 U. S. Embassy dispatch from Quito states.



Egypt

FISH AND SHRIMP AGAIN UNDER PRICE CONTROLS: Price controls for 14 kinds and sizes of fish and for medium-size shrimp, effective February 6, were announced recently by the Egyptian Ministry of Supply, the U. S. Embassy at Cairo reports in a February 8 dispatch. Other sizes of shrimp were previously subject to price controls. The new price ceilings were imposed after the items were decontrolled for two weeks and merchants had increased prices.



Iceland

FROZEN FILLETS TO RUSSIA: Icelandic fishermen, barred from landing catches at Britain's main east coast ports, have sent 6,000 metric tons of frozen cod fillets to Russia this year, the British fishery periodical The Fishing News reported in its March 26 issue.

They say this makes up for the loss of their British market and they had hopes of sending 5,000 tons more by the end of April. At the same time they expect to send 3,200 tons to Czechoslovakia and 350 tons to Hungary.

Iceland signed a two-year trade agreement with Russia last August after more than five years of no trade between the countries. Under it Iceland will sell Russia nearly half her annual herring production and a third of the frozen fish production.

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FISH PRODUCTION, 1953: Total Icelandic landings by species in 1953 amounted to 361,328 metric tons, an increase of 7 percent as compared to the 336,760 tons landed in 1952 (see table). The increase was due to the larger herring catches--more than double the 1952 landings, according to a March 23 U. S. Legation dispatch from Reykjavik. The cod catch in 1953 was down 3 percent.

Cod comprised 58 percent of the 1953 catch, followed by herring (19 percent), ocean perch (10 percent), and coalfish or pollock (6 percent).

Species	1953	1952
	.. (Metric tons) ..	
Cod	209,793	215,258
Haddock	7,978	9,761
Ling	2,409	3,028
Catfish (wolffish)	9,623	8,667
Sea perch (ocean perch) ..	36,366	36,748
Coalfish (pollock)	22,336	24,659
Tusk (cusk)	2,379	3,045
Herring	68,176	32,001
Miscellaneous ^{1/}	2,268	3,593
Total	361,328	336,760
^{1/} Includes plaice, lemon sole, witch, megrim, dab, halibut, and skate.		

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FISHERIES OUTLOOK FOR 1954 IS FAVORABLE: The 1954 prospects for the Icelandic fisheries are, on the whole, favorable. There appears to be a market for all the fish that can be caught and processed, and the capacity of various processing plants was increased during 1953. The principal difficulty anticipated is the recruiting of sufficient seamen to man the fishing vessels. In general, laborers are interested in going to sea only if there is a salary differential of 25 percent or more in their favor. If the differential is less, the seamen prefer to work on shore. Due to construction activities at Keflavik, there is almost no seasonal unemployment. Several trawlers are going to sea undermanned, states a February 12 U. S. Legation dispatch from Reykjavik.



India

RENEGOTIATION OF CANNED FISH TARIFF RATES IN GATT REQUESTED:

The Government of India, in the light of exceptional circumstances, has requested renegotiation of certain tariff concessions (including canned sardines and pilchards, and other canned fish) made by India in the General Agreement on Tariffs and Trade (GATT) in 1947 and 1951. The interested contracting parties to that Agreement, including the United States, have agreed to this renegotiation, in accordance with the understanding reached by the Contracting Parties at their Eighth Session that they would give sympathetic consideration to such requests.

The fishery products included are:

INDIA - SCHEDULE XII

Indian Customs Tariff No.	Description of Product	Rate of Duty
16 (1)	Fish canned, other than sardines and pilchards	20% ad val.
16 (3)	Sardines and pilchards, canned	20% ad val.

United States exports of canned salmon to India during 1934-38 averaged 117,000 pounds annually; sardines, 200,000 pounds; and other canned fish, 11,000 pounds. During the war, up to 20 million pounds of canned salmon and 7 million pounds of sardines were exported to India. There were no exports between 1946 and 1951. In 1951, 51,669 pounds of canned salmon, 24,950 pounds of sardines, and 4,190 pounds of tuna were shipped to India. In 1952 exports were reduced to 3,325 pounds of canned salmon and 3,063 pounds of tuna; the U. S. also exported canned shrimp and crab to India.



Indonesia

MOTORIZED FISHING VESSELS: A total of 10,000 motorized fishing vessels is planned by the Indonesian Ministry of Agriculture in its 20-year development plan. The vessels will be acquired at the rate of 500 per year, according to the March 12 issue of *The Fishing News*, a British fishery magazine. Of the total fleet, 9,000 will be of the Mayang type with 20 to 25 hp. engines; while the remainder will be larger vessels with 40 to 50 hp. engines.



Iran

SURVEY OF THE FISHERIES: A study of the Iranian fisheries was commenced in July 1952 by a United States Foreign Operations Administration expert, with the objective to determine the best methods for development. Highlights of the study as reported by a dispatch from Iran follow:

The only organized fishery industry found was that being operated in the Caspian Sea area by the Joint Soviet-Iranian Company called the SHILAT. The majority of the production was comprised of sturgeon and caviar, herring, a carp-like fish similar to Great Lakes whitefish, and salmon. Most of this production went to Russia with the balance used in Iran.

The Seven Year Plan Organization of the Iranian Government shows much interest in the development of the fisheries of the Persian Gulf doubtless due to the fact that it owns a sardine cannery at Bandar Abbas which has been completely inactive since 1948.

In the seasons 1936/37 and 1937/38, a Danish scientist conducted biological investigations in the Persian Gulf at the request of the Government of Iran to determine the species available. Although these investigations were concerned solely with the biological aspects with no attempt to investigate extent of resources or to get other information valuable to a commercial fishery, the Government purchased the cannery from a Copenhagen firm and erected it in Bandar Abbas.

When the cannery opened in January 1941, four Danish cannery technicians and six Danish fishermen were employed as instructors for Iranian personnel. Late in 1941 these men returned to Denmark because of World War II. The result was that the cannery has been in production only sporadically since that time and with poor results. Quality of pack has been inferior, costs high, and marketing very unsatisfactory.

After a study was made of the situation in February 1953, it was considered entirely probable that the cannery could be operated profitably if administered properly. It was found to be obsolete when compared with some U. S. fish canneries. But with certain added equipment, some of which might be procurable from domes-

tic sources, and a change in process from that prescribed by the Danes, no reason could be seen to prevent a good-quality pack of sardines in oil at reasonable cost, especially since the fish are available in sufficient quantity even with the primitive gear now used. After consideration of the various factors involved, it was decided it would be very much worthwhile to resume operations during the 1953/54 season on a limited scale. Actual operating experience would determine if appreciable investment for expanded fishing effort, modernization, and increased capacity of the cannery might be economically justified.

No accurate information as to extent of fish resources in the Bandar Abbas area could be obtained. There was clear evidence of an enormous supply of sardines. However, as to other varieties, such as tuna, red snappers, kingfish, shrimp, and shark, it was not possible for the local fishermen to offer more than opinions. The gear now used are principally beach seines. There was no experience as to what might be found in deep water. However, in view of quantities and species of fish caught off the beaches, the value of a series of exploratory operations was clearly indicated. If tuna, snappers, shrimp, and possibly other varieties should be found in commercial quantities and sizes, the establishment of a freezer and cold-storage plant in Bandar Abbas definitely would be justified to prepare these high-priced fish for export. As a matter of fact, a group of private Iranian and United States businessmen are now planning to erect such a freezer.

The cannery was found to have a small fish-meal plant using a rotary dryer fired by direct heat. There was no information in the cannery records as to designed capacity, but it is estimated to be about one ton of dried meal per day. Although intended to utilize only offal from the cannery and saltery, it was believed that sufficient additional trash fish could be available from the fishermen to permit steady plant operations. The meal is urgently needed in Iran both as a protein concentrate for stock feed and as a fertilizer.

To date, approximately 55 tons of frozen sturgeon have been exported to the United States and England. It is expected that by the fall of 1954, export of Caspian sturgeon will have become a successful routine matter and will have reached a volume of several hundred tons per season. In fact, there are strong indications that there is a ready market abroad for all the sturgeon the Iranians care to sell.



Japan

FROZEN TUNA EXPORTS, 1953: Japanese exports of frozen tuna during 1953 exceeded 40,000 short tons, valued at over US\$13 million, a February 26 U. S. Embassy dispatch from Tokyo reports. The United States took 38,900 short tons, valued at US\$12.7 million. Of this, 31,600 short tons were albacore, valued at US\$10.8 million. Canada imported 1,300 short tons of Japanese frozen tuna (mostly albacore) in 1953, valued at US\$432,000.

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FREIGHT RATES INCREASED ON FROZEN TUNA SHIPPED FROM JAPAN TO U. S.: Increased contract freight rates on frozen albacore, skipjack, and yellowfin tuna shipped to the United States were announced by the Trans-Pacific Freight Conference of Japan and the Japan/Atlantic Freight Conference. On shipments to U. S. Pacific Coast ports the rates will be US\$45 per short ton from April 1 through May 31; and US\$50 per ton from June 1 through September 30. Prices on shipments to Atlantic and Gulf ports during the same periods are US\$47 and US\$62, respectively. Prices on shipments to May 31 are an extension of rates in effect since December 1, 1953.

Japanese exporters are protesting the US\$5 per ton increase commencing June 1 as being out of line with ocean freight rates on canned tuna, states an April 2 U. S. Embassy dispatch from Tokyo.

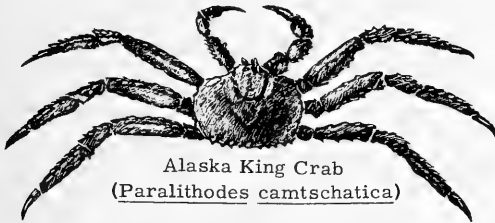
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CRAB EXPEDITION TO BRISTOL BAY: The 8,200-ton cannery ship *Tokei Maru*, accompanied by six fishing boats of 60 to 75 tons, left Hakodate for Bristol Bay to fish for crabs, reports a U. S. Embassy dispatch (April 9, 1954).

The expedition is a joint venture of three Japanese companies. The goal set for the expedition is 57,000 cases of king-crab meat (the same as last year), plus 5,000 cases of other types of crab meat.

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KING CRAB FISHING COMMENCES OFF KURILES: The king crab season in waters north of Hokkaido opened on March 15 with 76 boats authorized to fish, an April 2 U. S. Embassy dispatch from Tokyo points out. About half these vessels have been fishing between Nemuro and Shikotan Island with exceptional success. The king crabs are larger and more plentiful than in any recent season. The target limit is 30,000 cases (21,000 cases in 1953), and in the first week of fishing the fleet caught enough crabs for 11,000 cases. How-



Alaska King Crab
(*Paralithodes camtschatica*)

ever, seizures of crab fishing boats by Soviet patrols have clouded the picture and reduced to a small number the boats willing to fish near the Kuriles.

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SALMON EXPEDITIONS MAY INCREASE IN 1954: Early indications point to an increase in the 1954 Japanese Pacific salmon expeditions, as there will be at least four expeditions, with one mothership for each, and a total of about 140 catcher boats. Three additional applications to send fleets are under consideration, states a February 26 U. S. Embassy dispatch from Tokyo. The 1953 expeditions consisted of three motherships and 93 catcher boats.

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CANNED SARDINE PRODUCTION, 1953: The total production of canned sardines in Japan during 1953 amounted to about 1½ million actual cases, a March 11 dispatch from the U. S. Embassy at Tokyo states. Of this, 1.2 million cases were exported, and the remainder consumed in the domestic market.

For 1954, a pack of one million actual cases is estimated by the Japan Sardine Cannery Industrial Cooperative Association, of which 700,000 to 750,000 cases will be for export. The domestic demand for canned sardines is estimated to remain constant at about 300,000 cases.

The export market for Japanese sardines is principally in southeast Asia, and the low prices offered plus the high tariffs adopted by Burma and Indonesia are the basis for the Association's pessimism. Also, there were on hand at the end of the year 400,000 cases of sardines in tomato sauce which had not been sold. These are now being disposed of slowly but the carryover necessarily affects the 1954 prospects.

Japanese sardine canners are now familiar with the United States ban of mixing round herring or other species with true sardines, and hope that they may be able to increase exports to the United States above the 100,000 cases shipped in 1953.

The total sardine catch for 1954 should normally be between 300,000 and 350,000 metric tons.



Republic of Korea

CANADA DONATES SECOND COD SHIPMENT TO KOREAN AID PROGRAM:

The Canadian Government has made available a second shipment of dried and salted cod to the United Nations emergency program in Korea, the United Nations Korean Reconstruction Agency (UNKRA) announced March 8.

The shipment of 1,500 short tons, valued at C\$450,000 was to be shipped from Halifax, N. S., and St. John's, Newfoundland.

Canada last November made a gift of 1,000 short tons of cod, valued at C\$300,000, to supplement the Korean rice diet.

The donations to the emergency program are in addition to Canada's contribution of C\$7,250,000 to the UNKRA program of reconstruction and rehabilitation in Korea.



Mexico

MORE SEVERE PENALTIES FOR TERRITORIAL WATERS VIOLATIONS MAY BE PROPOSED: The Mexican Government may propose to the next session of Congress legislation to provide more severe penalties for violations of Mexican territorial waters by foreign shrimp trawlers, according to the Mexican newspaper Ex-celsior (February 24). This proposed action was indicated by the Mexican Secretary of the Navy in a press interview following the seizures of three United States shrimp vessels on February 16 and 17.

The Secretary's statement was: "The lack of adequate laws leaves piracy practically unpunished. In order to correct this, the Ministry of the Navy has almost concluded the study of a Law of Fishing and Ways of Communication, or a bill of amendments to Book III (of the General Law of Ways of Communication), which relates to maritime traffic. This study will be discussed during the next session of Congress."

Another Mexican newspaper, Novedades, which also carried a story on the interview, interpreted the Secretary's statement to mean that the Ley de Pesca would be amended to require permits for passage through Mexican territorial waters and to provide heavy penalties for violations of this requirement. Thus, any shrimp trawler found within nine miles of the Mexican coast could be seized and fined whether or not it was actually engaged in fishing at the point of apprehension.

In another recent news story (Novedades) it was reported another possible amendment of fishing laws would be directed against United States shrimp trawlers. According to this report, consideration is being given to a congressional bill which would provide for the confiscation of vessels caught fishing illegally in Mexican territorial waters. At present the only penalties for illegal fishing are a fine of 5,000 pesos (US\$580) and the confiscation of the catch and the fishing gear."

Note: Value conversion based on 8.60 pesos equal US\$1.

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ABANDONED SHRIMP GROUND PRODUCES AGAIN: Several months ago a Mexican shrimp fishing concern discovered that fishing banks directly outside the mouth of the Panuco River at Tampico again produced sufficient shrimp to make commercial operations profitable. Although these banks had been worked out and abandoned a number of years ago, a small Mexican shrimp fleet was transferred to Tampico from Campeche. This small fleet has been operating out of Tampico for almost a year. The area worked is limited in size and potential but proved profitable for the Mexican concern, particularly because of its proximity to the preferred United States market, a February 24 U. S. Consular dispatch from Tampico points out.

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GUAYMAS SHRIMP FISHERY TRENDS: The shrimp production in the Guaymas area which fell off in the last quarter of 1953 failed to improve noticeably during the first three months of 1954, reports an April 8 U. S. consular dispatch from Nogales. However, the over-all economic situation of the fishing industry in the Guaymas area reflected some increase in production.

The number of fishing units decreased by about 20 vessels from the previous year. Working relations between the freezing plants and the fishing cooperatives are reported somewhat strained and there is little promise of a meeting of the minds in the immediate future. On the other hand, all things considered, for those who have managed to maintain operations it has been the best season since 1950.

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NEW WEST COAST SHRIMP SEASON ANNOUNCED: A new closed season for shrimp fishing in certain west coast Mexican waters was published in the February 19 Diario Oficial. The closed season for all except certain shrimp trap fishing along the west coast is now from April 16 to August 31; a little later than the former closed season which was from March 1 to July 31 in the northern part and February 1 to July 31 in the southern part, according to a U. S. Embassy dispatch (February 23) from Mexico City.

The new regulations read as follows:

"Paragraph 1. - There is established a closed season for fishing shrimp in the protective waters which include bays, estuaries, and lagoons of the States of Sonora, Sinaloa, Nayarit and of the peninsula of Baja California, from April 16 to August 31 of each year.

"Paragraph 2. - With respect to fishing shrimp practiced by the systems of "cierras" (traps) or "tapocas" (traps) from Mazatlan, Sinaloa, south to the limits of the States of Nayarit and Jalisco, the fishing may not commence until the Secretary of Marina authorizes for each season the installation or closing of these specified methods, in conformity with the technical and scientific studies which are being completed, and in conformity with Article 55 of Fraction X of the Law of Fishing."

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SPINY LOBSTER FISHING SEASON CHANGED: The closed spiny lobster fishing season in the Gulf of California between parallels 29 and 23 has been changed to April 16-October 31, according to a decree published in the Diario Oficial of March 18. Spiny lobsters from this area should be exported only through Nogales. There were no changes in the other areas, states a U. S. Embassy dispatch (March 19) from Mexico City.

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SPINY LOBSTER EXPORT SUBSIDIES EXTENDED: Mexican subsidies previously established for exports of spiny lobsters have been extended for the period January 1 to December 31, by resolutions published in the Diario Oficial of February 22. The subsidy granted lobsters (tariff classification No. 11-10) is equivalent to 75 percent of the 15-percent ad-valorem export surtax to exporters who ship through or with the approval of the National Bank of Cooperative Development, according to the March 22 Foreign Commerce Weekly of the U. S. Department of Commerce.

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EXPORT SURTAX CHARGES FOR CERTAIN FISHERY PRODUCTS AMENDED: Mexican export surtax charges were amended by a decree published in the Diario Oficial of January 19, 1954. Effective January 23, further reductions from the 15-percent ad-valorem surtax were announced for two fishery products:

Tariff No.	Item	New	Former
		Reduction	Reduction
63-10	Abalone, in bottles, jars, or tins	80	33
71-17	Tanned sharkskins	80	55



Netherlands

ANTARCTIC 1953/54 SEASON WHALE OIL SOLD: Whale oil from this season's Antarctic Netherlands whaling expedition has been sold at £78 (US\$218) per ton, according to The Fishing News (March 5), a British fishery periodical.



New Zealand

QUALITY AND MARKETING REGULATIONS ADOPTED FOR SPINY LOBSTER TAILS: Voluntary quality and marketing regulations have been adopted by the New Zealand Wholesale Fish Merchants' Association with the object of improving the marketing of New Zealand spiny lobster tails in the United States, a February 12 news release from the Association reports. The regulations are:

- | <p>1. Crayfish tails shall (a) be clean and devoid of foreign matter; (b) not be soft-shelled or from a female in berry; (c) have the intestine completely removed; (d) be individually wrapped in cellophane or other approved moisture-proof wrapping material which completely covers all meat exposed from the shell; and (e) be packed in containers which contain a net weight of not more than 30 pounds of crayfish.</p> <p>2. (a) Containers containing a net weight of either 20, 25, or 30 pounds shall be used provided that a uniform-sized box shall be used by each packer; (b) to allow possible shrinkage in transit each case of 20 pounds shall be packed with a minimum excess of 12 ounces; (c) containers shall be clean, new, attractive in appearance, and not likely to have any deleterious effect on the contents; (d) each container shall be wirebound or strapped with suitable wire or strapping; (e) each container shall not be more than six inches across its narrowest internal dimension.</p> | <p>3. Crayfish tails shall be so packed as to be uniform in size in each container and shall be graded in sizes as follows:</p> <table border="1"> <thead> <tr> <th>Grade</th> <th>Net Weight of Each Crayfish Tail</th> </tr> </thead> <tbody> <tr> <td>Midget or crownies</td> <td>Under 6 ounces</td> </tr> <tr> <td>Small (S)</td> <td>Not less than 6 ounces and not more than 9 ounces</td> </tr> <tr> <td>Medium (M)</td> <td>Not less than 9 ounces and not more than 12 ounces</td> </tr> <tr> <td>Large (L)</td> <td>Not less than 12 ounces and not more than 16 ounces</td> </tr> <tr> <td>Jumbo (J)</td> <td>Not less than 16 ounces and not more than 20 ounces</td> </tr> <tr> <td>Jumbo-Jumbo (JJ)</td> <td>Not less than 20 ounces and not more than 24 ounces</td> </tr> <tr> <td>Super-Jumbo (XJJ)</td> <td>Not less than 24 ounces and not more than 28 ounces</td> </tr> <tr> <td>Packhorse</td> <td>Over 28 ounces</td> </tr> </tbody> </table> <p>4. Crayfish tails shall have been processed "from crayfish which, following the removal of all intestines,</p> | Grade | Net Weight of Each Crayfish Tail | Midget or crownies | Under 6 ounces | Small (S) | Not less than 6 ounces and not more than 9 ounces | Medium (M) | Not less than 9 ounces and not more than 12 ounces | Large (L) | Not less than 12 ounces and not more than 16 ounces | Jumbo (J) | Not less than 16 ounces and not more than 20 ounces | Jumbo-Jumbo (JJ) | Not less than 20 ounces and not more than 24 ounces | Super-Jumbo (XJJ) | Not less than 24 ounces and not more than 28 ounces | Packhorse | Over 28 ounces |
|--|---|-------|----------------------------------|--------------------|----------------|-----------|---|------------|--|-----------|---|-----------|---|------------------|---|-------------------|---|-----------|----------------|
| Grade | Net Weight of Each Crayfish Tail | | | | | | | | | | | | | | | | | | |
| Midget or crownies | Under 6 ounces | | | | | | | | | | | | | | | | | | |
| Small (S) | Not less than 6 ounces and not more than 9 ounces | | | | | | | | | | | | | | | | | | |
| Medium (M) | Not less than 9 ounces and not more than 12 ounces | | | | | | | | | | | | | | | | | | |
| Large (L) | Not less than 12 ounces and not more than 16 ounces | | | | | | | | | | | | | | | | | | |
| Jumbo (J) | Not less than 16 ounces and not more than 20 ounces | | | | | | | | | | | | | | | | | | |
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| Packhorse | Over 28 ounces | | | | | | | | | | | | | | | | | | |

tinal parts, have been vigorously washed individually in clean water."

5. Crayfish tails shall (a) be placed under refrigeration, fully prepared for freezing, within a period of two hours from the time of killing; (b) be reduced in temperature to not more than 20° F. within a period of 12 hours from the time of killing; and (c) immediately thereafter be transferred to a refrigeration chamber the temperature of which shall be held at not more than 10° F. constant.

6. The trade description on the containers shall include (i) the words "Frozen Rock Lobster Tails"

in bold letters and the words "Produce of New Zealand;" and (ii) the Grade (for the purpose of this subclause the following abbreviations may be used: small--S, medium--M, large--L, jumbo--J, jumbo-jumbo--JJ, super-jumbo--XJJ); (iii) the serial identification number of the container; (iv) any printing on cellophane or other wrappers touching the meat shall be in ink or coloration which can be certified as being harmless; and (v) containers shall also be marked with the following information: the count, net weight, brand, and name of packer.

Only when the exporter is satisfied that the rock lobster tails have been prepared and packed in conformity with these voluntary regulations may he insert in the container the approved certification label of the Association which reads: "These ... (brand) ... New Zealand rock lobster tails are packed in conformity with the standards laid down by the New Zealand Wholesale Fish Merchants' Association."

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IMPORT LICENSES FOR RUSSIAN AND JAPANESE CANNED FISH: Consideration will be given applications for licenses to import canned fish (including caviar, crab meat, and salmon) into New Zealand from the Soviet Union, the New Zealand Minister of Industries and Commerce announced late in 1953. This is the usual manner of indicating to importers that the Government is prepared to allow imports of goods which have been excluded. No indication was given as to the value or quantity of canned fish that will be permitted to enter, a U. S. Embassy dispatch from Wellington points out. It is understood that the Government does not have a specific amount in mind, but will wait to see how much the importers will seek to bring in, and then decide the quantity to be allowed. The principal Russian product involved will be canned salmon.

Earlier the New Zealand Government announced that it was prepared to allow imports of canned fish from Japan. The latest ruling allows licenses granted for canned fish to be used for purchases in either Russia or Japan. Thus an importer with a license for Japanese fish can use the authorization to bring in the Russian product, or vice versa.

These import licenses were to be granted for canned fish from Japan and Russia on vessels which leave those countries not later than December 31, 1953, the Minister of Industries and Commerce announced later. This decision was reached when applications for licenses from these countries exceeded £2 million (US\$5.6 million). The Minister stated that the quantity actually available represents only a fraction of the total for which applications have been received. The Minister also stressed that this provision applies only to fish consigned direct from Japan and Russia and not to stocks held in other countries, the U. S. Embassy at Wellington reported in a December 2 dispatch.



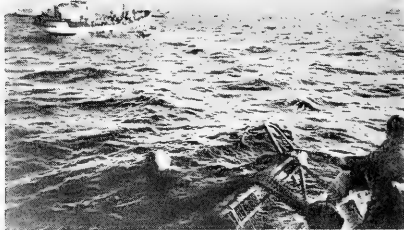
Norway

LOFOTEN 1954 COD FISHERIES LOWEST SINCE 1929: Final figures on the Norwegian Lofoten cod fisheries show that the 1954 catch was only 42,068 metric tons, the lowest since 1929, according to the Norwegian Information Service. The 1954 catch was 7,000 metric tons below the 1953 production, which was also very disappointing. For many years the Lofoten fisheries averaged 70,000 to 80,000 tons a season.

As of the first of April, reports from Lofoten indicated that a general break-up of fishing activities was well under way, especially among jiggers and drift-netters. The mature cod had already left the fishing banks, heading westward for the Norwegian Sea, with the fleet in vain pursuit, indicating the end of the Lofoten season.



Sorting the catch--Lofoten cod fishery.



Hauling in the seine--Lofoten cod fishery.

Government Aid for Lofoten Fishermen: To relieve the plight of the fishermen hardest hit by below-cost-of-production catches, the Norwegian Parliament early in April appropriated Kr. 3 million (US\$420,000) to provide work for about 3,000. Another Kr. 700,000 (US\$98,000), earlier voted by Parliament for emergency work projects will be used for the same purpose. In addition, by Royal Decree the Government has made Kr. 50,000 (US\$7,000) available to help the fishermen get back home. All told, some 20,000 men were on the banks at the height of the fisheries. Since March 10 about 700 licensed purse seiners have participated. On the whole, they have made out better than the drift-netters, liners, and jiggers.

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VIEWS ON FAILURE OF LOFOTEN COD FISHERIES: The Director of the Norwegian Ocean Research Institute maintains that failure of this season's Lofoten cod fisheries should hardly be a surprise, according to an April 22 bulletin from the Norwegian Information Service. Interviewed by Bergen Tidende, he observes that these fisheries have failed a number of times ever since accurate records of landings were started back in 1860. For periods of about 25 years at a stretch the catches have been relatively small. Then for unknown reasons they suddenly have increased, remaining at a high level for the same length of time. After the unusually big landings that prevailed prior to 1951-52, he says, there was every reason to expect a setback.



Lofoten Isles

As to assertions that the extensive purse seining on the Lofoten banks has scared away the influx of mature cod, the Director says this is highly unlikely. Nor does he believe that purse seining has destroyed the spawning. Experimental purse seining, he observes, has been permitted only a few years, and the codlings spawned on Lofoten during these years will not return as mature cod until 1956-58.

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COMBINED WINTER HERRING FISHERY, 1954: Norway's combined winter herring fishery amounted to 1,053,200 metric tons on March 7 and had a first-hand value of 204,400,000 kroner (US\$28.6 million), according to the report of a director of an association of herring reduction plants in Fiskaren (March 17), a Norwegian trade paper. Of the total quantity 81.7 percent was delivered to herring-reduction plants. The balance was exported as fresh herring; or salted, canned, used as bait; or for domestic consumption.

Expanded reduction facilities in Western Norway increased the available capacity from 7,440 metric tons each 24 hours before World War II to the current capacity of 28,000 metric tons. A cooperative fleet of transporters served the fishing vessels and had a combined capacity of 83,700 metric tons. Sale of the huge quantities of meal and oil produced is not expected to encounter any difficulties. About 50,000 metric tons of the meal will be used in Norway and most of the balance has already been sold to foreign countries at relatively good prices. The total value of the meal and oil, based on world market prices, would be about 300,000,000 kroner (US\$42 million).

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WINTER HERRING FISHERMEN MAKE RECORD EARNINGS: Shares earned by Norwegian fishermen who took part in the 1954 winter herring fishery ranged from 3,000 kroner (US\$420) to 7,000 kroner (US\$980), the highest ever, reports the Norwegian Information Service on March 18. The month-long winter herring fishery was concluded on February 14.

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SPRING HERRING SEASON SUCCESSFUL: The Norwegian spring herring season closed on March 26 with a total catch of 182,096 metric tons with a landed value of 30.4 million kroner (US\$4.25 million), according to an April 2 U. S. Embassy dispatch from Oslo. This was almost double the 1953 catch which totaled only about 102,300 metric tons, valued at 18 million kroner (US\$2.5 million). Both the winter and spring herring seasons were much more successful than last year.

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FISH MEAL AND OIL PRODUCTION, 1953: Norway's 1953 production of fish oils was estimated at around 80,000 short tons, reports the U. S. Embassy at Oslo. However, if fishing conditions remain normal, 1954 production should exceed 100,000 tons. Because of bad weather during the fishing season, herring oil output in 1953 was considerably less than in 1952 when output reached 84,800 tons. Fish-liver oil output also was down. Provisional data place the 1953 output between 18,000 to 22,000 tons as against 31,000 tons in the preceding year.

Exports of crude herring oil from Norway during January-November 1953 were 6,097 tons, or less than half the 13,729 tons exported in 12 months 1952. In both years Western Germany was the principal outlet, followed by the Netherlands.

Total 1953 production of herring meal is estimated at between 165,000 and 175,000 tons, compared with 193,000 tons in 1952. January-November exports of herring meal were 100,900 tons as against 124,120 tons in 12 months 1952. Exports to the United States declined sharply in the past year.

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CANNED FISH EXPORTS, 1953: Norway exported 26,631 metric tons of canned fishery products in 1953, valued at 119.5 million kroner (US\$16.7 million), according to a March 18 bulletin from the Norwegian Information Service.



Spain

NEW FISH CANNERY: A new fish-canning factory is to be built at Torrevieja, Alicante, Spain, according to the March 12 issue of The Fishing News, a British fishery periodical. The cannery will be the second of its kind in the eastern provinces, and is part of a gradual transfer of fish-preserving industries from the Atlantic coast to the Mediterranean coast.

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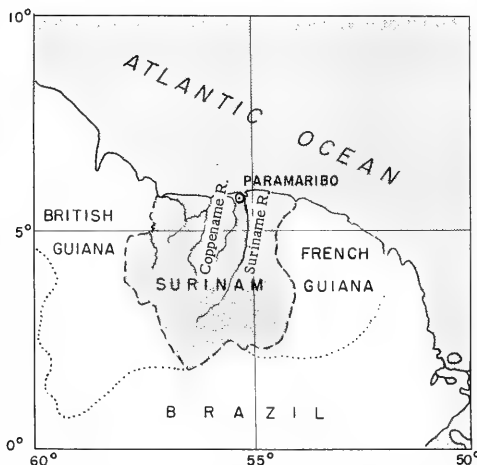
VIGO FISH CANNING TRENDS, FEBRUARY 1954: Fish canners in the Vigo area of Spain purchased 202,000 pounds of fish during February, a March 9 U. S. consular dispatch from Vigo reports. This compares to 280,000 pounds in January and 294,000 pounds in February 1953. The substantial decline was principally due to the scarcity of fish. The bulk of the cannery purchases in February consisted of castenet (brama-raii) and bocarte (anchovy).



Surinam

SHRIMP FISHERY: Large catches of shrimp in the mouth of the Suriname and Coppename Rivers in Surinam have now made it possible for shrimp to be exported to the United States and the Netherlands, according to the December 1953 Monthly Information Bulletin of the Caribbean Commission.

In addition to the direct advantages that come with Surinam's ability to sell a greater quantity of shrimp in the outside market, the shrimp industry is providing valuable protein for animals in the country. The Agricultural Products Board is currently buying large quantities of shrimp waste which is ground into a meal and sold to cattlemen who mix it into their animal feed. The meal, which is being sold at about US\$140 per short ton, contains approximately 37 percent digestible protein and is welcomed by cattlemen who have long needed a cheap source of animal protein.



An exploratory shrimp-trawling survey was conducted by the Acting Head of the Surinam Fishery Division commencing in May 1953, according to a February 10 U. S. consular dispatch from Paramaribo. The survey was conducted 12 miles north, 60 miles west to 15 miles east of the Suriname River, to learn when shrimp could be found along the coast, and the possibilities of catching them.

The survey was made with a small 42-foot cutter equipped with a 40 hp. Diesel motor used as a trawler. Explorations in deeper water are planned when the weather permits. Using a 40-foot shrimp trawl, the experimental trawler caught 50 to 300 pounds per hour. Along the coast the bottom is very soft mud.

Shrimp are found in shallow waters near the coast (mostly within the four-fathom line) and inside the estuaries, creeks, and swamps. (The estuaries have been exploited for shrimp for generations.) Species caught consist of 98 percent sea bob (*Xiphopaeneus kroyerie*) about 2 to 3 inches long, and 2 percent brown-grooved shrimp (*Penaeus aztecus*) about 5 to 6 inches long. Larger shrimp were not found in quantity in Surinam's territorial waters, although there are indications that bigger shrimp exist in deeper water. At present shrimp fishing is carried on mostly with fixed traps and bow nets. Fishing craft consist of 30-foot open wooden boats, some equipped with outboard motors. Shrimp appear in the estuaries in February and March, and then from July-December.

Most of the shrimp until recently was sold fresh or dried. At present there is a good domestic demand for dried shrimp.

There are no special laws or rulings on shrimp fishing in Surinam, the Netherlands Embassy at Washington, D. C., points out. Permits are required from the Surinam Government if fishing is carried on within territorial waters. No permits are required if fishing is outside territorial waters. Crews of fishing boats can be foreigners.

Export duties on frozen shrimp shipped out of Surinam are at the rate of $\frac{1}{2}$ percent of the value declared on the export license, and a small statistical fee.

There are two ice-making plants in operation in Surinam. About 150 metric tons of ice can be reserved for the shrimp fishery each month, but the price is high.



Thailand

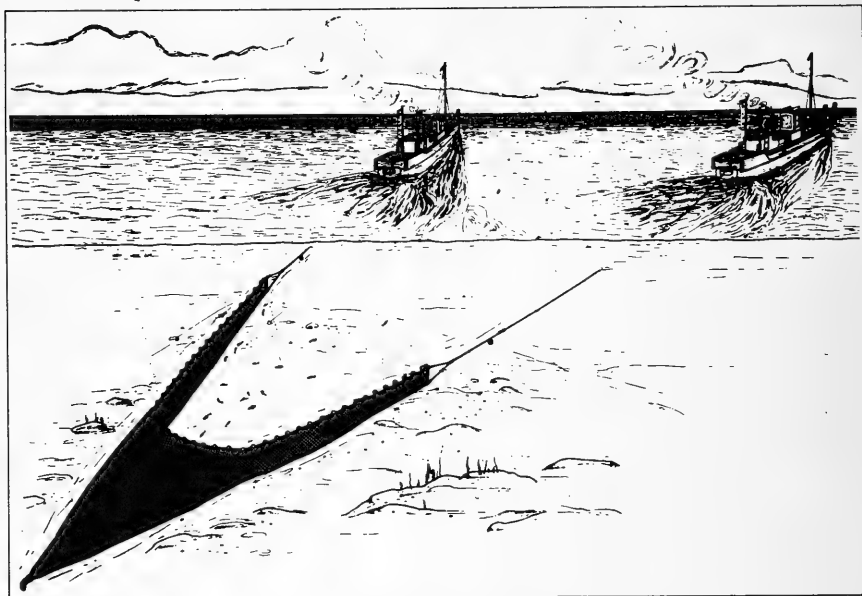
BULL-TRAWLING TESTS: Two wooden Japanese-type bull trawlers were tested recently by a new Paknam, Thailand, fishing company, a January 18 U. S. Embassy dispatch from Bangkok states. The vessels are semi-Diesel powered and formerly worked out of Singapore. Key fishing personnel are Chinese from Hong Kong, and Thai crews are being trained to take over at some future date. The operation is a two-boat trawl fishery with each vessel setting alternately.

Trip reports furnished by the new fishing company indicate that the offshore waters of the outer Gulf of Thailand harbor a rich and varied stock of commercially valuable species. Reports on the results of the trips follow:

Trip 1 (November 20 to December 2, 1953): The total landed fare amounted to about 13.5 metric tons, produced in seven days of actual fishing. Twenty-one sets of the net, about 70 hours on the bottom, yielded an average of about 1,400 pounds per set, or about 425 pounds per hour. The total catch, however, is known to be at least 25 percent greater because considerable small and unmarketable fish were rejected at sea.

Principal species landed were red snapper, grouper, lizardfish, grunts, flounders, and sea bream. A small quantity of large shrimp and one large spiny lobster were taken. Fish thrown away at sea included slipmouth, sea catfish, rays, and small individuals of many other species. The area fished extended from 50-70 miles off the stretch of outer Gulf northeast from Rayong to Kohchang. Depth of water ranged from 18 fathoms to 26 fathoms with bottoms of sand and sand and mud generally clear but with heavy sponge growths in some sections. On two successive days hauls included about 40 percent small fish--the last haul produced 72 cases of marketable fish but almost 70 percent of the total brought aboard was small unmarketable fish.

While financial details were not furnished, it is calculated that an average price of at least 3 baht per kilo (11 U.S. cents per pound) was obtained, for a gross of about 40,000 baht (US\$3,200). This should at least cover expenses and it is probable that a small profit was obtained.



Sketch showing operation of two-boat trawler.

It was concluded that the first trip was successful even though the fishing grounds were previously entirely unexplored, the crews were inexperienced, and two of the sets were practically blank due to inexperienced net handling. If a practical means for delivering the scrap and small fish to fish-meal plants is devised, gross income will be increased and the source of raw material for these plants considerably broadened.

Trip 2 (December 23 to January 2): About 18 metric tons, caught in 27 sets over a period of nine fishing days, were landed from the second trip. The net actually fished on the bottom about 76 hours--drags were somewhat shorter than in Trip 1. Average weight of landed fish per set was 1,463 pounds, and 521 pounds per hour of fishing. Both averages are higher than for Trip 1. The fishing log shows that 16 tons of small unmarketable fish were thrown away at sea. This increases the actual catch by almost 100 percent and the averages per set and per hour accordingly. Rejected fish were predominantly slipmouth and rays but the small fish category also included many other species. The landed catch included red snappers, groupers, grunts, flounders, lizardfish, sea bream, and other valuable market fish. About 110 pounds of jumbo shrimp were landed and some crabs. A small number of large squid were taken.

Two separate areas were fished on December 23 and 24--off Kohsichang in the inner Gulf and from Rayong to Kohchang, 40 to 80 miles off the outer Gulf. Opera-

tions in the inner Gulf on mud-sand bottom in 10 to 21 fathoms produced mostly mixed small fish and some shrimp and crabs. Less than one ton of marketable fish was retained.

About 500 cases were sold at auction on arrival at Bangkok, the remainder was stored in ice at the refrigeration plant at Paknam. No direct information was given as to final weighouts and prices obtained, but at the estimated conservative figure of 3 baht per kilo (11 U. S. cents per pound), the trip grossed around 55,000 baht (US\$4,400). This should have produced a profit for the trip. If the fish discarded were delivered for fish meal at 0.20 baht per kilo ($\frac{2}{3}$ U. S. cent per pound), it would have earned some 3,500 baht (US\$280) more.

Summary: Although it would be premature to qualify these operations as a complete financial success on the basis of the first two trips, some facts are evident. From the standpoint of the resources, it would certainly appear that the section of the Gulf fished is unusually productive for a tropical area. How much fishing strain can be supported is, of course, unknown. The high incidence of small species, undersized individuals of marketable species, and unwanted species suggest that some measure be taken either to utilize these or regulate mesh sizes to cut down the catch of the smaller fish. Probably the best solution at this stage would be to insure that the entire catch be utilized.

The type of fishing employed in this operation is fairly expensive since two vessels are used. It is possible that smaller vessels fishing with single otter trawls might produce fish at less cost. The great abundance of slipmouth and sea catfish, neither of which is in demand as market fish but excellent for fish meal, suggests that small-boat trawling operations might be developed for supplying fish meal plants.

While it will probably take a considerable number of years to explore the Gulf thoroughly, this first indication of what exists in the offshore areas is highly significant and justifies further exploration.

Comparing these results with those of other regions, it appears that catches are very good. In the Philippines, production averaged 151 pounds per hour (25 to 636 pounds per hour minimum and maximum). The average catch per hour during the two trips described is 473 pounds--the total catch including discarded fish is at least 700 pounds. Trawlers in the Mediterranean Sea operating out of Alexandria averaged 255 pounds per day and those from Port Said 108 pounds. Japanese vessels fishing off Western Australia caught fish at the rate of 440 pounds per hour. On Wadge Bank off Ceylon, the daily average catch was 4,600 to 6,400 pounds per day.



United Kingdom

ELECTRONIC FISHING METHOD DESCRIBED: An electronic fishing method has been invented by a Belfast, Northern Ireland, dental surgeon, reports *The Fishing News* (April 15), a British fishery magazine. He made a successful demonstration of his new electric technique for officials of the Northern Ireland Ministry of Commerce recently, and announced that the next test would be on the first herring shoals sweeping down the North Channel into the Irish Sea late in April. He believes his system may prove an infallible way of catching herring commercially by the electric shock method.

The inventor told the Irish News Agency: "In the presence of fishery experts, including the Director of Scientific Development of the Ministry of Commerce, we... gave a demonstration of our apparatus in Lough Islandreevey, near Castlewellan,

Co. Down, on Saturday. It was a complete success. Within half an hour, in a small area of the lake the size of the backyard of a house, we landed ten large pike ranging from 4 to 8 pounds weight. I have no doubt that in larger lakes the pike menace can be eradicated by my electrical current trapping method.

"On Saturday next I'm taking the gear to Larne to renew experiments in Larne Lough in trapping herring on a big scale by attracting them electrically.

"I believe that the Lough Islandreevey experiments have proved that the apparatus can now be applied to sea fishing."

The secret of the electric "shock" method is that fish run from the negative to the positive pole. Fish caught in the electrified field, made by impulses from the machine in the water, are stunned.

The Scientific Development Branch of the Belfast Ministry of Commerce is particularly interested in the technique and experiments are expected to continue elsewhere.

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FREEZING-FISH-AT-SEA NEEDED TO FULLY UTILIZE DISTANT-WATER FISHERIES: If the British distant-water fisheries are to be fully utilized, a method must be developed for freezing fish at sea, according to the 1952/53 report of the British Department of Scientific and Industrial Research. Excerpts from this report were published by the Fish Trades Gazette (March 27, 1954), a fishery trade periodical.

The recent report continues: "At the Torry Research Station, a pilot-scale vertical-plate freezer has been designed which might be suitable for installation on existing vessels. Since the rate of catching is variable and the space available for freezing aboard ship is severely limited, fish may have to be held in ice for a time before they can be frozen."

Experiments have shown that the quality of the fish need not be affected by holding in ice for at least three days while regulating supplies to the freezing unit. Fish which are to be frozen should be gutted and washed according to normal trawler procedure; if the fish is frozen ungutted, the product is inferior, states the report. Storage in ice before freezing accentuates the advantages of storing the frozen fish at very low temperatures, e.g., -30°C . (-22°F .), and conversely the use of a lower storage temperature permits greater latitude in the prefreezing conditions.

At different rates of freezing, the effect of ice formation on cell structure in fish appears to be a complicated one. In order to investigate this a new air-blast freezer has been built in which many of the factors which affect the rate of freezing can be controlled. Research on the effect of these variable factors is expected to lead to reliable data for design purposes.

Efforts have been made to improve the quality of white fish reaching the consumer. As a method of assessing quality, a numerical scoring system for the sensory assessment of the spoilage of wet white fish stored in ice has been developed. Since it would be useful if results obtained by this sensory evaluation of appearance, odor, flavor, and texture could be correlated with results of chemical determination of the changes which occur during the development of spoilage, experiments are being made under strictly controlled conditions, to determine whether such correlation exists.

Speaking of dehydration, the report mentions a small drying tunnel which has been constructed for work on the air-drying of fish. In this tunnel conditions can be

automatically controlled and variable factors can be recorded photographically. The time required for drying has been found to be virtually independent of relative humidity in the range of 25 to 70 percent, but it increases at higher humidities, the report points out.

* * * * *

DEEP-WATER TRAWLERS CONTINUE FULL-TIME FISHING: British deep-water trawlers at Humberside ports continued until the end of March the suspension of the 20-percent lay-up. This applied to trawlers operating under the Distant Waters Development Scheme which was initiated to prevent an oversupply of fish. Still in effect was the regulation that any vessel with a catch exceeding 70 percent capacity was to offer the excess to the salt-fish trade.

Catches of the distant-water trawlers prior to March averaged only 50-percent capacity. The position was scheduled to be reconsidered at the end of March, reports the February 12 issue of The Fishing News, a British fishery magazine.

* * * * *

GOVERNMENT LOANS TO INSHORE FISHERMEN FOR GEAR: The British White Fish Authority announced recently that it is prepared in certain circumstances to provide loans for inshore fishermen for nets and gear, states the British fishery periodical, Fish Trades Gazette (March 27, 1954). The loans are for purchasing nets and gear for fishing vessels of not more than 70 feet in length--the class of vessels operated by inshore fishermen. Like the schemes for providing grants and loans for new vessels and engines and for promoting voluntary cooperative arrangements, this measure is intended to give further encouragement and support to the inshore section of the fishing industry.

Loans will be made where new nets and gear are acquired in the three following circumstances: (a) as part of the initial equipment of a new vessel; (b) as a result of a statutory change in net mesh sizes; and (c) as a result of a change other than seasonal in the type of fishing in a particular area. Each application will need to be approved by the Authority.

The loans will not exceed 60 percent of the cost of the nets and gear. The rate of interest for the present will be $2\frac{7}{8}$ percent but may be changed from time to time. The loans will be repayable within three years. The Authority will require satisfactory security for the loan and the borrowers will need to comply with certain conditions.

The arrangements will operate from March 24, 1954. They will not apply to Northern Ireland where assistance on nets and gear may be given under other arrangements or to vessels engaged solely in herring fishing.

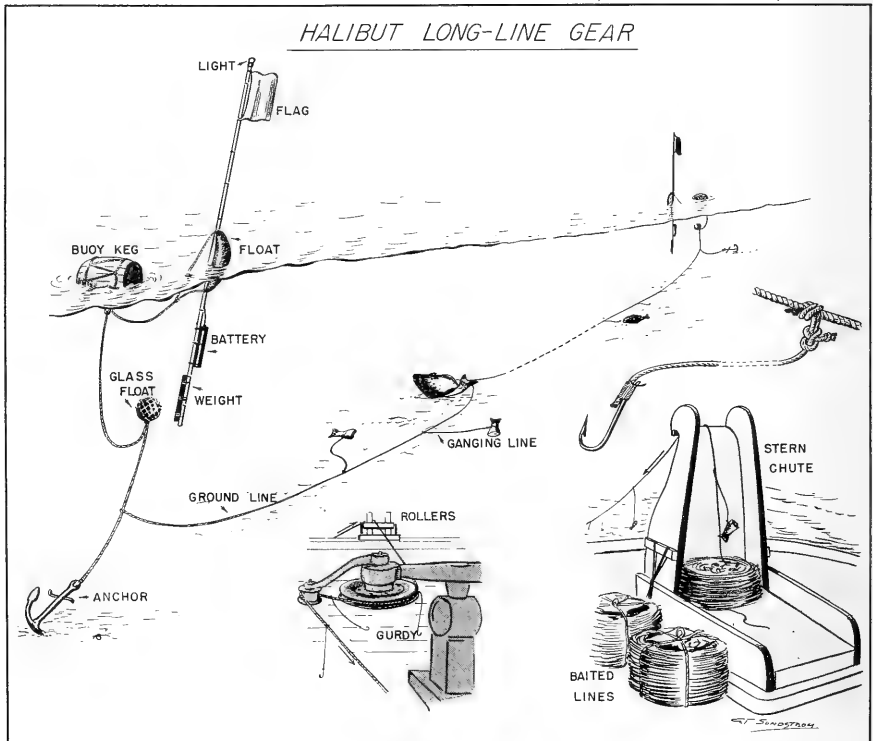


Venezuela

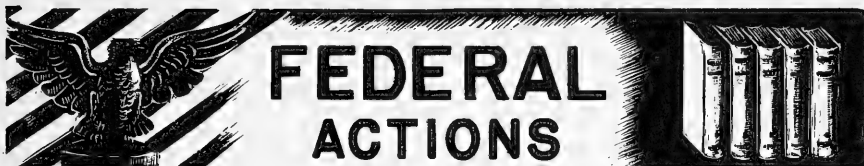
NEW FISH MEAL AND OIL PLANT: The opening of a new fish meal and oil plant at Cumana, Sucre, was announced on February 9. Cumana is a fish-canning center. The plant has a maximum daily capacity of 36 metric tons of fish scrap, and was purchased in Norway at a cost of 400,000 bolivares (US\$120,000).

During the fishing season--December to July--the plant can function at capacity and it is expected will average 4 tons of meal and 1 ton of oil daily, states a U. S. Embassy dispatch (February 18) from Caracas.

Heretofore the fish residue from the canneries has represented a disposal as well as a sanitation problem. It has been customary to have the accumulation of fish heads, viscera, etc. hauled out to sea when the quantity reached the limit of toleration.



Details of the type of gear used on United States and Canadian halibut schooners for catching halibut in the North Pacific Ocean.



Department of Defense

CORPS OF ENGINEERS

PROPOSED SCHEDULE OF LICENSE

FEES REVISED: The proposed schedule of license fees issued by the Department of the Army's Corps of Engineers were amended, according to the April 17 Federal Register. As amended, the proposed schedule excludes Item 5 "Fish Traps and pounds." The new Schedule does include "fishing structures" which is construed to

mean such large structures as fishing traps of the type used principally in the Alaska salmon industry. The Corps of Engineers has indicated that it never intended to include ordinary fish traps, pounds, nets, crab and lobster traps, etc. The revised fee schedule, proposed to become effective July 1, 1954, as published in the April 17 Federal Register follows:

FEES FOR LICENSING AND RELATED ACTIVITIES

REVISED SCHEDULE

Notice was given in the FEDERAL REGISTER of January 29, 1954 (19 F. R. 514), of a proposed schedule of fees for the purpose of recovering the cost of issuing permits for work in navigable waters of the United States. The schedule has been revised after careful consideration of all comments received and a revised fee schedule, proposed to become effective July 1, 1954, is published below:

REVISED FEE SCHEDULE

Group	Classification	Fee per permit
1	Structures or work such as piers or landings, aerial or submarine cables, pipelines, moorings and icebreaker collis, pile clusters, dredging, dumping, fishing structures, jetties, pumping plants, oil well structures, structures for geophysical operations, or any other similar structures or work in any navigable water of the United States.	\$5 when no notice required, \$25 when only public notice required, \$50 when public hearing required.
2	Structures such as bridges, dams, causeways, tunnels over or under any navigable water of the United States.	\$50 when only public notice required, \$100 when public hearing required.
3	Revised plans and extensions of time of permits and instruments of approval of plans.	Dependent upon action required, 50 percent of appropriate fee set forth above for group 1 or 2.

PRACTICE AND PROCEDURE

(a) Exemptions. No charges will be made for permits issued to charitable nonprofit organizations, and Federal, State and other public agencies.

(b) Applicability. (1) A fee will be charged only when an actual permit is required and issued for the performance of any of the work indicated above. The fee covers only the cost of issuing the permit and does not include any charges for inspection costs. The schedule of fees does not change in any respect ex-

single fee, subject to subparagraph (1) of this paragraph.

(4) If the application is denied, the fee will be returned to the applicant with the letter disapproving his request.

(5) Under the Department's rules of practice and procedure District Engineers are not required to issue a public notice for such minor structures or work as in their opinion could offer no objection and to which there could be no objection from the standpoint of navigation. In all other cases a public notice is mandatory and a public hearing shall

be held when necessary to develop all the facts and to afford interested parties full opportunity to be heard. In the event a public notice is issued and a public hearing is then found necessary, the fee paid for the public notice will be credited toward the fee for a public hearing.

(c) Payment of fees. (1) Upon receipt of an application the District Engineer will advise the applicant of the applicable fee as determined by the fee schedule. Full payment must be made and in no case will an application be processed prior to such payment.

(2) Payment may be made in legal tender, postal money order, or check payable to The Treasurer of the United States. All fees collected will be paid into the Treasury as miscellaneous receipts by the District Engineer.

(3) Receipts will be furnished only upon request in the case of payments in cash made in person. Sending of cash through the mails is entirely at the risk of the sender.

(d) Effective date. The schedule of fees shall take effect and apply to all applications received on and after July 1, 1954.

Any interested party may present such written comments and suggestions, in duplicate, as to the level and form of the proposed fees as he may desire to the Chief of Engineers, Corps of Engineers, U. S. Army, Building T-7, Washington 25, D. C. Attention: ENGWO, within the period of 30 days from the date of publication of this notice in the FEDERAL REGISTER.

(SEAL)

WM. E. BERGIN,
Major General, U. S. Army,
The Adjutant General.

Note: See Commercial Fisheries Review, April 1954, p. 71.



Federal Trade Commission

ALASKA SALMON INDUSTRY CONSENT SETTLEMENT RELEASED: A consent settlement in Docket No. 6141, involving investigations of 61 organizations or persons engaged in fishing or processing in the Alaska salmon industry or organizing parts of this industry, was released by the Federal Trade Commission recently.

In the consent decree dated April 9, 1954, it was ordered by the Commission that the respondents "do forthwith cease and desist from entering into, continuing, cooperating in, or carrying out any planned common and concerted course of action, understanding or agreement between or among any two or more of said respondents, or between any one or more of said respondents and others not parties hereto, to do or perform any of the following acts:

"1. Fixing, establishing, maintaining or adhering to, in any manner or by any method whatever, the price or prices at which any type of raw or fresh salmon caught in the fishing areas or districts of Alaska are to be, or are, purchased or sold;

"2. Fixing, establishing, maintaining or adhering to or attempting to fix, establish, maintain or cause adherence to, by any means or method, uniform or minimum prices for the purchase or sale of said salmon;

"3. Jointly or collectively negotiating, bargaining or agreeing by any means or method as to the price or prices at which said salmon is proposed to be, or is, purchased or sold;

"4. Authorizing or empowering any association, group, corporation or union to negotiate, bargain or agree as to the prices to be paid or received in the purchase or sale of any such salmon.

"PROVIDED, however, that nothing herein contained shall prevent any association of bona fide salmon fishermen, acting pursuant to and in accordance with the provisions of the Fisheries Cooperative Marketing Act (15 U.S.C.A., Paragraphs 521, 522) from performing any of

the acts and practices permitted by said Act;

"PROVIDED further, that nothing herein contained shall be deemed to prohibit one or more respondents from entering into or continuing a bona fide partnership, joint operation or venture, or consolidation, for the purpose of operating one or more canneries, and in which the prices paid for raw or fresh salmon are determined by said partnership, joint operation or venture, or consolidation, and where such determination is, under the contract establishing such partnership, joint operation or venture, or consolidation, binding upon all members thereof....

"PROVIDED further, that nothing herein contained shall prevent collective bargaining between any respondent Union and respondent Industry and/or any employer respondent with respect to wages and working conditions or employee members of said Union within those fishing districts wherein they may be."

The full text of the consent settlement in Docket No. 6141 is available from the Federal Trade Commission, Washington 25, D. C.



Office of Defense Mobilization

TRANSPORTATION EXPANSION GOAL TIME LIMITS EXTENDED: An extension of time limitations for six expansion goals in the transportation field was announced recently by the Office of Defense Mobilization.

This action, taken on the recommendation of the Defense Transport Administration, sets December 31, 1954, as the final date construction can begin on equipment or facilities to be eligible for fast tax write-offs.

Goals affected are: freight cars; locomotives, Diesel; inland waterway vessels (specified types); ore carriers, Great Lakes; railroad terminal and road facilities; warehouse and storage facilities (refrigerated).



Tariff Commission

GROUNDFISH FILLET ESCAPE ACTION GOES TO PRESIDENT: The findings of the U. S. Tariff Commission in the groundfish fillet investigation (Investigation No. 25, under Section 7 of the Trade Agreements Extension Act of 1951) were transmitted to the President on May 7, 1954. The findings of the Commission were not made public.



Eighty-Third Congress (Second Session)

MAY 1954

Listed below are public bills and resolutions introduced and referred to committees or passed by the Eighty-Third Congress (Second Session) and signed by the President that directly or indirectly affect the fisheries and allied industries. Public bills and resolutions are shown in this section only when introduced and, if passed, when signed by the President; but also shown are the more pertinent reports, hearings, or chamber actions on some of the bills shown in this section from month to month.

CHEMICAL ADDITIVES IN FOODS: H. R. 9166 (O'Hara of Minnesota) - a bill to protect the public health by amending the Federal Food, Drug and Cosmetic Act to prohibit the use in food of new chemical additives which have not been adequately tested to establish their safety; introduced in the house on May 17 and referred to the Committee on Ways and Means.

DISTRIBUTION OF FISHERY PRODUCTS: Senate passed on May 14 with amendments S. 2802, to encourage further the distribution of fishery products in the development of research programs and increased markets, after adopting the committee amendments, as amended, and adopting en bloc a series of amendments by Senator Ellender to the bill and to the committee amendments which would terminate the act on June 30, 1957, would limit retransfer of funds to not to exceed \$1.5 million (for the purchase of surplus fishery products), would limit the separate fund created to not more than \$3 million in any fiscal year, and would require Secretary of Interior to make annual report on use of the fund to appropriate congressional committees.

To Encourage Distribution of Fishery Products is a report of the April 1 Hearing before Subcommittee No. 5 (Fisheries and Wildlife) of the Senate Committee on Interstate and Foreign Commerce. Includes the statements by witnesses, statements and excerpts submitted by witnesses, reports from various Government agencies, and letters from various interested parties on S. 2802.

The House Committee on Merchant Marine and Fisheries on May 25 ordered reported to the House, S. 2802. On May 24 Subcommittee No. 2 had approved the bill in an executive meeting.

H. R. 9018 (McCormack) - introduced in the House on May 5 and H. R. 9249 (Norblad) introduced on May 24; referred to the Committee on Merchant Marine and Fisheries. Similar to S. 2802.

PROTECTION OF U. S. FISHERMEN ON HIGH SEAS:

H. R. 9268 (Allen of California) - a bill to protect United States fishermen in their lawful operations on the high seas, and for other purposes; introduced in the House on May 25; referred to the Committee on Merchant Marine and Fisheries.

Also the following bills similar to H. R. 9268: H. R. 9269 (Bates), H. R. 9270 (Bennett of Florida), H. R. 9271 (Boykin), H. R. 9272 (Campbell), H. R. 9273 (Colmer), H. R. 9274 (Doyle), H. R. 9275 (Holz), H. R. 9276 (Hosmer), H. R. 9277 (King of California), H. R. 9278 (Lane), H. R. 9279 (Lantaff), H. R. 9280 (Lipscomb), H. R. 9281 (Mack of Washington), H. R. 9282 (Mailliard), H. R. 9283 (Matthews), H. R. 9284 (McCormack), H. R. 9285 (McDonough), H. R. 9286 (McMillan), H. R. 9287 (Miller of California), H. R. 9288 (Miller of Maryland), H. R. 9289 (Nicholson), H. R. 9290 (Norblad), H. R. 9291 (O'Neill), H. R. 9292 (Pelly), H. R. 9293 (Phillips), H. R. 9294 (Preston), H. R. 9295 (Scudder), H. R. 9296 (Sikes), H. R. 9297 (Thompson of Texas), H. R. 9298 (Tollefson), H. R. 9299 (Utt), H. R. 9300 (Westland), H. R. 9301 (Wilson of California).

SMALL BUSINESS STUDY: The select Committee on Small Business in the House on May 17 committed to the Committee of the Whole House on the State of the Union, H. Rept. 1610, Progress Report--First Session on H. Res. 22 - a resolution creating a select committee to conduct a study and investigation of the problems of small business. It is the purpose of this report not only to give information on the activities of the committee during the first session of the 83d Congress, but to discuss and analyze in an unbiased manner various aspects of the economy which affect the well-being of the small-business community. Part I contains information on the legislative background of the Small Business Administration and an analysis of hearings conducted throughout the country on the effectiveness of the SBA program. Part II discusses the effect of particular taxes on small business and various proposals for tax revision advanced by the Administration, the House Ways and Means Committee, and the Small Business Committee. Part III is concerned with the adequacy of credit supplied to small firms by private financial institutions and by the Government; with recommendations for improvement in these programs. Part IV analyzes the problems arising from the desire of small business to receive a fair share of Government procurement, and discusses those programs established to aid in this process. Part V deals with various problems in the antitrust field and their effect on small business. Included are discussions on fair trade, significant cases, the committee established to study the antitrust laws, and the legislative proposals in the antitrust field. Part VI is a brief summary of other studies conducted by the committee in the field of mining, Government competition with private enterprise, and the relaxation of economic controls. A final report containing subsequent data will be published at the end of the second session.

SOCIAL SECURITY FOR FISHERMEN: The House Committee on Ways and Means on May 19 tentatively agreed to extend OASI coverage to those in fishing and related service. Under present law persons engaged in fishing and similar activities are excluded from OASI coverage unless their serv-

ices are performed in connection with commercial salmon or halibut fishing or on a vessel of more than 10 net tons. The committee adopted a provision which would repeal this exclusion and cover employment in fishing and similar activities generally. It is expected that this provision will extend OASI coverage to approximately 30,000 persons.

TARIFF RATE ADJUSTMENTS: H. R. 9159 (Hunter) - a bill to amend the Tariff Act of 1930 so as to provide a permanent procedure for adjustment of tariff rates on a selective basis, to regulate the flow of imported articles on a basis of fair competition with domestic articles, and for other purposes; introduced in the House on May 17 and referred to the Committee on Ways and Means. The bill is designed to restore to Congress the final responsibility for any adjustments made in the tariff. The bill would empower the Tariff Commission under stated conditions to increase, reduce, or to establish rates of duty; or to impose, modify, or withdraw import quotas, subject only to Congressional veto. It would establish imports on a fair competitive basis, first by avoiding import injury to domestic producers; and second by providing means of reducing excessive rates to the peril point--that is, to the point below which import injury would occur. This might include complete removal of a duty. The bill would give statutory standing to the rates now owing their existence to a trade agreement concession, and would permit

the General Agreement on Tariffs and Trade to expire June 30, 1955. Therefore, there would be no increase in any rate of duty upon expiration of the existing trade agreements law. All existing trade agreements would remain in effect in accordance with their own terms until or unless expressly abrogated. The President no longer would initiate trade agreement negotiations or proclaim tariff rates.

Also (similar to H. R. 9159) H. R. 9162 (Mack of Washington), H. R. 9173 (Secrest), H. R. 9174 (Scudder), H. R. 9176 (Steed), H. R. 9178 (Van Zandt), H. R. 9185 (Bailey), H. R. 9186 (Byrd), H. R. 9189 (Fogarty), all introduced on May 17 and 18, and H. R. 9210 (Neal), H. R. 9213 (Staggers), and H. R. 9217 (Lane) introduced on May 19; and H. R. 9347 (Jenkins) and H. R. 9349 (Mollohan), introduced on May 20; referred to the Committee on Ways and Means.

TRADE AGREEMENTS EXTENSION ACT OF 1954: H. R. 8860 (Kean) - a bill to extend the authority of the President to enter into trade agreements under section 350 of the Tariff Act of 1930, as amended, and for other purposes; introduced in the House on April 15 and referred to the Committee on Ways and Means. This bill extends to June 30, 1957, the President's authority to enter into foreign trade agreements, and would establish a new statutory basis for reducing tariffs as recommended by the Randall Commission.



FISHING VESSEL IN SEARCH OF LOST CONTINENT

To support their theory that a vast continent called Lemuria once stretched across what is now the northwest Indian Ocean, four members of an Italian zoological expedition sailed on the small fishing vessel Marsouin from Dar es Salaam, Taganyika, on September 6, 1953. The expedition was bound for the Comoro Islands in the Mozambique Channel and the neighboring atoll of Aldabra where they were scheduled to carry out a two-months' investigation into fish, mammal, and insect life to support their theory.

The expedition will be joined in the Comoro Islands by an Italian director of documentary films who will make a full-length colored picture of underwater life.

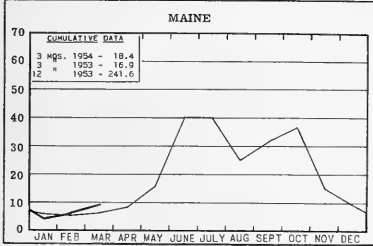
It is the belief of the members of the expedition that the numerous small islands which run in a rough line from Madagascar to India are the broken links of a narrow peninsula that once joined Africa and Asia.

--The South African Shipping News and Fishing Industry Review, October 1953.

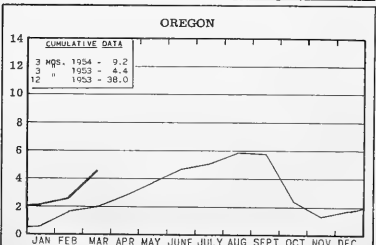
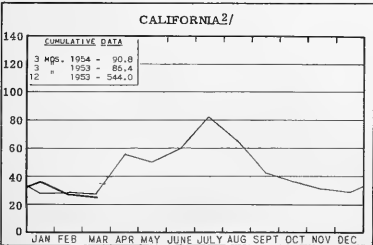
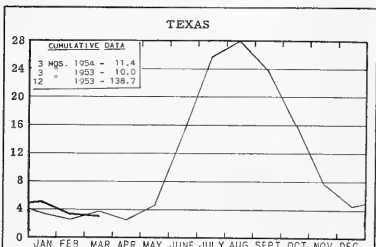
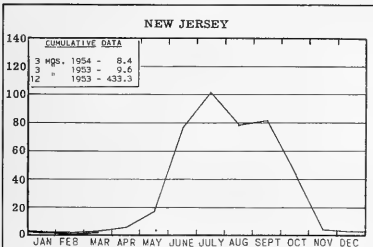
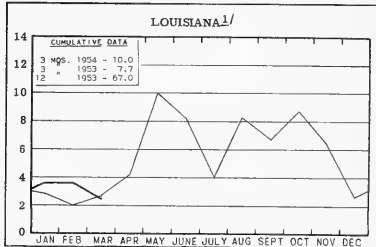
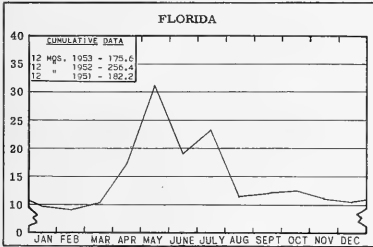
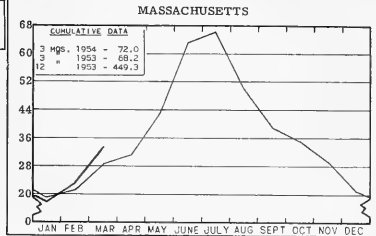
FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds



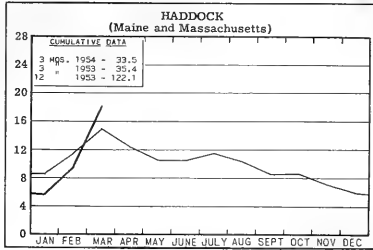
Legend:
 — 1954
 - - - 1953



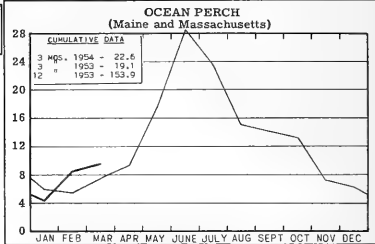
^{1/}ONLY PARTIAL--INCLUDES LANDINGS AT PRINCIPAL PORTS.
^{2/}ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

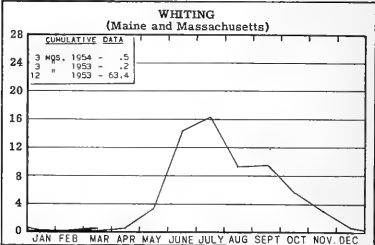
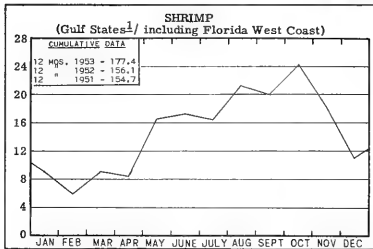
In Millions of Pounds



Legend:
— 1954
- - - 1953

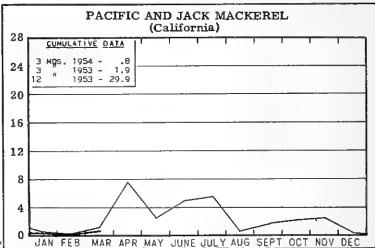
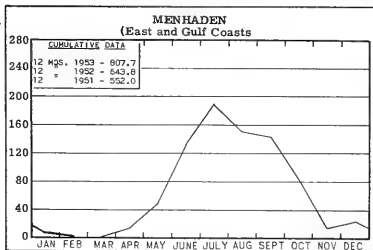


In Millions of Pounds



^{1/2} JAN. & ALL. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

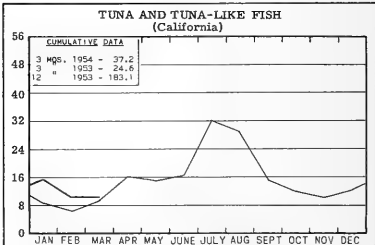
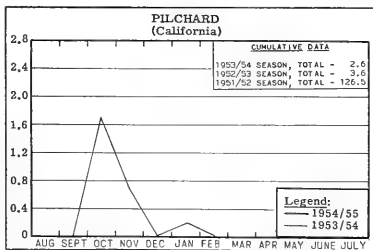
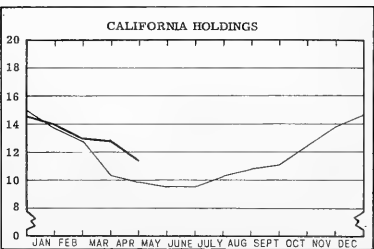
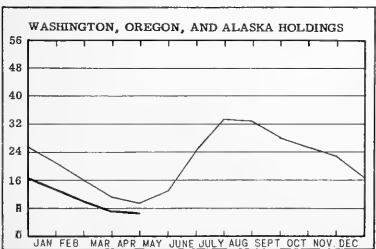
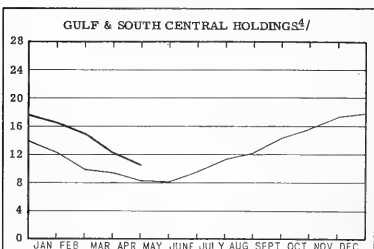
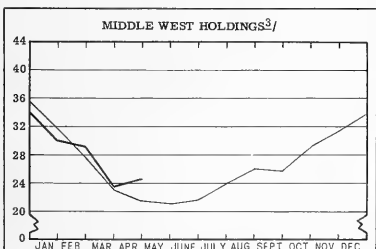
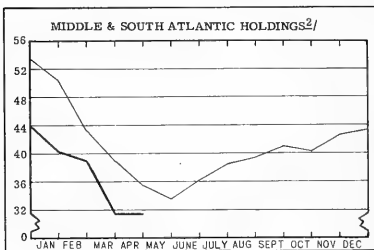
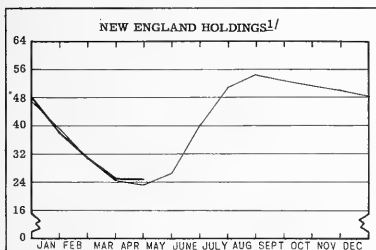
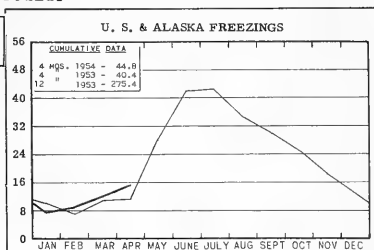
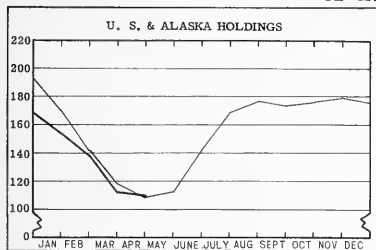


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds

Legend:
— 1954
— 1953



*Excludes salted, cured, and smoked products.

¹/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT.

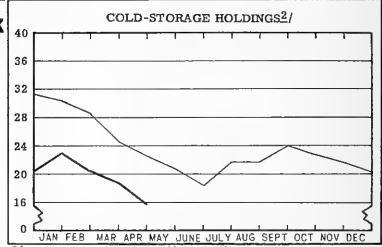
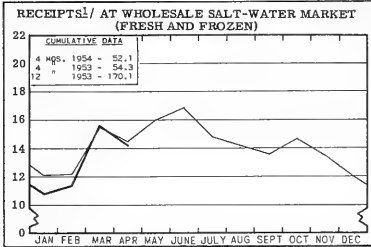
²/ALL EAST COAST STATES FROM N.Y. SOUTH.

³/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR., & KANS.

⁴/ALA., MISS., LA., TEX., ARK., KY., & TENN.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pound



^{1/}INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

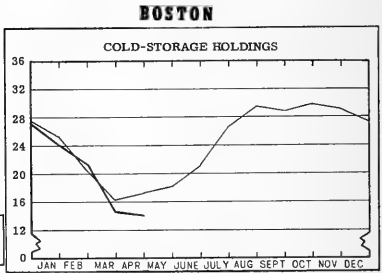
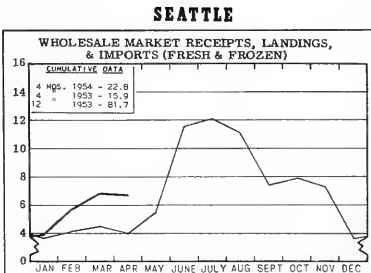
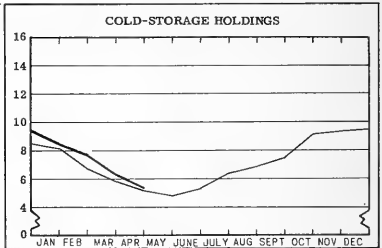
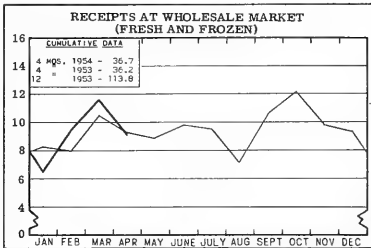


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

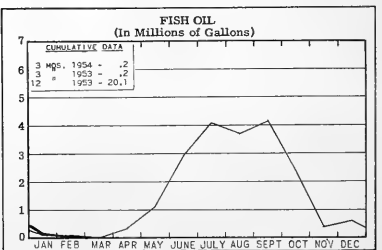
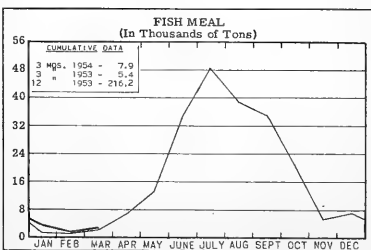
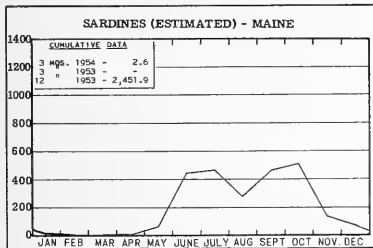
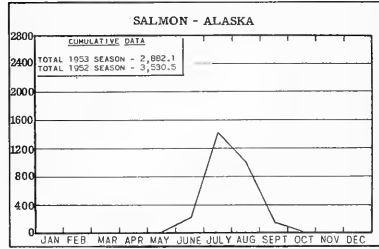
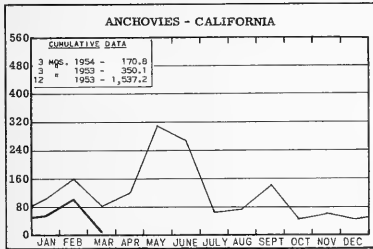
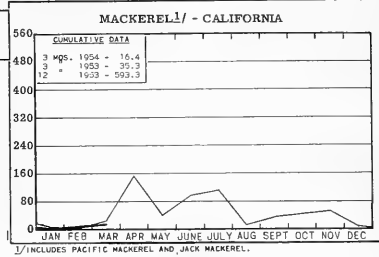
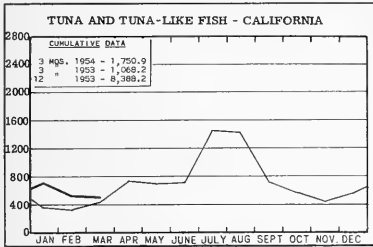


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



STANDARD CASES

Variety	No. Cans	Can Designation	Net Wgt.
SARDINES	100	$\frac{1}{2}$ drawn	$3\frac{1}{2}$ oz.
SHRIMP	48	--	5 oz.
TUNA	48	No. $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
SALMON	48	1-pound tall	.16 oz.
ANCHOVIES	48	$\frac{1}{2}$ lb.	8 oz.

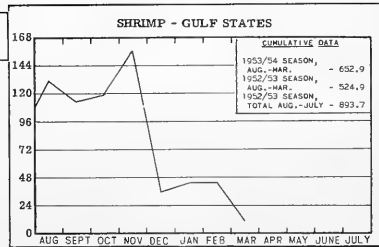
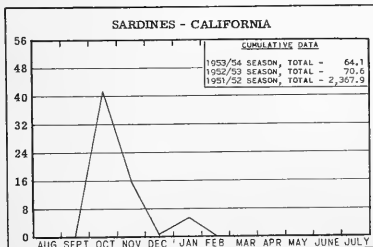
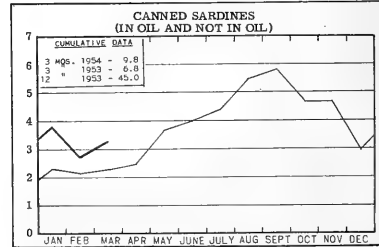
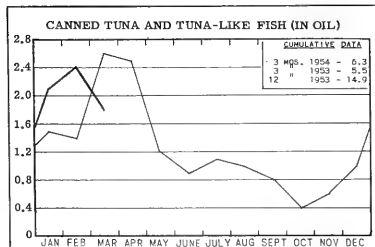
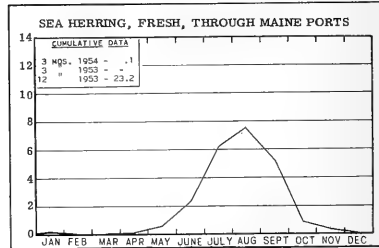
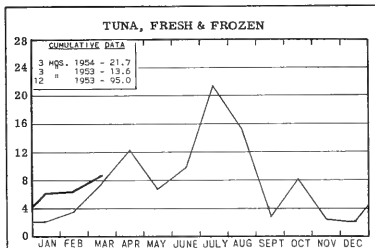
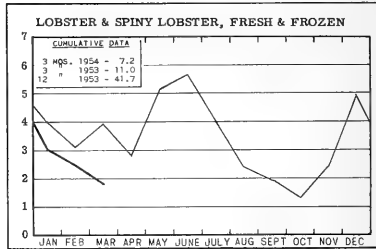
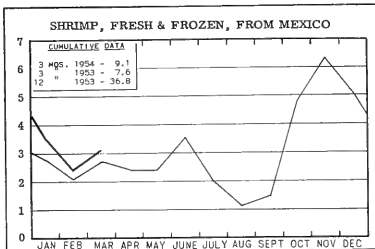
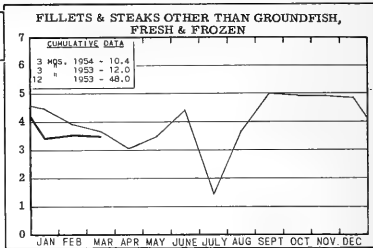
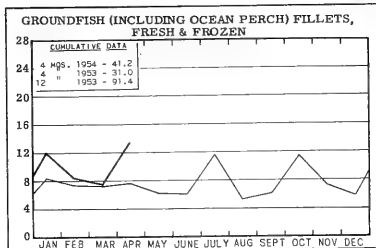


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds





FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.

FL - FISHERY LEAFLETS.

SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.

SSR - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

- | Number | Title |
|---------|--|
| CFS-963 | - Fish Meal and Oil, January 1954, 2 p. |
| CFS-966 | - New England Fisheries, 1952 Annual Summary, 8 p. |
| CFS-976 | - Mississippi Landings, February 1954, 2 p. |
| CFS-977 | - Maine Landings, February 1954, 5 p. |
| CFS-979 | - Fish Meal and Oil, February 1954, 2 p. |
| CFS-980 | - Texas Landings, February 1954, 3 p. |
| CFS-981 | - Massachusetts Landings, February 1954, 8 p. |
| CFS-983 | - Lake Fisheries, 1952 Annual Summary, 6 p. |
| CFS-984 | - Frozen Fish Report, March 1954, 8 p. |
| CFS-985 | - Packaged Fish, 1953 Annual Summary, 4 p. |
| FL -243 | - Aids for Small Business (revised), 6 p. |
| FL-336t | - Quarterly Outlook for Marketing Fishery Products, April-June 1954, 32 p. |
| FL -409 | - Fish and Shellfish Preferences of Household Consumers-1951. Part III-Summary by Income Groups, 47 p. |

Wholesale Dealers in Fishery Products (Revised):

- SL - 19 - Louisiana, 1954, 7 p.
 SL - 21 - California, 1954, 9 p.
 SL - 22 - Oregon, 1954, 4 p.
 SL - 23 - Washington, 1954, 9 p.

Canning Firms (Revised):

- SL -102 - Maine Sardines (including sea herring), 1953, 2 p.
 SL-102A - California Sardines (Pilchards), 1953, 1 p.
 SL -116 - Food for Animals from Marine-Animal Products, 1953, 2 p.
 SL -160 - Firms Manufacturing Menhaden Oil and Meal, 1953, 2 p.
 Sep. No. 371 - Offshore Salmon Explorations Adjacent to the Aleutians Islands, June-July, 1953.

SSR-Fish. No. 115 - Weakfish Migration in Relation to its Conservation, by Robert A. Nesbit, 84 p., processed, January 1954. The complex movements of weakfish have been studied by comparing the stocks of fish at several localities as to abundance, size, age composition, and rate of growth, and by tagging experiments. As a result of this study the author presents a hypothesis concerning the movements of the fish during each year of their life. "The most important conclusion to be derived from this study," says the author, "is that the fishery apparently draws on a common stock which originates chiefly in southern waters. Consequently, any conservation policy for the weakfish industry must consider the effect of fishing intensity on the total yield of the Middle Atlantic Bight."

SSR-Fish. No. 117 - Seasonal Abundance of Clam Larvae in Rhode Island Waters, 1950-52, by Warren S. Landers, 31 p., processed, March 1954. Since 1948 the Fish and Wildlife Service has carried on a biological study of the soft clam (*Mya arenaria*) and the hard clam (*Venus mercenaria*) of the Atlantic Coast of the United States. Much of the research was done in Narraganset Bay in Rhode Island, where there is a considerable commercial fishery for the hard clam or quahaug. From collections of larvae of soft and hard clams at two locations in Narraganset Bay, quantitative data on seasonal abundance were compiled. This report presents these data.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Alaska Fishery and Fur Seal Industries: 1950, by Seton H. Thompson, Statistical Digest No. 29, 71 p., illus., printed, 35 cents, 1953. This report was compiled by the field staff of the Branch of Alaska Fisheries and from sworn statistical returns submitted by all fishery operators in Alaska. Detailed reports and statistical tables concerning the operation and yield of the various fishery industries are presented, with added data on certain related matters, particularly the condition of the fishery resources. Under the section on fishery industries, the following subjects are covered: court decisions; Alaska Department of Fisheries; research; exploratory fishing investigations; administration; management; and general statistics on salmon, herring, halibut, shellfish, and miscellaneous fishery products. The second section on the Pribilof Islands fur-seal industry covers administration, fur-seal population studies, and general statistics on the fur seals taken in 1950. A statement is also included on sealing privileges accorded aborigines.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Biotic Influences Affecting Population Growth of Planktonic Algae, by Theodore R. Rice, Fishery Bulletin 87 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 54), 23 pp., illus., printed, 25 cents, 1954. Describes experiments in which two species of fresh-water algae, *Chlorella vulgaris* and *Nitzschia frustulum*, were used. The purpose of this study was to ascertain whether the biological products of a species could influence its own growth as well as the growth of another species under conditions which could be tested in laboratory cultures, and to consider whether these materials actually do exert an effect under natural conditions. Describes the preparation of cultures, and discusses growth rates and interactions of *Chlorella* and *Nitzschia*, inhibition of growth rate in conditioned media, effect of varying the initial concentrations of *Nitzschia* and *Chlorella*, and effect of antagonistic substances on phytoplankton growth.

Determining Age of Atlantic Shad from Their Scales, by James P. Cating, Fishery Bulletin 85 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 54), 18 pp., illus., printed, 20 cents, 1953. Determining the age of shad (*Alosa sapidissima*) from scales has been considered difficult by many workers, and recent investigators have attempted to ascertain only the number of times of spawning. Much of the difficulty in reading scales arises in locating the first three annuli because accessory rings, or false annuli, sometimes are found in this area of the scale, and the annuli are not always clearly defined. A method of locating these annuli, using transverse-groove counts, is presented. After the positions of the first three annuli are known, the age of the fish can be determined by counting any additional annuli which usually are easy to see, and adding the number of spawning marks. Criteria for determining whether annuli have been obliterated by spawning marks and the number of times the fish has spawned when one spawning mark has eroded into another are also presented.

"A Method for Cellulose Acetate Impressions of Fish Scales with a Measurement of Its Reliability," by Robert L. Butler and Lloyd L. Smith, Jr., article, The Progressive Fish-Culturist, vol. 15, no. 4 (October 1953), pp. 175-178, illus., processed (annual subscription \$1.25 domestic, US\$1.65 foreign). During recent years there has been a trend toward the use of cellulose acetate impressions of fish scales instead of the mounted scales themselves in age and rate-of-growth studies. Several difficulties have been encountered which cast doubt on the validity of the calculations made from impressions. Many presses either require excessive pressure or fail to record the thin edges of the scales on the plastic. When excessive pressure is used, there is a possibility that distortions may be introduced in the original impression or during subsequent storage. In order to minimize these difficulties, a press employing moderate pressure and considerable heat has been developed, and the reliability of calculations from the impressions has been checked in a series of experiments conducted over a two-year

period. This article describes a pneumatic press designed to operate on the 80- to 100-pound air pressure that is available in most laboratories, method of operation, and accuracy of the impression method.

Population Heterogeneity in the Pacific Pilchard, by Frances E. Felin, Fishery Bulletin 86 (From Fishery Bulletin of the Fish and Wildlife Services, vol. 54), 28 pp., illus., printed, 30 cents, 1954. The possibility of heterogeneity in stocks of *Sardinops caerulea* along the Pacific Coast of the United States and Canada is examined through evidence from growth and vital statistics of the fished population(s). Growth characteristics of six year-classes sampled in Canada are compared with those from San Pedro. Significant difference in predicted size indicates lack of homogeneity in populations of adults as sampled by the fishery in Canada and in San Pedro. Evidence from qualitative and quantitative differences in individual scale and growth patterns indicates some independence in the fished stock of the Pacific Northwest and southern California. Bimodality in length composition of certain year-classes is evidence that pilchard populations are not homogeneous. Large long-ranging pilchard may arise from spawning stocks off California while more southern stocks, smaller in size and more short-lived, have limited migration.

Propagation and Distribution of Food Fishes for the Calendar Years 1949-1950, by Lee M. Duncan and O. Lloyd Meehan, Statistical Digest 28, 40 pp., printed, 20 cents, 1953. Describes the general program of the Federal hatchery system in the propagation and distribution of food fish and the compilation of fish distribution data. Also includes statistical data for the calendar years 1949-1950 on fish and fish eggs distributed, and assigned to Federal agencies and state fish commissions. Distribution of fish and fish eggs by stations, and distribution of fish by states are also covered.

Use of Impounded Water for Fish Culture, by Harlan E. Johnson and Richard F. Brice, Research Report 35, 37 pp., illus., printed, 1953, 20 cents. Describes tests made at Dorena Dam Experimental Laboratory, September 1950 to November 1952, to determine the suitability of impounded water for fish culture.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

Abstract of Commercial Fisheries Laws of California, 1953-1955, folder, Department of Fish and Game, Sacramento 14, Calif. Describes license provisions for catching, selling, and processing fish and shellfish; boat registration provisions; open and closed seasons for certain fish and shellfish; lawful fishing nets and gear that may be used in certain districts; and the

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATIONS ISSUING THEM.

districts where commercial fishing is permitted. Lists 43 things regarding commercial fishing which are unlawful.

Arbejdet fra Fiskeriministeriets Forsøgslaboratorium for 1953 (Annual Report to the Danish Fishing Industry), 31 pp., printed, in Danish with English translation of the main experimental results. Fiskeriministeriets Forsøgslaboratorium, Øster Voldgade 10, København K, Denmark, 1954. Describes the results of the following experiments: storage of live lobsters; fat content of herring; freezing shrimp and salmon; breaded frozen fish; influence of the initial bacterial count on the keeping quality of herring tidbits; bacterial growth in herring tidbits and the distribution of bacteria in sauce and meat; effect of organic acids on the bacterial growth in herring tidbits; canned fish, salted fish, and fish silage.

The Black River Studies, The University of Missouri Studies, vol. XXVI, no. 2, 136 pp., illus., printed, \$2.50. The University of Missouri Studies, Columbia, Missouri, 1953. A study of the limnology and the fishery of the Black River, one of Missouri's principal Ozark streams. The findings of this research project are here presented in seven separate but related sections: (1) "The Black River Basin in Missouri," by Robert S. Campbell and John L. Funk. Describes the physical characteristics of the river and the river basin, and the chemistry, plankton, and rooted aquatic plants of Black River. (2) "The Benthos of Black River and Clearwater Lake, Missouri," by Timothy R. O'Connell, Jr., and Robert S. Campbell. A comparison of the variety and abundance of the bottom fauna in Black River with that of the same region after impoundment by Clearwater Lake. (3) "The Small Fishes of Black River and Clearwater Lake, Missouri," by Robert G. Martin and Robert S. Campbell. Describes the small-fish populations of Black River and Clearwater Lake. (4) "The Population of Larger Fishes in Black River, Missouri," by John L. Funk and Robert S. Campbell. Thirty-four species of fish were collected from three areas on the Black River in 1947 and 1948. The collections are analyzed by river section and by fishing methods. The limitations of the methods used and the effects of gear selectivity are discussed. (5) "Age and Rate of Growth of Five Species of Fish in Black River, Missouri," by Mercer H. Patriarche and Edward M. Lowry. The age and rate of growth of smallmouth bass (*Micropetrus dolomieu*), rock bass (*Ambloplites rupestris*), longear sunfish (*Lepomis megalotis*), gizzard shad (*Dorosoma cepedianum*), and green sunfish (*Lepomis cyanellus*) are presented. (6) "Management and Utilization of the Fishery of Black River, Missouri," by John L. Funk. The purpose of this paper is to evaluate the management and the utilization of the fishery resource of the Black River before impoundment of Clearwater Lake, and to assist in the formulation of a sound management program. (7) "Appraisal of the Fishery of Black River, Missouri," by Robert S. Campbell and John L. Funk. This appraisal brings together the major

findings of the various related studies conducted on Black River and Clearwater Lake, to demonstrate their interrelationship, and to present general conclusions. Descriptions of field stations and of methods are given in the appendix.

"British Columbia Lingcod," article, Trade News, December 1953, vol. 6, no. 6, pp. 6-7, processed, Department of Fisheries, Ottawa, Canada. Discusses the value of the lingcod fishery of British Columbia, and describes briefly the characteristics of the lingcod, its maximum sizes, and fishing methods.

The Commercial Fisheries of Maryland (A Special Report to the General Assembly of Maryland), Educational Series No. 30, 45 pp., illus., printed, Board of Natural Resources, Department of Research and Education, Chesapeake Biological Laboratory, Solomons Island, Maryland, January 1953. This bulletin is intended to provide to the legislators and the public in general information concerning the fisheries of the State of Maryland, including facts relative to their past condition, their current status, and the possibilities they offer for future development. Briefly describes the nature and extent of the Chesapeake Bay and its tributaries, characteristics of the Chesapeake Bay fishery, the five types of gear used in the capture of commercial fish in Maryland waters, life history of the various species of commercial fish, causes of depletion, and problems of management. Also describes the blue-crab industry of Maryland, its life cycle, causes of decline, and problems of management. The bulletin also discusses the oyster industry of Maryland, how oysters live and multiply, causes of depletion, and problems of management.

Commission on Foreign Economic Policy Minority Report, by Daniel A. Reed and Richard M. Simpson, 25 pp., printed, 15 cents. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., January 1954. This report is divided into two parts: (1) an analysis and criticism of the Commission of Foreign Economic Policy Report to the President and the Congress; and (2) recommendations, as alternatives to those of the Commission, for a foreign economic policy.

(Connecticut) Report of the Shell Fish Commissioners (July 1, 1950-June 30, 1953), 22 pp., printed, Office of the Shell-Fish Commission, 185 Church Street, New Haven, Conn., 1953. Describes the establishment of spawning beds in various rivers and harbors in an endeavor to perpetuate the oyster industry of Connecticut. Also describes the starfish survey, formerly conducted by the U. S. Fish and Wildlife Service. In addition to a financial statement, this report gives an alphabetical list of individuals and vessels licensed to work on the natural oyster beds of Connecticut; a list of owners and acreages of grounds under perpetual franchise; State grounds; and town grounds. Included is a statement of how to lease grounds and excerpts from the State's shellfish laws. No data on production are given.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATIONS ISSUING THEM.

Consumption of Food in the United States, 1909-52,

Agriculture Handbook No. 62, 253 pp., illus., processed, 70 cents. Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C., September 1953. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This publication revises and brings up to date the detailed information on per-capita consumption of all major food commodities (including fish and shellfish) in continental United States, including the basic data on supplies and distribution from which the consumption estimates are derived. Sources and methods are described and evaluated; indexes of supply-utilization, production, and per-capita civilian consumption are developed; the nutritive value of the food supply is estimated and appraised; and some supplementary information useful for the analysis of the consumption of and the demand for food is presented.

Dealers in Trout and Pondfishes, 15 pp., processed. Sport Fishing Institute, Bond Building, Washington 5, D. C. A list of dealers in trout and pondfish, compiled by the U. S. Fish and Wildlife Service. All names are arranged alphabetically by localities under the states in which they operate.

Federal Aid in Fish and Wildlife Restoration (Annual Reports of the Dingell-Johnson and Pittman-Robertson Programs for the Fiscal Year Ending June 30, 1953), 95 pp., illus., printed. Wildlife Management Institute, Wire Building, Washington 5, D. C. Describes the accomplishments of the Pittman-Robertson wildlife restoration work and the Dingell-Johnson fish restoration work for the fiscal year ending June 30, 1953. Under the section describing the accomplishments of the fish-restoration program are discussions of the fisheries investigations, fisheries development, acquisition of public fishing waters, coordination of fish-restoration projects, and fiscal aspects. Financial tables present a description of the individual fish and wildlife restoration projects by states, together with information concerning work proposed and the status of funds; apportionment of funds to each state for use in fish restoration projects; apportionment of federal aid in fish restoration funds, states' contributions, and grand total for fiscal years 1952-54; and summary of Federal aid in fish restoration apportionments, obligations, reversions, and balances for fiscal year 1953.

Fisheries Research Papers, vol. 1, no. 2 (March 1954), 51 pp., illus., printed. Washington Department of Fisheries, 1308 Smith Tower, Seattle, Wash. Contains the following articles: A Preliminary Study of the Population of English Sole, *Parophrys vetulus*, in Holmes Harbor, Washington, by A. T. Pruter and R. Van Cleave; Selectivity of Cod-end Mesh Sizes in Otter Trawling, by Jerry Jurkovich; Food of the Dogfish, *Squalus ocanthias*, by Kelsow Bonham; New and Little Known Fishes of the Eastern Pacific, by Arthur D. Welander and Dayton L. Alverson; Occurrence of the Eel-pout, *Aprodon cortezianus* in Queen Charlotte Sound, B. C., by Arthur T.

Palmen; A Multiple-Depth Running Plankton Sampler, by Ronald E. Westley; a Newly Identified Oyster Predator, by Charles E. Woelke.

(Florida) Summary of Florida Commercial Marine Landings for 1952 (Report to Florida State Board of Conservation), by Irving J. Cohen with the collaboration of Billy F. Greer, 27 pp., processed. The Marine Laboratory, University of Miami, Coral Gables, Florida, September 1953. Contains tables summarizing the total Florida commercial landings and value of food fish, non-food fish, shellfish, and miscellaneous items by species for the year 1952; a breakdown of the landings between east coast and west coast; and landings and value by county by species. Compilation of Florida fisheries data is complicated by several factors. Throughout the State there are 400 to 420 wholesale fish dealers distributed over 1,200 miles of coastline and reporting from 33 counties. There are over 70 commercial species caught, the landings of which totaled over 256 million pounds in 1952. This represents more coastline, more dealers, and more species than any other state in the Nation. Florida's catch ranks about fourth to sixth in both production and value in the United States. The monthly collection of fish and shellfish landings in Florida is a cooperative undertaking between the U. S. Fish and Wildlife Service and the Marine Laboratory of the University of Miami on behalf of the Florida State Board of Conservation.

Fisheries Year-Book and Directory 1953-54 (International Reference Book and Directory of the Fishing and Fish Processing Industries), edited by Harry F. Tysser, 441 pp., illus., printed. British-Continental Trade Press Ltd., London, England. (Available in the United States from John D. Griffiths, American Sales Director, British-Continental Trade Press Ltd., 3606 Parkwood Drive, Greensboro, N. C.) A valuable reference on the commercial aspects of the fisheries and a book with a wide scope. All phases of the fisheries of the world are touched upon—catch, processing, vessels, gear, research, edible products and byproducts, and recent developments and techniques in various countries. The first part of the book has articles on various phases of the fishery industries and the second part is an extensive directory of firms engaged in the various branches of those industries. The chapter "Around the World" is a survey of the fisheries, fish processing, and trade in Argentina, Australia, Belgium, British West Africa, Canada, France, Greenland, Ireland, Israel, Italy, Morocco, Netherlands, New Zealand, Portugal, South Africa, Sweden, United States, and U.S.S.R. The fishery industries of Great Britain, Iceland, Denmark, and the German Federal Republic are treated more extensively in separate articles. Other chapters discuss English fishery research, migrations of mackerel, quick freezing of fish, and modernizing the fishing fleet. One chapter—"Fish Varieties on the Market"—describes and illustrates 90 varieties of fish in all the principal markets of the world. Most of the statistics are for 1952. A fish supply calendar is included, tabulated by

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type of fish, area of catch, and months of supply. Among the lists included are: organizations and trade associations, trade journals of interest to the fishery industries, and a Who's Who of the fishing industry. A dictionary of fish names gives the scientific, French, German, Norwegian, Danish, Swedish, and Dutch names of a considerable number of fish and shellfish.

The second part of the book consists of a directory divided into industry classifications, with the names of firms grouped by countries. Included are: (1) exporters and curers, quick freezers, and trawler owners; (2) importers and wholesalers; (3) fish canners and preservers; (4) machinery and equipment for fish processing, refrigeration, etc.; (5) packing machinery, materials, etc.; (6) ship builders and repairers, ship chandlers, nets and cordage, instruments, and other equipment; (7) fishery byproducts—meal, oil, vitamins, etc.; and (8) cold storage and transportation. Although these directories do not list many United States firms, the listings for other countries seem to be fairly extensive. Also included is a list of trade marks, descriptions of the products and merchandise under them, and the producers and distributors using them. The final list in the book is a "Buyers' Guide and Classified List of Advertisers." This handbook incorporates the "World Fisheries Year-Book," "North Atlantic Fisheries Year-Book," and the "Herring Exporters Manual."

"Flying for Menhaden," by James Wharton, article, The Commonwealth, vol. XXI, no. 1, January 1954, pp. 12-13, 36, illus., printed, Virginia State Chamber of Commerce, 111 N. Fifth Street, Richmond 19, Virginia. Describes the use of planes, usually independently owned, in the search for menhaden from North Carolina to Long Island. The number of planes serving the fish factories that dot the coast all the way to Texas has been showing a gradual increase through the years. Even before the days of the radiotelephone, planes were sent out. But the only method then feasible was to drop buoys when schools were discovered, leaving the boat to find the buoy. This was a tedious and uncertain procedure and was discontinued. Now communications are even being made with the purse boats (the small boats launched from the mother-ship to spread the net) from the plane by walkie-talkie. The use of planes in the menhaden fishery cuts down operating expenses by curtailing the often aimless wandering of the boats when no fish are visible. That alone, say the pilots, is enough to warrant their services. The captains and plant operators agree that plane spotting is here to stay. The catch, in the area from Long Island to North Carolina, for the season that closed in October 1953, passed the billion-fish mark.

Food and Agriculture Organization

The Food and Agriculture Organization has published reports describing that Agency's activities under the Expanded Technical Assistance Program for developing the fisheries of many countries.

These reports have not been published on a sales basis, but have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization, Viale delle Terme di Caracalla, Rome Italy.

Report to the Government of India on the Present and Prospective Activities of the Pilot Deep Sea Fishing Station in Bombay, FAO Report No. 117, 31 pp., illus., processed, May 1953. The objective of the program, the work accomplished, and recommendations for developing the fisheries of India appear in this report.

Report to the Government of Yugoslavia on the Handling, Collection, Transport, Storage and Refrigeration of Fish, FAO Report No. 220, 61 pp., illus., processed, January 1954. Objective of the program: fishing operations (bluefish, non-migratory, and trawler fisheries); handling, collection and transport of bluefish; refrigeration facilities; marketing and distribution; and continuing assistance to the fishery are the subjects covered by the report.

Report to the Government of India on the Development of Inland Fisheries in West Bengal, FAO Report No. 226, 30pp., processed, January 1954. Describes the fresh waters of West Bengal and their present use and work accomplished during the assignment; presents recommendations for developing the inland fisheries of West Bengal.

Report to the Government of Israel on Fishing Methods, FAO Report No. 227, 16 pp., 1 plate of photographs, processed, January 1954. Discusses the Mediterranean fisheries, fisheries of Lake Tiberias, and potential fisheries on the Gulf of Aqaba. Presents recommendations on fishing methods.

Report to the Government of Yugoslavia on the Fish Canning Industry, FAO Report No. 106, 12 pp., processed, April 1953. Discusses objective of assignment, summarizes work accomplished and results of a survey, and presents principal recommendations for future action for developing the fish-canning industry in Yugoslavia.

Report to the Government of Libya on the Fisheries of Libya, FAO Report No. 18, 65 pp., map, and 16 plates of photographs, processed, November 1952. Discusses the sponge fishery, fishing (including inshore, tuna, possibility of developing the marine resources, and productivity of the Libyan sea), and presents recommendations for expansion of the fisheries. The map which is included shows the Libyan sponge and fishing grounds.

Report to the Government of Chile on Food Fishes of Chile, FAO Report No. 45, 88 pp., and 3 plates of photographs, processed, November 1952. Describes working conditions, work carried out, observations on environment in the sea, presents studies on the biology of the various marketable fishes, and plans for future work.

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(FOA) Monthly Operations Report (Data as of August 31, 1953), 67 pp., illus., processed, Division of Statistics and Reports, Foreign Operations Administration, Washington 25, D. C. This issue, which contains data through August 31, 1953, summarizes the activities of the Mutual Security Agency and the Technical Cooperation Administration consolidated under the Foreign Operations Administration as of August 1, 1953. Charts and appendix tables on the European Program cover operations beginning with April 3, 1948. Charts and appendix tables on the Far East Program cover MSA/ECA operations under the China Area Aid Act of 1950. A section of the report deals with materials development.

(FOA) Monthly Operations Report (Data as of December 31, 1953), 60 pp., illus., processed, Monthly Operations Report (Data as of January 31, 1954), 98 pp., processed, Division of Statistics and Reports, Foreign Operations Administration, Washington 25, D. C. In order to make the Monthly Operations Report a more useful document, a number of advance statements have been added covering FOA allotments, authorizations, and expenditures. This practice, initiated with the December issue, will be continued in future releases of the report. Reflecting the inclusion of later statistics, the report will bear the date of the advance statistical statements. For example, the December 31 issue is dated December 1953, and there will be no Monthly Operations Reports dated September, October, or November 1953. Charts and appendix tables on the European Program, included in these issues, cover operations beginning with April 3, 1948. Charts and appendix tables on the Far East Program cover MSA/ECA operations under the China Area Aid Act of 1950. Charts and tables on the operations of the Technical Cooperation Administration in Latin America, the Near East and Africa, and South Asia, now consolidated in the Foreign Operations Administration, are included in a special section of this report. The January 1954 issue describes the FOA program in India.

Gulf Stream North, by Earl Conrad, 253 pp., printed, \$3.50. Doubleday & Co., Inc., 575 Madison Ave., New York 22, N. Y., 1954. Menhaden fishing is the subject of this novel. It is the story of how fishermen of the Atlantic coast net the menhaden--the leading species of fish and shellfish caught by United States fishermen. In 1953 the United States catch of menhaden totaled about 1.7 billion pounds--350 million pounds more than in 1952 and about 200 million pounds above the 1936 record catch of 1.5 billion pounds. Menhaden is not well known because it is not an edible species of fish and is utilized entirely for making fish meal, oil, and solubles. How the fishery grew up is brought out in this novel. There have been magazine articles on the menhaden fishery and a U. S. Fish and Wildlife Service educational film ("The Story of Menhaden"), but this is the first time that it has been made the subject of a novel. The story describes life aboard a purse seiner vessel, the setting and hauling of the enormous purse-seine net,

the use of striker boats, and the use of airplane spotting for locating the fish. An exciting five days off the coast of Georgia is the scope of the novel. It is the fictional account of an old menhaden vessel that has already brought in millions of fish in its time. Woven around an outline of the menhaden industry's development, the novel relates the tale of those who fish for menhaden with the large purse seine nets. Sighting the fish, the life among the fishermen, some of the chants that they sing while hauling in the net, the heartbreaking sight of tons of fish diving and breaking the enormous expensive purse-seine net, and a storm at sea are realistically portrayed. The author has captured the salty language of the menhaden fishermen. It is a book for those interested in fisheries and those who just want a good story.

--J. Pileggi

"The Impact of Science in the Fishing Industry-I," by Daniel P. Norman, article, Monthly Review Federal Reserve Bank of Boston, vol. 35, no. 12 (December 1953), pp. 6-7, printed, Federal Reserve Bank of Boston, Boston, Mass. Innovations originating in electronics, biology, chemistry, and other fields are accelerating changes in the traditional methods of catching, processing, and marketing fish. This article discusses such electronic devices as echo sounders, which are coming into wider use for navigation and also for the accurate measurement of the depth and density of schools of fish. Other types of electronic equipment used in the fishing industry are also discussed.

(India) Annual Administration Report of the Department of Fisheries, Bombay State, for the Year 1952-53, 67 pp., illus., printed, Government Book Depot, Charni Road Gardens, Bombay 4, India, 1954. Reports on the marine fisheries, fish-curing yards, fisheries schools, socio-economic work, fresh-water fisheries, and technological studies. Statistics are also included on the different varieties and quantities of fish landed in 1952/53.

Inter-American Tropical Tuna Commission Annual Report for the Year 1952 (Comision Interamericana del Atuna Tropical Informe Anual Correspondiente al Ano 1952), 61 pp., printed in English and Spanish. Inter-American Tropical Tuna Commission, La Jolla, Calif., 1953. Included in this report are: the recommended program of investigations; progress on investigations; membership changes; and a short resume of the Commission's regular annual meeting at San Jose, Costa Rica, on August 13. An appendix to the report describes the investigations conducted by the Commission during 1952, and discussed in this section are the compilation of current statistics of total catch; compilation of detailed data respecting current fishing operations; derivation of measures of success of fishing and abundance of the fish populations; collection and analysis of historical data respecting the development of the fishery; investigations of the biology and ecology of bait species; investigation of the general oceanography of the Eastern

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Pacific; investigations of biology and ecology of tunas. The Commission, established by a Convention between the United States and Costa Rica, has as its purpose the collection and interpretation of information which will facilitate maintaining, at levels of maximum sustained yield, the populations of tropical tunas in the Eastern Pacific and of the bait species used in their capture. The Commission, organized in 1950, is directed by the Convention to undertake investigations of the tunas and bait species, and to make recommendations for joint action by the member governments designed to attain the objectives of the Convention.

Interim Report on Mullet Research, by G. C. Broadhead and H. P. Mefford, Special Research Bulletin No. 8, 9 pp., illus., processed. The Marine Laboratory, University of Miami, Coral Gables, Fla., January 1954. A preliminary report on a study begun in 1948 to evaluate the economic and biological status of the Florida mullet fishery. According to the consensus in the industry this valuable fishery was declining due to the lack of proper management. The industry felt that supplies of mullet were dwindling because of overfishing and the taking of spawning and undersized fish. This report discusses briefly (a) the grave marketing problems facing the industry, (b) the high fishing intensity and high natural mortality revealed by tagging and other means, (c) the relatively short migrations undertaken by Florida west coast mullet and the somewhat longer migrations taking place on the Florida east coast, and (d) the different sizes and times of maturity in various subpopulations.

Maryland's Commercial Fishing Gears: I. The Fin-Fish Gears, by Coit M. Coker, Educational Series No. 18, 37 pp., illus., printed. Board of Natural Resources, Department of Research and Education, Solomons Island, Md., February 1949. Presents brief descriptions of the five major types of gears used to catch fish commercially in Maryland. Indicates how each gear is fished and what it catches. The five types in use are the pound net, gill net, fyke net (including eel pot), haul seine, and otter trawl. The purse seine is mentioned, although it is now barred in Maryland.

(Colony of Mauritius) Annual Report of the Fisheries Branch, 1952, No. 16 of 1953, 31 pp., processed. Fisheries Branch, Colony of Mauritius, 1953. The activities of the Fisheries Branch during 1952 are described, and the results of two cruises by the refrigerated fishing vessel Silverlord are presented. Deep-sea fishing, the systematic study of fish species, shark fishing, production by major ports and banks, and other catch data on a monthly and annual basis are discussed. An appendix lists the scientific and common French name of the fishes of Mauritius.

The Minimum Shrimp Size Regulation in South Carolina, by G. Robert Lutz, Contribution from Bears Bluff Laboratories No. 16, 14 pp., illus., printed. Bears Bluff Laboratories,

Wadmalaw Island, South Carolina, February 1954. This is part of a report based on a study of the shrimp and shrimp industry of South Carolina. This section deals entirely with the minimum size restriction on shrimp and, in effect, simply shows that the "55 Count" law is impracticable. The author states that "It is evident that the minimum size restriction at fifty-five count heads off is wasteful and will serve no purpose in protecting shrimp. In fact, no minimum size regulations seem useful or necessary. However, if South Carolina must have a minimum restriction law, that restriction should be placed at the four-inch size, which is approximately a ninety count shrimp heads off, or a fifty-five count shrimp heads on. It is pointed out that even if such a law is passed, with the present gear in use other trawls will still take shrimp under four inches. In order to comply with the law, these shrimp will simply be culled out at sea and thrown away. Ultimately, it is hoped that some type of selective gear can be recommended which will eliminate the catch of the majority of shrimp under four inches, but much further work must be done before such recommendations can be made."

(New Jersey) Annual Report of Division of Fish and Game (For the Fiscal Year Commencing July 1, 1952, and ending June 30, 1953), 51 pp., printed. Division of Fish and Game, Department of Conservation and Economic Development, Trenton, N. J. Describes the activities of the New Jersey Division of Fish and Game. The first section deals with the Fish and Game Council, legislation, and the Fish and Game Code. The part dealing with fish reports on the hatchery operations, fish distribution and reclamation, fish distributed by the Federal Government, pound fisheries, the 1952 pound catch by species, menhaden and food fish licenses, special netting licenses, fisheries management, the number of fish by species landed in New Jersey for fiscal year 1952/53, and the Delaware River and Hudson River shad industries. There is also a section on game and finances, as well as a chapter on stocking of New Jersey waters.

Observations on the Early Life History of the Giant Scallop (PECTEN MAGELLANICUS), by Frederick T. Baird, Jr., Research Bulletin No. 14, 7 pp., illus., printed. Department of Sea and Shore Fisheries, Vickery-Hill Bldg., Augusta, Maine, August 1953. Describes a study of the spawning and rearing of the giant scallop. For three successive years spawning was successfully induced during a two-month period, although at no time could scallops be reared successfully beyond the trochophore stage. These experiments corroborated the observations made previously by other investigators, since their efforts to rear scallops had been unsuccessful. Also describes the experimental fishing operations in search of young scallops of the first and second year-classes. The author states that: "From the data presently available from three years' records it is evident that juvenile scallops average approximately 2 mm. at the end of the first growing season. At the end of the second growing season the attained growth ranges from

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5-12 mm. This attained growth appears to be dependent on the growth attained during the first growing season. In aging scallops the second annulus or winter ring indicates a scallop approximately one and one-half years old."

Oyster Bulletin, vol. II, no. 1 (April 9, 1954), 2 pp., processed. Chesapeake Biological Laboratory, Department of Research and Education, Solomons Island, Md. This year a series of oyster bulletins again will be issued by the Chesapeake Biological Laboratory. These bulletins will contain items of interest to oyster producers with special emphasis upon spatfall and fouling of test shells exposed in various areas. The bulletins will appear more frequently during the summer and early fall months when oyster setting is in progress. This first bulletin presents data on exposed test shells and background information on development of oysters in the Chesapeake Bay area.

"Point Four Activities in Fishery Technology in Peru;" by Norman D. Jarvis, article, Food Technology, vol. 8, no. 4 (April 1954) pp. 177-179, printed, single copies: domestic \$1, foreign \$1.25. Institute of Food Technologists, Chicago, Ill. (Available from Business Manager, 176 West Adams St., Chicago 3, Ill.) An idea of the Point 4 program in fisheries as it works in Peru is given in this article by the author. In addition, the work in fishery technology described is an example of the breadth of the field the food technologist may be called on to cover in the so-called "underdeveloped" countries. Discussed in the article are the background factors in the development of the Peruvian fishery industry, and the development of a technological laboratory and training program. The nature and scope of the program is described. "The Peruvian technological laboratory has made good progress," states the author. "The technologists have learned to work independently and have found means for increasing the production of fresh, frozen, cured, and canned fishery products in the domestic market and are showing the fishing industry of Peru how to produce products of better quality."

Quarterly Report on Fisheries Research, (December 1953), 6 pp., processed. The Marine Laboratory, University of Miami, Coral Gables, Florida. A report of the work carried out for the Florida State Board of Conservation on the following research projects: shrimp, mullet, blue crab, sailfish, scallop, swordfish, and red tide.

Report to Congress on the Mutual Security Program (For the Six Months Ended December 31, 1953), 70 pp., illus., printed, 45 cents, Mutual Security Agency, Washington, D. C., December 31, 1953. (For sale by Superintendent of Documents, Washington 25, D. C.) Covers the operations of the Mutual Security Program during the six months ended December 31, 1953.

The Status of the Alewife Fishery in Maine, by Frederick T. Baird, Jr., Fisheries Circular

No. 13, 9 pp., printed. Department of Sea and Shore Fisheries, Vickery-Hill Building, Augusta, Maine, August 1953. A summary of existing conditions in the alewife fishery in Maine and an outline of the changes which have taken place in the past ten years. Describes briefly the life history of the alewife, spawning ground accessibility, and potential areas capable of supporting alewife runs. Recommendations for maintaining and improving the alewife fishery are also presented.

"The Striped Bass in New York Waters," by Edward C. Raney, article, The New York State Conservationist, vol. 8, no. 4 (February-March 1954), pp. 14-16, illus., printed, single copy 25 cents. New York State Conservation Department, Albany, N. Y. (Available from the Conservationist, Room 515, Arcade Bldg., Albany 1, N. Y.) This is a summary of what is known about the striped bass as it pertains particularly to New York State and the relation of the New York State stocks to striped bass found elsewhere along the Atlantic Coast. The author points out that the New York State Conservation Department, under the Dingell-Johnson Federal Aid program, is about to embark on an investigation which will reveal badly needed facts about the basic biology of striped bass in New York waters.

"Trolling the Pacific," article, Trade News, February 1954, vol. 6, no. 8, pp. 6-7, 22, illus., processed. Department of Fisheries, Ottawa, Canada. Describes the modern British Columbia trolling boats and the trolling gear used by these boats to catch silver and coho salmon. In recent years between 4 and 5 thousand troll licenses have been issued each year in British Columbia, points out the article.

Tuna--A Saga of the Sea, 35 pp., illus., printed. Tuna Research Foundation, 19 Pine Ave., Long Beach 2, Calif. Presents a collection of easy-to-prepare canned tuna recipes. After a short history of the tuna industry, the booklet discusses the nutritional value of canned tuna. The recipes feature canned tuna in oven specialties, salads, top-of-the-range dishes, sandwiches, soups, and hors d'oeuvres. The booklet is very attractively printed with many color plates.

"En Undersøgelse af Anvendeligheden af Elektrollytfortinnet Blik til Dansk Fiskeog Grøntkonserves," by Knud Nielsen, reprint, Konserves, vol. 11, no. 11, 5 pp., illus., printed, in Danish with summary in English. Fiskeriministeriets Forsøgslaboratorium, Oster Volgdage 10, København K, Denmark, November 1953. Describes experiments in the packing of canned fish in electrolytic tinned cans. According to the author, "the experiments proved that none of the products can obtain a satisfactory keeping quality in unlacquered tinplate, and only relatively few products, such as sardines in oil and mackerel in oil, can be packed in lacquered electrolytic tinplate. Canned fish in tomato and other more corrosive products cannot be packed in electrolytic tinned cans lacquered with the lacquers available in Denmark at present."

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"Underwater Sound Production and Concurrent Behavior of Captive Porpoises, Tursiops truncatus and Stenella plagiodon," by F. G. Wood, Jr., article, Bulletin of Marine Science of the Gulf and Caribbean, vol. 3, no. 2, Sept. 1953, p. 120-133, illus., printed, \$2 for individual numbers. University of Miami Press, Coral Gables, Florida. Characteristic sounds in the sonic range made by captive dolphins, or porpoises, were heard and recorded using underwater listening gear. The phonations described include those elicited by strange objects, those which accompany feeding activity, a distinctive sound heard during the mating season, and others less clearly associated with particular circumstances or stimuli. Tursiops truncatus is highly vocal, a characteristic which may apparently be related to certain behavioral traits and to its usual coastal or inshore environment. On the other hand, only two types of phonation have definitely been attributed to Stenella plagiodon, an offshore species whose behavior differs in many respects from that of Tursiops. Previous accounts of porpoise sounds and the circumstances attending their production are reviewed.

(Union of South Africa) Fishing Industry Research Institute Sixth Annual Report of the Director (1st April, 1952-31st March, 1953), 27 pp., printed. Fishing Industry Research Institute, Cape Town, South Africa. Summarizes briefly: (1) the general activities of the Institute, (2) progress on research investigations, and (3) the results of routine inspections and analyses. Research projects reported upon include studies on fresh stockfish, salting and drying of stockfish, frying, freezing, rock-lobster canning, fish canning, and fish meal.

(Union of South Africa) The Marine Oils Industry of the Union, Report No. 337, 114 pp., processed. Board of Trade and Industries, Department of Commerce and Industries, Pretoria, Union of South Africa, 1953. This is a report of an investigation which is part of the general inquiry into the manufacturing industries of the Union of South Africa. It deals with the industries producing crude whale oil and whale meal, crude fish body oils and fish meal, and processed fish body oil as well as vitamin oils. The report points out that the whaling companies at present only produce crude oil and certain byproducts, of which whale-meat meal is by far the most important. The further processing of the oil is undertaken by the industries using it as a raw material. The crude fish oil, on the other hand, is to a large extent being processed for further use in other industries. Although most of the members of the fish-oil industry also engage in canning of fish, this phase has been excluded from this investigation. The scope of the report methods used for the investigation, and a discussion of fats and oils in general make up the Introduction. Part I (The Whaling Industry) deals with the size and organization of the industry, including the products produced and their uses; international regulation of whaling; world production, trade, and prices; investment and employment in the Union industry; the products of the local industry and their disposal. Under

operating results, the report discusses the capital structure and profits of the whaling industry, external factors bearing on the fortunes of the industry, and internal efficiency. Part II describes the fish-oil industries, and discusses the size and organization of the fish body oils industry. Under size and organization of the fish body oils industry, the report discusses the general background, rise and significance of the Union industry, and the organization of the industry. Under efficiency and operating results of the fish body oils industry is included external efficiency, internal efficiency, and operating results. A chapter on Public Policy deals with conservation, monopolistic conditions, and protection for the fish body oils industry. Another chapter describes the vitamin oils industry. A summary and recommendations make up the last chapter.

"Use of Gill Nets in Studying Fish Populations, Clear Lake, Iowa," by Kenneth D. Carlander, 5 pp., reprint from Iowa Academy of Science, vol. 60 (1953). Department of Zoology and Entomology, Iowa State College, Ames, Iowa. Standard experimental gill nets were used to take fish samples for age and growth studies. This report is an attempt to derive, from the catch records, information on changes in abundance of the various species of fish. This is part of Project 39 of the Iowa Cooperative Fisheries Research Unit, sponsored by the Iowa State Conservation Commission and by the Industrial Science Research Institute of Iowa State College, with the cooperation of the U. S. Fish and Wildlife Service.

(Virginia) Fifty-fourth and Fifty-fifth Annual Reports of the Commission of Fisheries of Virginia (Fiscal Years Ending June 30, 1952 and June 30, 1953), 64 pp., illus., printed. Commission of Fisheries, Newport News, Va., 1954. Describes the oyster, crab, and fishery industries of Virginia and gives statistical data on the number of bushels of oyster shells planted by the Commission of Fisheries in its repletion program. Includes reports of the Superintendent of Hatches covering the shad-hatching work on the Chickahominy, Mattaponi, and Pamunkey Rivers for 1952 and 1953. A report from the Virginia Fisheries Laboratory describes its activities for the period July 1951 through June 1953, with special reference to the oyster, blue crab, croaker, and shad research studies. Also shows the revenue derived by the State from the fish and shellfish industries under supervision of the Commission of Fisheries of Virginia and also the expenditures of the Commission.

What About the Wage Gap?, Publication No. 134, 7 p., printed. The American Tariff League, Inc., 19 West 44th St., New York 36, N. Y., 1954. The gap between what the average United States worker earns and what the foreign worker earns is of considerable interest to the United States fishing industry because of the large amounts of fishery products imported into this country. This publication presents a study of the wage gaps for 13 foreign countries and the United States. In the report it is pointed out

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that "A main reason for tariff in the United States is to offset in some degree, and where necessary, the wage gap between domestic and foreign workers, so that foreign producers compete fairly in the United States market with American producers who pay the American scale of wages."

--J. Pileggi

What's the Answer? (A Brief Guide to Sources of Business Statistics), 30 pp., printed, 50 cents. Committee on Business Statistics, Chamber of Commerce of the United States, Washington 6, D. C., 1953. This pamphlet outlines how to acquire and organize a low-cost statistical library, and suggests other valuable reference works for the less modest budget. It includes several general publications in each of many fields, but is not intended to be a complete listing for any particular field.

TRADE LISTS

The Office of Intelligence and Services of the Bureau of Foreign Commerce, U. S. Department of Commerce, has published the following mimeographed trade lists. Copies of these lists may be obtained by firms in the United States from that office or from Department of Commerce field offices at \$1.00 per list:

Commercial Fishing Companies and Fish Exporters - Brazil, 6 pp. (March 1954). Lists

the names and addresses, size of firm, and type of products handled. The report includes a brief summary of basic data on the fisheries of Brazil, and comments: "Although the coasts of Brazil abound with fish, the commercial fishing industry is in the initial stage of development. Primitive methods of fishing still prevail throughout the country. Only a limited number of fishing companies are pioneering in this field on a commercial scale."

Feedstuffs - Importers, Dealers, Manufacturers, and Exporters - Philippines, 7 pp. (March 1954). Includes firms handling fish meal and oil. Lists the names and addresses, size of firm, and type of products handled by all dealers in feedstuffs in the Philippines.

Oils (Animal, Fish and Vegetable) - Importers, Dealers, Producers, Refiners and Exporters - Chile, 11 pp. (February 1954). Lists the names, address, and size of the various firms handling fish and whole oils and their U. S. representatives, if any. The report points out that due to the low production of oil-seeds in Chile, imports of edible and industrial oils have been necessary in recent years--only fish and olive oil are usually exported from Chile.

Provisions - Importers and Dealers - Spain, 17 pp. (February 1954). Includes firms landing fishery products--includes the size of the firm and the type of products and their U. S. representatives, if any.



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HOW TO COOK CLAMS

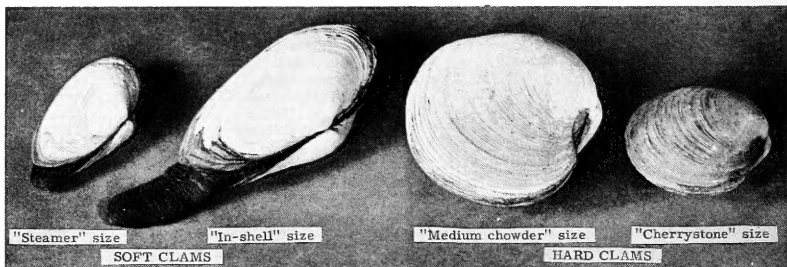
The U. S. Fish and Wildlife Service's Test Kitchen Series No. 8, How to Cook Clams, contains 27 choice recipes kitchen tested by the Service's home economists. Wholesalers and retailers handling clams will find this illustrated booklet a valuable sales aid as well as an eye-opener to the number of different methods for preparing this delicately-flavored shellfish. Recipes and other material in this booklet may be reproduced freely and without restriction.

Many traditions have grown up around the serving and eating of clams. Annual clam-eating contests are held in various coastal regions of the country. The connotations of the term "clambake" have extended the use of that word far beyond its original meaning. Few controversies (in cooking circles, at least) have more participants than that which centers on the proper way to make clam chowder.

Several species of clams are widely used for food, with the market varieties of the East Coast differing from those of the West Coast.

On the Atlantic Coast, the marketed species are the hard clam, soft clam, and surf clam. The hard clam is commonly called "quahog" in New England where "clam" generally means the soft-shell variety. In the Middle Atlantic States and southward, "clam" is the usual name for the hard clam.

Littlenecks and cherrystones are dealers' names for the smaller size hard clams, generally served raw on the half shell. The larger sizes of hard clams are called chowders and are used mainly for chowders and soups. The larger sizes of soft clams are known as "in-shells" and the smaller sizes as "steamers."



On the Pacific Coast, the most common market species are the butter, littleneck, razor, and pismo clams. The Pacific littleneck clam is a different species from the Atlantic hard clam.

On each of our coasts are areas famous for the quality of their clams. Notable among these are Pismo Beach in California, whence comes the delicious pismo clam, and Long Beach in Washington, famous for the razor clam. On the Atlantic Coast many areas are noted for their "cherrystones," soft clams, and surf clams.

Although clams are served most often in chowders, there are many good ways to serve them. It is not only the fine distinctive flavor that recommends them as a food; they are also an excellent source of the "protective" nutrients, including proteins, minerals, and vitamins.

Some of the easy-to-prepare yet out-of-the-ordinary recipes included in the new publication are Stuffed Clams, Clam Au Gratin, Clam Poulette, Deviled Clam Loaf, Baked Clam Hash, Sour Cream Clam Pie, Clam and Spaghetti Casserole, and Clam and Ham Scramble.

The booklet also gives instructions on how to buy and shuck clams.

How to Cook Clams is available individually or in quantity. Single copies 20 cents. Firms or individuals who order 100 copies or more sent to one address receive a 25-percent discount from the single-copy price. Order directly from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.