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COMMERCIAL FISHERIES REVIEW

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Vol. 23, No. 5

MAY 1961

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 BUREAU OF COMMERCIAL FISHERIES.

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Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, May 10, 1960.

5/31/63

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COMMERCIAL FISHERIES REVIEW

May 1961

Washington 25, D. C.

Vol. 23, No. 5

APPLICATION OF STEAMING AND VACUUM TO SHUCKING AND CLEANING SCALLOPS

By Harvey R. Bullis, Jr.* and Travis D. Love**

SUMMARY

A new method has been devised for shucking scallops and removing the viscera from the muscle by application of heat and vacuum. Heating one shell of the scallop for approximately 20 seconds loosens that shell and releases the remaining portion of the scallop. The viscera are then removed by applying a vacuum, and the muscle is loosened from the remaining shell with a second application of heat and then is chilled in ice water, drained, packaged, and frozen. The viscera, drawn into a trap tank in the vacuum line, can be digested, concentrated, and marketed as solubles or meal supplements. The shells can be sold either whole or ground.

Commercial application of the processes involved is outlined and discussed.

INTRODUCTION

In recent years, a number of large beds of calico scallops (*Pecten gibbus*) have been found along the southeastern and Gulf coasts of the United States. One of these beds, discovered by the U. S. Bureau of Commercial Fisheries exploratory trawler *Silver Bay* off Cape Canaveral, Fla., has aroused much commercial interest.

Among the difficulties in establishing a fishery for these scallops is the high cost of hand shucking and cleaning. Several methods for mechanical shucking therefore have been considered, and one method has been tested successfully in a pilot plant. The successful method utilizes two principles: heat and vacuum. Development of the method arose from the belief that (1) if one shell of the scallop were heated briefly, in near-boiling water, the edible muscle (also known as the meat or eye) might pull loose from that shell and (2) if a vacuum were applied to the viscera surrounding the muscle,



Fig. 1 - Shucking scallops from new Florida bed requires concentrated effort of crew of motor vessel *Silver Bay*, U. S. Bureau of Commercial Fisheries research trawler which made find. The shells are easy to open, but real know-how is needed to quickly separate viscera from meat by hand.

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the viscera might be removed, leaving the clean muscle attached to the remaining shell. The shell could then be separated by a second application of heat, freeing the edible product.

This paper presents the results of experiments designed to test these beliefs and discusses the results and their application to commercial practice. Also included is a discussion of the handling of the byproducts--viscera and shell.

EXPERIMENTAL SHUCKING

PROCEDURE: The scallops were placed by hand in a flat, shallow pan, where they were held for 20 minutes in sufficient boiling water (approximately $\frac{3}{4}$ of an inch) to cover the lower shell. The heated shell was then removed, and the scallops were placed in front of an operator who vacuumed the viscera from the muscle with a 1-inch-diameter flexible hose attached

to a 2-cylinder high-vacuum pump powered by a $7\frac{1}{2}$ -horsepower electric motor. Approximately 22 inches of vacuum was used. The remaining shell, still containing the muscle, was next placed in boiling water for 15 to 20 seconds. The shell and muscle were then separated, the muscle being flipped into an ice-water bath. After a few minutes of chilling, the accumulated muscles were quickly drained, packaged, and frozen.



Fig. 2 - Removing the scallop viscera by vacuum. Operator is applying vacuum to the scallop half shell. The viscera will be sucked into the hose and pulled into the cylindrical viscera trap tank. The hose leading from the other side of the trap tank is connected to the vacuum line.

the muscle pulled off with the viscera and was lost in the vacuum-line trap tank. Slight variations of steaming time therefore were necessary, owing to variations in the size of the scallops, the temperature of the shell, and the time that had elapsed since the scallops were caught.

SIMULATED COMMERCIAL SHUCKING

PROCEDURE: After experimentation proved that the principles involved in the new method were correct, the next step was to determine the economic feasibility of the method. Accordingly, a series of tests was conducted to obtain figures for time consumed and yield obtained for both hand and vacuum operations so that these operations could be compared. Since facilities for rapidly heating large quantities of scallops were not available, that part of the process dependent on heat was handled manually by a shucker who removed one shell and passed the other shell with the adherent muscle and viscera to a vacuum-hose operator. A third man completed the shucking by cutting out the muscle after removal of the viscera. As a control, an expert hand shucker worked on 1-bushel samples.

RESULTS: The following results were obtained:

1. The hand shucker averaged about 0.8 of a bushel per hour.
2. The yield from hand shucking averaged 4.25 pints of muscles per bushel.
3. Viscera could be removed with a suction hose at rates varying from 4 to 5.3 bushels per hour.
4. Yield with the vacuum method was poor until the hose man gained experience. The first 8 bushels yielded an average of only 3.25 pints of muscles per bushel, and it was noted that a large number of muscles were being pulled into the tank trap. The subsequent 9 bushels yielded an average of 4.75 pints per bushel with loss of muscles down to less than 5 percent.

By use of the same method of hand shucking and vacuum cleaning, with teams of 4 and 7 men working on a mechanical line, the average shucking rate in both cases was 1 bushel per man per hour compared with 0.8 of a bushel per man per hour by hand--an increase of 20 percent. The men composing the teams were relatively inexperienced. Each team included one hose man. Yields should be somewhat higher when facilities for heating the scallops become available. In hand shucking, the muscle is cut loose, with a consequent loss of the muscle still attached to the shell, which loss ranges from 5 to 20 percent by weight. When heat is used, however, the muscle is completely detached.

BYPRODUCT TREATMENT

Viscera from the trap tank underwent enzymatic digestion when held 3 to 4 hours at 130° to 140° F. The resulting soupy liquid could be evaporated to 50-percent solids or evaporated to dryness and mixed with cereals for animal feeds. Composition of the scallop muscles and viscera was determined by proximate analysis (table 1). Additional byproducts can be obtained from the shells, which may be ground for use in poultry feed or may be used whole as a filler in concrete products. Whole shells are currently selling (1960) at approximately 3 dollars per cubic yard on the Gulf Coast.

Table 1 - Proximate Composition of Scallop Viscera and Meats (Muscles)

Sample	Protein	Oil	Ash	Moisture
	(Percent)			
Viscera	9.7	2.5	83.1	4.7
Viscera	9.5	2.6	82.7	5.2
Viscera	9.5	2.7	82.6	5.2
Edible Meats (Avg. of 2 samples) .	16.2	0.8	81.4	1.6

OUTLINE OF A SUGGESTED COMMERCIAL-SCALE HEAT-VACUUM SHUCKING OPERATION

The new heat-vacuum method of shucking and cleaning scallops lends itself well to mechanization and commercial application. A suggested mechanized set up, designed around two link-chain belts, is visualized as follows:

1. The whole scallops are received on the first link chain belt, which has been provided with a raking bar or fingers so that the shells will lie flat and be spread in a single layer.
2. The shells are moved on the belt into a shallow tray of boiling (or near-boiling) water, where only the bottom valve is covered.
3. After the shells have been passed through the hot water for a sufficient interval (approximately 20 seconds), the belt runs to a rotary tumbler, where it dumps the shells.
4. The rotary tumbler should effectively separate the heated, empty shells from the shells containing the scallop meats.
5. A chain belt, leading from the tumbler, conveys the opened shells to a group of men handling vacuum viscera extractors.

6. After the viscera have been removed, the shells are placed on a second link chain belt and passed into a second hot water bath, where the second valve or shell is removed.

7. Meats (muscles) are then hand-packed or suctioned off the line to a wash bath prior to sorting, packing, and freezing.

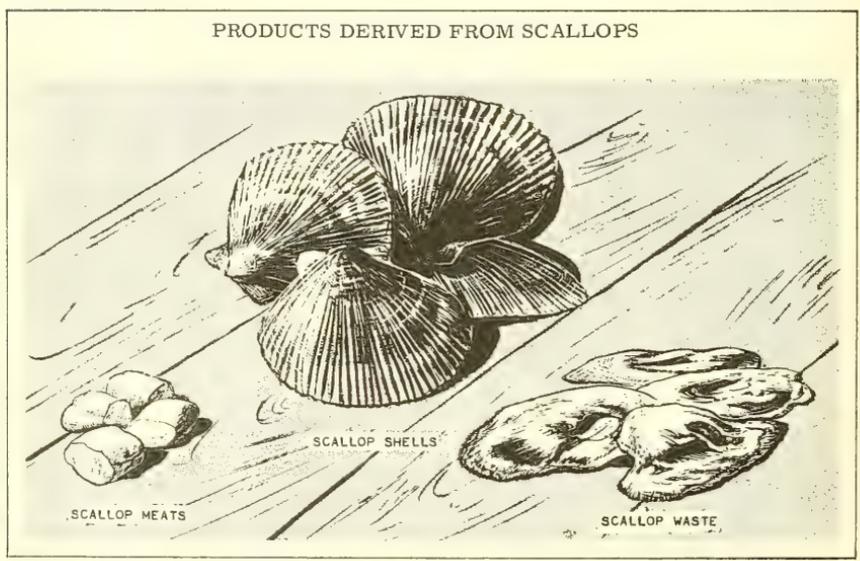
8. The viscera, suctioned off earlier, fall into a trap tank attached to the vacuum line, where they are digested and concentrated to the desired percentage of moisture.

In view of the success of removal of viscera by vacuum, using a hand-held hose, it seems possible that further research will yield completely automatic removal of viscera, and the necessity of handling will be eliminated.

Collecting the viscera in a trap tank off the vacuum line facilitates utilization of the viscera in animal feeds. A trap tank of a size suitable for commercial operation could be used also as a container for digestion of viscera by merely adding a steam pipe to the bottom of the tank. The digested product could then be piped into dehydrators or blenders for further preparation.



PRODUCTS DERIVED FROM SCALLOPS



RED CRAB EXPLORATIONS OFF THE NORTHEASTERN COAST OF THE UNITED STATES

By Ernest D. McRae, Jr.*

SUMMARY

Limited explorations for the deep-water red crab (Geryon quinquedens) were conducted by the U. S. Bureau of Commercial Fisheries during the 12 months beginning in July 1959. A total of 121 drags was made with commercial trawling gear in areas between the Gulf of Maine and Cape Hatteras. Depths investigated ranged from 50 to 1,040 fathoms and red crabs were taken between 60 and 800 fathoms. The best fishing was between 200 and 300 fathoms.

Results of tests indicate that both yield and quality of the red-crab meat is good, but the quantities of crabs taken are considered insufficient to support profitable commercial-scale fishing for red crabs alone at the depths where the largest concentrations of crabs were found.

INTRODUCTION

To investigate the extent and scope of little-known or seldom-utilized marine fishery resources and to determine whether these resources might be profitably exploited through commercial fishing are functions of exploratory fishing conducted by the U. S. Bureau of Commercial Fisheries Exploratory Fishing and Gear Research Base, Gloucester, Mass.

Pursuant to this, a preliminary survey of the deep-water red crab (Geryon quinquedens Smith) resource was made in areas along the continental slope and the outer edge of the continental shelf bordering Middle and North Atlantic States. The objectives of this survey were to determine the magnitude and extent of the resource and to gather available biological data on this species of crab.

BACKGROUND

The red crab (G. quinquedens) was first described in 1879 (Smith 1879). Since then, little research effort has been concentrated specifically on the species and most data available have resulted from general explorations. These indicate that the Atlantic range of this crab extends from Nova Scotia to Cuba in depths from approximately 60 to greater than 1,000 fathoms.

A report on the results of exploratory cruises made in 1884 by the U. S. Commission of Fish and Fisheries steamer Albatross (Smith 1887) includes red-crab catch records from 2 stations off Chesapeake Bay in 444 and 568 fathoms, 4 stations off Long Island in 510 to 861 fathoms, and 13 stations off Martha's Vineyard in 353 to 1,043 fathoms. In reference to the red-crab catches made in the Martha's Vineyard area, Tanner (1886) commented: "The hauls (4 drags made on Aug. 19, 1884 in 538 to 728 fathoms) were particularly

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Fig. 1 - The M/V Delaware, a conventional, steel-hulled North Atlantic otter trawler with a displacement weight of 518 tons and a length of 147.5 feet, is rigged for side fishing. The Bureau-owned vessel is used for exploratory fishing and gear research by the Gloucester, Mass., Exploratory Fishing and Gear Research Base.

rich in the large red crabs (*Geryon quinquegens*) . . . Several being prepared they were eaten by the officers, who were unanimous in the opinion that they were very sweet and palatable."

The Woods Hole Oceanographic Institution conducted experimental deep-water fishing between Nova Scotia and Virginia from 1948-53. In part, this work resulted in the collection of about 6,750 red crabs from an approximate depth range of 100 to 730 fathoms. The crabs were taken during 161 drags that were so generally distributed throughout the area explored that Schroeder (1955, 1959) felt encouraged to speculate upon the possible future development of this resource into a commercial fishery.

In the period 1955-57, the U. S. Bureau of Commercial Fisheries conducted deep-water lobster explorations from the perimeter of Georges Bank to Hudson Canyon (McRae 1960). Red-crab catches comparable to those reported by Schroeder were taken incidental to these explorations. In consequence, additional limited explorations for red crabs were planned. The work was carried out from the Bureau research vessel Delaware (fig. 1) at intermittent intervals within the 12 months beginning in July 1959.

Results of the Bureau's first red-crab trawling cruise (Delaware Cruise 59-7) were promising and an additional cruise (Delaware Cruise 59-10) was made for the specific purpose of gathering data on red-crab abundance from depths exceeding those originally planned for the explorations. The data resulting from these cruises, augmented by those taken during three subsequent cruises (Delaware Cruises 59-11, 60-2, and 60-6), are reported here.

AREA FISHED

Exploratory trawling was conducted in selected areas from the Gulf of Maine to Cape Hatteras (fig. 2). A total of 121 drags was made in depths ranging from 50 to 1,040 fathoms. Dragging effort was distributed as follows: 29 drags in less than 100 fathoms; 35 in 100 to 199 fathoms; 38 in 200 to 299 fathoms; and 19 drags in 300 fathoms or more. In order to minimize variations in depth during individual drags, depth contours were followed as closely as possible. In spite of this, marked irregularities in trawling depth were occasionally experienced over areas of broken and precipitous bottom.

The submerged edge of the continent off the northeastern United States is characterized by a succession of reverse submarine canyons. These deeply cut and serrate the slope and outer edge of the continental shelf and, in some areas, result in extremely broken and irregular bottom. It would be difficult to find an area more jagged and less conducive to trawling than that lying to the north of Cape May, N. J., in depths greater than 150 fathoms.

Of the many canyons, the best known (in order from south to north) are: Norfolk, Washington, Baltimore, Wilmington, Hudson, Block, Atlantis, Veatch, Hydrographer, Welker, Oceanographer, Gilbert, Lydonia, and Corsair Canyons. The largest of the submarine canyons (Hudson Canyon) exceeds the Grand Canyon of the Colorado in magnitude. The area of red-crab exploration included the canyons lying west and south of Hydrographer Canyon with supplemental coverage in areas within the Gulf of Maine (fig. 2).

FISHING GEAR AND METHODS

Standard commercial types of otter-trawl gear were used. The otter boards (doors) employed varied with the net in use. The nets used included (1) standard No. 36 and No. 41 New England otter-trawl nets (Knake 1956) and (2) 40- and 100-foot Gulf of Mexico shrimp trawls (Bullis 1951). The New England nets were used during 74 drags--55 drags with the No. 36 net and 19 with the No. 41 net. The 40-foot Gulf shrimp trawl was used in 44 drags; the 100-foot shrimp trawl was used in the remaining 3 drags. To facilitate deep trawling during Delaware Cruise 59-10, a bridle-rigged 40-foot shrimp net was used with a single dragging warp. The warp was comprised of $\frac{3}{4}$ -inch cable from both winch drums (joined together by shackling) supplemented by additional $\frac{1}{2}$ -inch wire from one drum. The resulting single warp was $2\frac{1}{2}$ miles (2,200 fathoms) long and allowed trawling to over 1,000 fathoms.

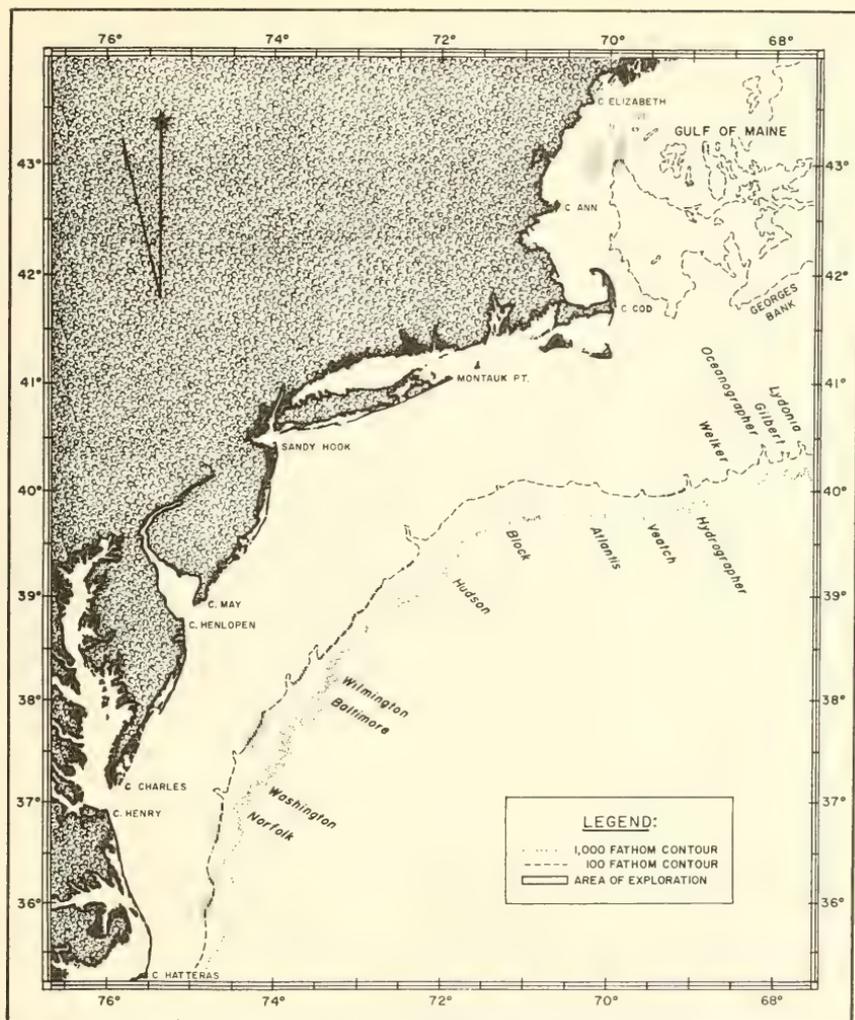


Fig. 2 - Area of explorations.

Roller gear was employed during 15 of the drags made with the No. 41 net to reduce gear damage when trawling was carried out on areas of hard bottom.

Damage to the nets was minimal. Some trawling difficulties, however, were experienced occasionally through hang-ups, bogged doors, or snarls. The latter resulted mainly from the net turning over when being dragged along steeply-inclined slopes.

FISHING RESULTS

Uniform seasonal coverage was not accomplished during the limited scope of these investigations. In the areas exclusive of the Gulf of Maine, 35 percent of the trawling was conducted during winter and 57 percent during the summer^{1/}. All sampling in the Gulf of Maine was accomplished in September at the end of the summer season.

Eighty-nine of the 121 drags made during the explorations resulted in catches containing red crabs. A total of 3,279 red crabs with an aggregate estimated weight of 4,049 pounds was recorded. Individual catches varying from 1 to 386 crabs were made in depths ranging from 60 to 800 fathoms (fig. 3). The record crab catch taken during the Delaware explorations resulted from a 70-minute drag in a depth of 200 to 250 fathoms. This catch of crabs weighed 558 pounds; the catch-rate was 478 pounds per hour. Large numbers of small red crabs resulted from trawling in the Gulf of Maine but, as this species was not the primary target for that cruise (Delaware Cruise 59-11), only limited data were taken from many of those catches.

The most productive depths found during the explorations were between 200 and 300 fathoms. The only drags resulting in catches of 100 (or more) pounds of red crabs per hour of trawling were made (1) entirely within the 200- to 300-fathom depth range, (2) when trawling into this depth from deeper or more shallow water, or (3) when trawling from this depth into deeper or more shallow waters.

The most productive area discovered during the explorations lies approximately east-to-southeast of Ocean City, Md. (lat. $37^{\circ}40' - 38^{\circ}27' N.$, long. $73^{\circ}20' - 74^{\circ}12' W.$), in 200 to 300 fathoms. This may be only one of several such areas, as corresponding depths along the southern edge of Georges Bank produced good red-crab catches during the earlier lobster explorations.



Fig. 3 - Red-crab catch taken east of Ocean City, Md.

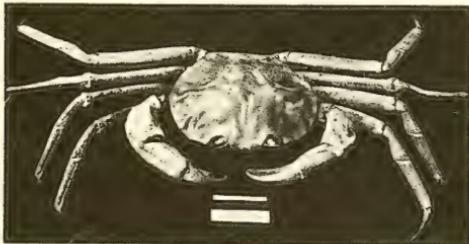


Fig. 4 - Male red crab taken from 250 fathoms depth.

taken in depths and areas where only large size males and females were found. The largest females were smaller than the largest males and seldom exceeded one pound in weight. A ^{1/}The seasons are considered to be defined by the winter solstice (Dec. 21-22), the vernal equinox (March 21), the summer solstice (June 21-22), and the autumnal equinox (Sept. 23).

In the course of the explorations, red crabs ranging in size from large males weighing approximately $2\frac{1}{4}$ pounds apiece (fig. 4) to small individuals weighing less than an ounce each were taken. Although small crabs were numerous in some areas, they were neither of sufficient size nor taken in sufficient quantities to be utilized commercially. The largest catches were

random sample was taken from one of the large catches, and the mean weights of sample individuals (to the nearest ounce) were determined to be: males, 28 ounces; females, 11 ounces; and ovigerous females, 16 ounces.

QUALITY, YIELD, AND PRESERVATION

Shipboard and shore tests^{2/} were conducted to determine quality, texture, and palatability of red-crab meat as well as meat yield and methods for the preparation and preservation of the meat and the whole crabs. The results follow:

1. For shipboard handling and extended preservation of red-crab meat during the exploratory cruises, the whole crabs were steam-cooked (fig. 5) and frozen. No successful technique was devised to eliminate the occasional breaking off of the brittle crab claws and legs during the cooking process or while handling and storing the prepared crabs.

2. The texture of the meat before and after freezing is delicate and tender. Picking is facilitated by the leathery and easily-broken shell.

3. Ten members of a taste panel rated the unseasoned, picked meat from steam-cooked and frozen whole crabs as: 40 percent, very good; 30 percent, good; 30 percent, fair.

4. A number of steam-cooked and frozen crabs were thawed and the meat carefully picked from the shells. The meat yield was found to vary from 32.5 percent to 45.7 percent of the unthawed weight of the frozen whole crab. The average yield was 36.5 percent.



Fig. 5 - Method of steam cooking crabs during explorations.

DISCUSSION

The red crab resource, in many respects, seems to be adaptable to commercial use. In the most productive areas, crabs of only the larger and more desirable sizes were caught. Red-crab shell is thin and leathery in consistency--a factor which facilitates picking. The meat yield is relatively high, the texture of the meat is tender, and the taste is savory and palatable. However, for a fishery resource to be profitably utilized, a favorable balance must exist between the cost of operation and the value of the catch. The best red-crab catches taken during the explorations were not large enough for the profitable operation of even the smallest-size vessels capable of trawling these depths. At present, commercial fishing for red crabs would be feasible only if fishing were carried out simultaneously for crabs and some other commercially-acceptable species (such as deep-water lobsters) found with the crabs or in the same general areas.

Further explorations may result in the discovery of new areas where larger concentrations of crabs might support commercial red-crab fishing. Advances in basic gear design or the development of new fishing gear and methods could also make the profitable utilization

^{2/}Taste panel tests and the determination of meat yield were made by Bureau technologists through the cooperation of the Bureau's Technological Laboratory, Gloucester, Mass.

of this potential fishery resource possible. It is felt that the quality of red-crab meat would encourage commercial fishing if future developments were to offer a prospect for profitable operations.

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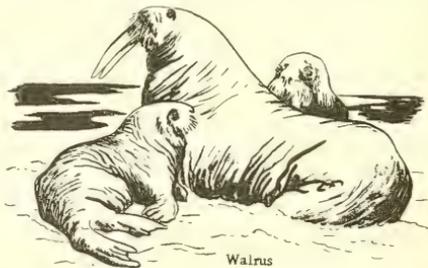


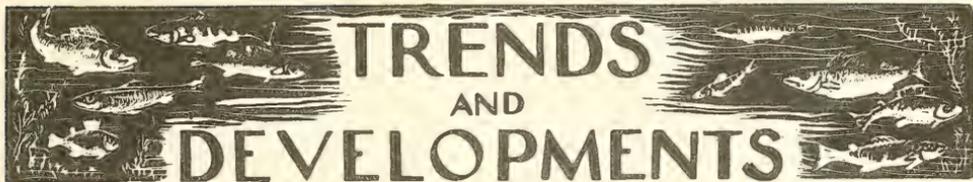
UTILIZATION OF WALRUS IN ALASKA

Approximately 1,153 to 1,453 adult and juvenile walrus were harvested (killed and retrieved) by Alaskan natives during the spring of 1959. The total number killed, however, ranged from 2,700 to 3,600 animals, of which approximately 34 percent were adult and juvenile males, 42 percent calves. The number of animals killed and lost or abandoned and left to die (calves) exceeds the number killed and retrieved.

Walrus meat is used as human and dog food. The degree of utilization depends largely on the size of harvest, ranging from nearly 100 percent utilization in those villages having a small harvest to less than 10 percent in those having a large harvest.

Female and young male walrus skins are used as boat coverings, the degree of utilization depending on harvest size. Income derived from carved and uncarved walrus tusks forms the basis of the economy in many coastal villages. (Report from the State of Alaska.)





TRENDS AND DEVELOPMENTS

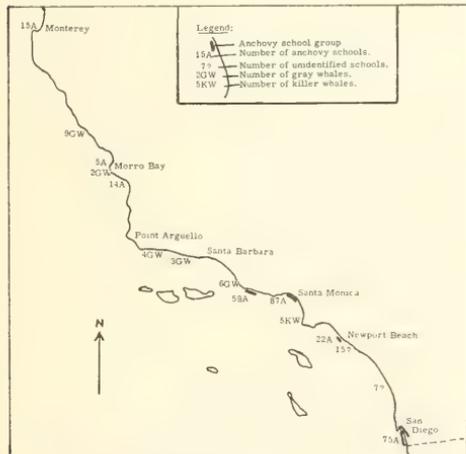
California

PELAGIC FISH POPULATION SURVEY CONTINUED:

Airplane Spotting Flight 61-2 - Pelagic Fish:

The inshore area from the United States-Mexican border to Point Arena, Calif., was surveyed from the air (February 14-17, 1961) by the California Department of Fish and Game Cessna "182" 9042T to determine the distribution and abundance of pelagic fish schools.

Fair weather generally prevailed along the California coast, but some low clouds and haze made observations difficult in parts of southern California and strong northwest winds were encountered north of Monterey Bay.



Airplane spotting flight 61-2 (Feb. 14-17, 1961.)

A total of 299 fish schools, 277 anchovy, and 22 unidentified, was tallied during the survey. Seventy-five of the anchovy schools were close to shore along the Coronado

Strand near San Diego, 22 were off the Newport Beach pier, 87 (45 on February 14 and 42 on February 17) were about two miles northwest of the Santa Monica pier, 59 were just east of Pt. Mugu, 14 at Avila, 5 off Morro Rock and 15 small fragmentary spots were located from one to two miles north of Pt. Pinos in Monterey Bay.

The 22 unidentified schools were between Oceanside and Laguna Beach.

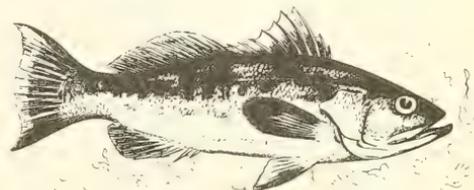
Only 24 California gray whales were seen during this flight, all traveling northward between Point Dume and Point Piedras Blancas.

During the afternoon of February 17, five large Pacific killer whales (Grampus rectipinna) were observed one-half mile offshore between Rocky Point and Point Vicente.

Note: Also see Commercial Fisheries Review, April 1961, p. 14.

PREPARATION FOR TUNA STUDY ON PACIFIC COAST:

M/V "Nautilus" Cruise 61-N-1-Tuna: The area along the southern California mainland from Corona del Mar to Dana Point, and off Santa Catalina Island (Whites Cove) and San Clemente Island (windward and leeward sides) was surveyed (Feb. 1-4, Feb. 7-9, 1961) by the California Department of Fish and Game's research vessel Nautilus. Objectives were to collect blood samples from kelp bass (Paralabrax clathratus) in order to determine if



California Kelp Bass
(Paralabrax clathratus)

genetic serological differences existed among the fish from the three areas; and perform a reciprocal blood study to test one method of serological analysis against another, in preparation for tuna work.

Due to a scarcity of biting fish at San Clemente Island, insufficient blood samples were obtained for significant testing. Santa Catalina Island and mainland areas, however, provided enough fish for a test. The results showed significant genetic serological differences between kelp bass from these two areas. The reciprocal study revealed that a new method of blood analysis was highly inaccurate when correlated with the standard method.

* * * * *

SEAWARD MIGRATIONS OF YOUNG KING SALMON STUDIED:

The California Department of Fish and Game in March 1961 resumed its attempt to solve the mystery of what happens to king salmon on their downstream migration to the sea.



The first step will be a test of midwater trawl gear which successfully recovered fingerling salmon last year just before they entered ocean waters. The shakedown cruise was scheduled for the Carquinez Straits, March 13-17. Once the gear is in working order, cruises were planned for every other week starting March 27 and continuing throughout 1961. The purpose will be to recover previously-marked fingerling king salmon in the brackish water phase of their migrations. These numbers, compared to the numbers released, will give fisheries scientists an indication of how many fish are lost between spawning gravels and the ocean.

The first of 10 weekly releases of three 50,000-fish lots at Coleman Hatchery near Anderson, at Rio Vista and in San Pablo Bay, began on March 28. Marking at Coleman Hatchery began on March 20. Included in the marking experiment was the transportation of some lots of fish by vessel from Rio Vista to San Pablo Bay. The first lot was released at San Pablo on March 31.



Cans- Shipments for Fishery Products, 1960

Total shipments of metal cans for fishery products in 1960 amounted to 123,907 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 115,479 1/2 tons in 1959, an increase of 7.3 percent. Shipments of metal cans in 1958 amounted to 123,602 tons and in 1957 totaled 114,500 tons.



The increase in the shipment of cans for fishery products from 1959 to 1960 was due primarily to better packs of Alaska salmon, Maine sardines, shrimp, tuna, and jack mackerel. The 1960 pack of tuna set another new record. The over-all pack of principal fishery products amounted to about 675.0 million pounds, higher by about 50 million pounds than the 1959 pack.

1/Revised.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in bases 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.



Central Pacific Fishery Investigations

OCEAN CONDITIONS AND TUNA SCHOOLS NEAR HAWAIIAN ISLANDS SURVEYED:

M/V "Charles H. Gilbert" Cruise 51: The beginning of a large-scale study of ocean currents around Hawaii, using drift bottles as a means of tracing the water flow, was the objective of the six-weeks cruise (January 16-February 28, 1961) of the U. S. Bureau of Commercial Fisheries research vessel Charles H. Gilbert.



Some 2,000 of the bottles were set adrift during the cruise, both to the east and west

of the main Hawaiian Islands. A few of the bottles released early in the voyage have already been picked up on the beaches of Maui, Molokai, and Oahu Islands.

The cruise covered an area greater than 0.5 million square miles, from French Frigate Shoal to Johnston Island. The purpose of the cruise was to study the temperature, salinity, and currents of the surface waters as related to the distribution of tuna schools and plankton organisms, and particularly to seek clues to the pattern of the annual spring migration of skipjack tuna (aku) into Hawaiian waters.

The return of the striped orange and white cards contained in the bottles will furnish information of value, not only to fishery scientists, but to all who travel on the ocean. The indications of currents given by the bottles can be used in searching for boats or life rafts drifting at sea, and the information may also be useful in planning the best locations for disposing of various types of waste materials in the ocean. Persons who find these bottles are urged to fill in the information called for on the cards and return them to the Bureau's Biological Laboratory at Honolulu.

The expedition searched at Johnston Island and French Frigate Shoals for the live-bait necessary for skipjack fishing, but found suitable bait fish very scarce. The only bait caught was a small amount of tilapia on Oahu and a few buckets of wholehole in Pearl Harbor. Tuna schools were also scarce in most of the areas covered by the survey. The only area in which a large number of schools were sighted was about 300 miles south of Honolulu, and those schools were small, fast-moving, and difficult to fish. The sighting of 59 bird flocks indicated the presence of the following fish schools: 7 skipjack, 1 yellowfin, 2 dolphin, and 49 unidentified.

Two lures trolled during daylight hours yielded 28 dolphin, 6 yellowfin tuna, 1 wahoo, and one skipjack tuna.

While at French Frigate Shoal the field party made a census of turtles and of the rare Hawaiian monk seals which inhabit that wildlife sanctuary. Several seal pups still under their mothers' care were seen, in addition to a fair number of adults.



Dams

STUDY ANNOUNCED OF FISH PASSAGE PROBLEM ON MIDDLE SNAKE:

A vigorous short-range attack on the problem of passing fish downstream at the proposed high dam sites on the Middle Snake River in Idaho was announced on March 15, 1961, by Secretary of the Interior Stewart L. Udall.

He said this is the first step in a comprehensive review of the Middle Snake development potential including power, water storage for river regulation, recreation, fish, and other resource uses.

In a letter to the Federal Power Commission, which currently is holding hearings on applications for construction of dams at the Nez Perce and High Mountain Sheep sites, Secretary Udall recommended that the Commission defer action on the applications until the Department's accelerated fish-passage studies have been completed.

Secretary Udall said the Department has set the end of 1964 as the target date for completion of a study program. He added, however, the scope of the studies will depend on the amount of money made available by the Congress for this purpose.

Secretary Udall said dams proposed for construction in the Middle Snake area could have a disastrous effect on anadromous fish, especially in the Salmon River which provides an estimated 50 percent of the Snake River run unless proven methods are found to protect the downstream migrants.

"We intend to learn as much as possible about which direction a sound development program should go. We believe that potential alternative sources of new power make prudent such a delay in further consideration of projects for the Middle Snake," Secretary Udall said.

He stressed that the Administration favors comprehensive basin development, but said, "We can't wait 10 or 15 more years."

Secretary Udall said the Department is "open minded" on the problem of additional storage. He said it would be a mistake to single out one particular dam in the studies, saying, "We need to know all we possibly can in the shortest possible time about full basin development."

pan and those in the United States, and keeping United States interests informed of Japanese fishery trends and developments.

There are at present only three fishery posts in the United States diplomatic service. The need for special fishery representation in Japan is particularly great because of the importance of fishing in the Japanese economy and because the United States and Japanese fishing industries have many close ties through trade and common conservation interests.

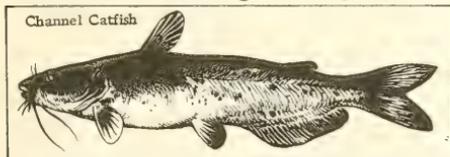
Suomela has a background of long experience in fishery administration, beginning with the U. S. Bureau of Fisheries in 1924, and was for 9 years Director of the Oregon Fish Commission. For the past 4 years he has been Commissioner of the U. S. Fish and Wildlife Service, and in that capacity has represented the United States on a number of international commissions in which Japan also takes part. He is thus well acquainted with Japan's international fishery relations and with the leading figures in Japanese fishery circles.



Fish Farming

EXPERIMENT ON STOCKING ALABAMA FARM PONDS WITH CHANNEL CATFISH:

A channel catfish stocking experiment involving some 120 farm ponds was outlined by Dr. Homer S. Swingle of Auburn University at a conference held at the University to develop a cooperative research project on channel catfish stocking in farm ponds.



The ponds will be located and checked by Alabama and U. S. Bureau of Sport Fisheries and Wildlife biologists. About 800,000 fingerlings will be furnished by the Marion, Ala., National Fish Hatchery for the proper stocking of the waters. State and Bureau biologists will examine the fish populations created to evaluate the result of the stocking. Dr. Swingle and his staff will coordinate the work of the various agencies and serve as a

collection agency for the data as they are accumulated.

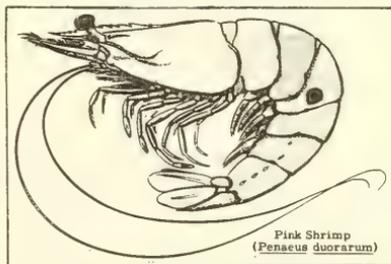


Florida

FISHERIES RESEARCH, OCTOBER-DECEMBER 1960:

The Marine Laboratory of the University of Miami is carrying on research on fisheries with funds provided by various sources, including the Florida State Board of Conservation and the U. S. Fish and Wildlife Service. The research of interest to commercial fisheries which appeared in the Laboratory's December 1960 Salt Water Fisheries Newsletter follows:

Larval Shrimp: Shrimp is Florida's most important fishery resource. About 25 million pounds of shrimp, worth approximately \$15 million, are caught each year. Almost one-half of these are pink shrimp from the Tortugas grounds northwest of Key West. Landings of Tortugas pink shrimp dropped from 24.2 million pounds in 1958 to 13.8 million pounds in 1959. This has had serious consequences for the fishing industry. Biologists at the Marine Laboratory are studying the pink shrimp in an effort to understand the reasons for these sharp fluctuations in the shrimp population.



Questions to be answered include: (1) At what season of the year is spawning most successful? (2) Is there any relation between the number of spawners and the number of offspring which are produced, or are other factors of greater importance in determining the number of offspring which survive? (3) How do the young shrimp reach the inshore nursery grounds?

The biologists hope eventually to predict the number of shrimp which will be caught.

As a first step in this program, the early life of the pink shrimp is being studied, with the support of the Bureau of Commercial Fisheries. Perhaps the most critical stage in the life of the shrimp is when it hatches from the egg. For approximately three weeks after hatching, the baby shrimp drift about in the water. They are able to swim only feebly and are at the mercy of currents which may carry them inshore to the nursery grounds or offshore to destruction.

The spawning grounds of the Tortugas shrimp extend about 30 miles north of a line drawn from Key West to the Dry Tortugas. The shrimp lay their eggs in water from 50 to 150 feet in depth. In the summer smaller shrimp, which are in the shallow southern part of this area, spawn heavily. In the winter, spawning is greater among larger shrimp, which are in the deeper northern part.

Spotted Sea Trout: In the last quarter of 1960 over 5,000 spotted sea trout were tagged on the west coast of Florida near Fort Myers, Cedar Key, and Apalachicola. Fish were tagged with a green plastic strip placed in the body cavity. This tag is found by fishermen at the time the fish is cleaned. Some tags carry a yellow plastic streamer which protrudes from the fish's body. This streamer draws the attention of the fisherman to the tag within. More than 500 fish with tags have been caught and returned. Fishermen take the tag to the nearest fish house where they are paid a reward of 75 cents.

For the most part spotted sea trout "stay at home." Some 95 percent were caught within 30 miles of the place of tagging. This means that the sea trout fishing in any community depends on how effectively the local resource is managed. A few fish wandered greater distances. One tagged at Apalachicola was caught at Grand Isle, La.

Others moved lesser distances within the State. No tagged sea trout were returned from south of Fort Myers or from the east coast of Florida.

Female sea trout grow faster than males and also live longer. A three-year-old female would be 12½ inches long but a male is half an inch shorter. Few males were over five years old, but females live as long as eight years.

A tagging experiment has been commenced at Fort Myers to estimate the number of sea

trout in the area and the rate at which they die. A reward of 75 cents will be paid for the return of a trout tag.

Frozen Breaded Shrimp Quality: The bacteriology of breaded shrimp has progressed into the final stage of experimentation. The last portion consisting of inoculating a sample of shrimp with the pathogen *Staphylococcus aureus* and another sample with *Streptococcus faecalis*. Both these organisms are of public health significance, and have been found by many investigators to be present in frozen food products, after many months of frozen storage.

The samples of shrimp are permitted to go through three cycles of alternate thawings and refreezings. Microbiological analyses are made after each phase, in order to determine the effect of the fluctuating temperatures.

Use of Okra Powder in Preserving Fresh and Frozen Fishery Products: An experiment was made to determine the possible use of okra in fishery products preservation. Ice containing 300 and 500 parts per million okra powder was used in the storage of fresh shrimp. The shrimp were stored for 15 days, being subjected to analysis of a taste panel and bacteriological analysis. Evaluation was made of flavor, odor, and appearance (melanosis).

Further testing was made applying okra as a glaze to frozen shrimp to prevent "freezer-burn" desiccation. Present methods used in the fishing industry are water glazing and alginate glazing. The properties of okra, being similar to that of the alginates thus may find practical application in the preservation of frozen fishery products. This storage testing will continue over a period of one year.

Results thus far have shown little difference between plain ice and okra ice at the concentrations used. Further tests are being conducted. Results from the frozen storage studies are too premature to detect any differences between the variables being studied.

Nonutilized Species Incidental to Shrimp Fishing: Investigations on the utilization of nonutilized fish caught incidentally in the shrimp fishery have led to the analysis of the liquified fish and of the liquid and solid portions that were separated. The whole

liquid fish contained about 14 percent protein, 3.4 percent minerals, and 78 percent water. The liquid portion which was skimmed off the top had 18 percent total dissolved solids, of which more than half were protein. This means that a good deal of the protein had become soluble and had concentrated in the liquid. The solid residue when dried had 52 percent protein.

The economic significance of the process is that nonutilized fish can be stored in acid at very nominal cost; in the meantime the fish autodigests and becomes a slurry, from this a liquid and solid are separated. The liquid is a source of readily available proteins which could be used as a pet-food supplement, protein concentrate, mink food, flavoring material, etc. The solid fraction can be dried into a commercial-type meal.

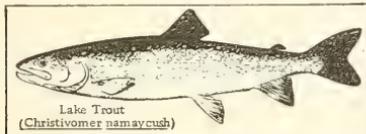
Another aspect of this investigation is to study the process of self digestion and determine which are the most favorable conditions.



Great Lakes Fishery Investigations

LAKE TROUT RESTOCKING PROGRAM GAINS MOMENTUM:

Over one million hatchery-reared lake trout were planted in Lake Superior during 1960 as part of a cooperative effort on the part of the U. S. Bureau of Commercial Fisheries, the states bordering on the Great Lakes, and Canada. By restocking the Great Lakes with hatchery-reared lake trout the biologists hope to rebuild the stocks that have been depleted by the parasitic sea lamprey.



Lake Trout
(*Salvelinus namaycush*)

Evidence accumulates to indicate that survival of some plants of hatchery fish is little short of sensational. An estimated 40 percent of the 1955 plant of 100,000 lake trout at Bayfield, Wis., has already been recovered by the commercial fishery. The 1959 plant of 30,000 lake trout in Lake Michigan has already yielded over 200 recoveries. Many of these fish are about 18 inches in length--growing more than twice as fast as lake trout formerly did in Lake Michigan.

Many of these lake trout were recaptured in perch gill nets in only five feet of water--something that never happened before.



Gulf Fishery Investigations

NEW CIRCULATING SEA WATER LABORATORY DEDICATED:

The new recirculating sea water laboratory housed in a remodeled building of the U. S. Bureau of Commercial Fisheries Biological Laboratory in Galveston, Texas, was dedicated in March this year. Two 29,000-gallon redwood water tanks and a series of filters, pumps, and plastic plumbing will supply the laboratory, where studies on the life history, diseases, and natural enemies of shrimp and commercial fishes will be carried out under controlled conditions.



Massachusetts

MARINE FISHERIES STUDY RECOMMENDS ACCELERATED RESEARCH AND MANAGEMENT PROGRAM:

Early in 1960 the Massachusetts Natural Resources Commissioner, acting under a directive from the Governor, appointed a 10-man Marine Fisheries Advisory Commission. The Commission, broadly representative of sport and commercial fishing, aquatic recreation, and industry interests, was to make a comprehensive study of the State's marine fisheries programs and problems. The Commission (consisted of 10 members) was charged to assist in formulating a sound, long-range State fisheries policy, to serve as a clearinghouse for marine proposals, and to submit its report and recommendations to the Governor by year's end.

A series of public hearings were held during the year, which served to bring sport and commercial factions together to discuss mutual as well as divergent interests. Upshot of the study, embodied in a series of specific recommendations, was the general proposal to strengthen the State's Marine Fisheries Division by expanding both its responsibilities and budget to permit initiation of a substantial marine fishery research and development program.

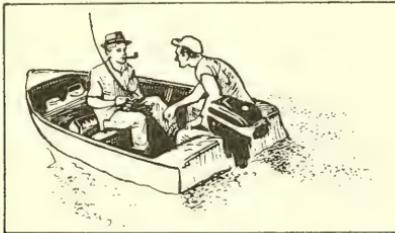
The Commissioner of Natural Resources on January 22, 1961, submitted to the Governor of Massachusetts the report (Final Report on the Studies of Massachusetts Marine Fisheries Problems by the Marine Fisheries Advisory Commission) of the State's Advisory Commission on Marine Fisheries relative to marine fisheries problems in Massachusetts.

The report sums up fisheries problems in 5 different categories and makes 16 specific recommendations to improve the sport and commercial fisheries in Massachusetts.

"Unless immediate steps are taken to accelerate the Commonwealth's grossly inadequate programs of research and management, and unless the various fishing factions along the coast learn to successfully coexist, Massachusetts will be unable to regain her standing as a leader in the marine fisheries field among States on the Atlantic Coast," the report warns.

Cited are statistics indicating that some 2,000 miles of coastline and 1,800 square miles of water fall within the territorial jurisdiction of the Commonwealth. These waters have a potential productivity of double their equivalent in land area, the report continued.

The Commission estimates that 5,000 commercial fishermen, 250,000 salt-water anglers, 30,000 boat owners, and 10,000 skin divers derive their sport or livelihood directly from these waters, and contribute some \$50 million annually to the Commonwealth.



In commenting upon the commercial fishery for finfish, the Commission notes that some 528 million pounds of fish were landed in Massachusetts in 1958, but that due to problems termed both biologic and economic the industry is currently in "precarious" condition.

Responding to a request to open waters south and east of Cape Ann and on the east side of Cape Cod to commercial fishing, the Commission stated: "Whether or not dragnets are allowed in these areas is not a conservation issue, at least on the basis of information now available."

The report calls attention to the lobster industry as the State's most valuable inshore fishery for a single species (valued at \$1.5 million in 1958). It is felt that detailed investigations are needed, however, to determine if local populations can withstand additional fishing pressure from skin divers, who now constitute one-half of the licensed lobstermen and who account for 12 percent of the total catch in 1958 (0.5 million pounds).

Massachusetts inshore fisheries for shellfish have witnessed a general decline in over-all production during the ten-year period prior to 1959, the Advisory Commission report continues, but the Commonwealth is rapidly losing its position as a leading shellfish producing state for reasons that need not exist.

The Commission points to inadequate State assistance, lack of effective management by cities and towns, and the extent of coastal pollution as the reasons for this decline.

Salt-water sportfishermen now number close to one-quarter million individuals, the report goes on, with an annual expenditure of nearly \$20 million for equipment and services. Lack of access to coastal areas is cited as the prime problem confronting this fishery, but the sportfishermen's request to bar all commercial seining within territorial waters is declared "unjustified from a conservation point of view."

The report also takes note of the 10,000 active skin divers in Massachusetts and deplors the activities of a few irresponsible individuals who have encouraged criticism towards the group as a whole. The Commission urges that the talents and desires of skin-diving groups be utilized more extensively in programs of marine research and management and that their activities receive official recognition at the State level.

Pollution from boats and boat facilities was recognized as a growing problem to some local fisheries, but, the report continues, "pollution from boating is insignificant in comparison with the discharge of sewerage and industrial waste from coastal communities."

The Commission emphasizes, however, the urgent need for adequate information on the State's numerous bays and estuaries upon which a proper policy could be based.

Among the principal recommendations included in the report were the following:

1. That Massachusetts recognize the expansion of the marginal sea for fishery purposes as "inevitable" and enact legislation which would automatically extend its jurisdiction in the event of international action to this end.

2. That the present Commission be instituted as a permanent Advisory Commission on Marine Fisheries representative of commercial and recreational interests along the coast. "It has become manifestly evident that problems relating to marine fisheries must constantly occur but can often be resolved most effectively by a group representing the various interests involved," the Commission advises.

3. That the Director of Marine Fisheries, subject to certain restrictions, be given full administrative control over the fisheries. The Commission sharply criticized program or policy changes by individual legislative petition describing this method as "cumbersome, inequitable, and costly to the fishery itself."

4. That an accelerated program of research and management be authorized, particularly in the estuarine waters of the Commonwealth. The Commission declares that if such requests are not permitted, "Massachusetts may soon witness its decline as a leading producer of recreational and commercial products from the sea."

5. That the University of Massachusetts, and other institutions, place on their faculty sufficient personnel to initiate programs of research, education, and extension in the broad field of fisheries. The Advisory Commission report points to the serious shortage of professional marine biologists, the need for academic teamwork in any state estuarine program, and the desirability of effective programs of extension in order to promote unity among salt-water groups and provide technological assistance to the industry.

Other recommendations included in the Commission's comprehensive report were the following:

Urging that active and progressive measures are required to insure the future well-being of the Massachusetts fisheries, the Commission recommended a matching-fund program at the Federal-state level to assist the states in building up a competent marine fisheries research and management program.

As "study projects" for the future, the Commission recommended: Consideration of the State's coastal wetlands before they are lost irrevocably to commercial exploitation; the recodification of the State's complex marine fisheries laws and an investigation of the need for additional shellfish purification plants in Massachusetts.

The Commission further recommended, as a part of the proposed program, the establishment of a Marine Fisheries Fund, financed by license and other fees, to be expended exclusively for marine fisheries research programs.

It also recommended that cities and towns be authorized to appoint supervisors of marine fisheries with broad powers over all salt-water activities within their communities.

Among accelerated programs of research and management, the Commission suggested: marine research stations at Salem and Martha's Vineyard; a marine research and law enforcement vessel to work offshore within territorial waters; and an intensified program of applied research and management relative to all species of importance to commercial and sport fishermen.

The Commission further recommended that the Commonwealth undertake "an immediate program" of public access to the salt water because the rapid development of the coastal and shoreline areas "constitutes a liability to the recreational boating and sport fishing public."

The Commission further urged "an adequate marine fisheries budget for administration research and management," citing that \$100,000 annually is not enough for a 50-million-dollar industry.

Finally, the Commission recommended adequate programs of marine law enforcement saying that research and management are only as effective as are the means for effective law enforcement.



North Atlantic Fisheries

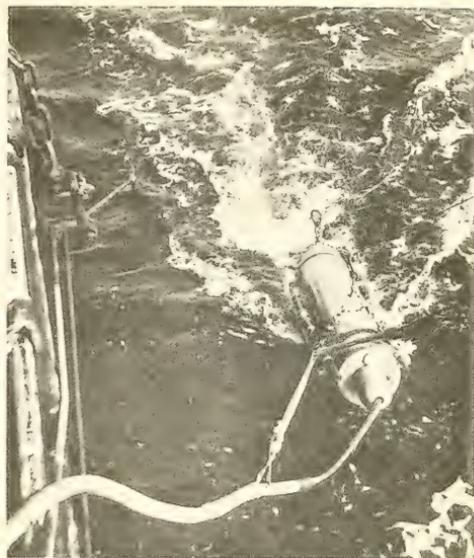
Exploration and Gear Research

UNDERWATER TV AIDS STUDIES TO IMPROVE DESIGN OF OTTER TRAWLS:

M/V "Delaware" Cruise 61-3: In order to observe the fishing action of a No. 41 standard manila otter trawl fished from the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware, the Bureau's underwater television unit was used during a one-week period ending March 3, 1961. This was the third in a series of cruises designed to obtain data on the otter trawl during fishing operations in support of efforts to design improved nets. Operations were conducted over the 12- to 15-fathom sand bottom on the southern part of Stellwagen Bank (42°13' N., 70°15' W.). Previous gear observation cruises, in July 1959 and in June 1960, used this same area at a time of year when planktonic turbidity severely curtailed visibility of the net. The winter schedule, while affording the advantage of lower turbidity, resulted in restriction of activity due to decreased light levels and stormy weather.

As in previous cruises, a 16 mm. motion picture camera was positioned at the shipboard television monitor to record net configurations, movements, and fish behavior. The television camera was lowered from the vessel down a trolley cable attached at various points on the headrope to give views of several sections of the trawl. When attached near the middle a composite view of the headrope bosom and footrope bosom was transmitted to the vessel. Views of the lateral parts of the trawl were obtained by fastening the trolley cable to positions on the wings. A total of 600 feet of film was taken of the headrope and wing.

Techniques in maneuvering the camera on the net were considerably improved over previous operations. Species repre-



Underwater TV camera unit entering water on cable attached to headrope of otter trawl. Conductor TV cable is in the foreground.

sented in the catches consisted of winter skates, yellowtail and winter flounders, lumpfish, ocean pout, long-horned sculpins, and the American lobster.



Oceanography

ATLAS OF NORTH ATLANTIC OCEAN PLANNED:

Drawing a detailed picture of the North Atlantic Ocean from top to bottom and from the equator to the pole will be one of the American Geographical Society's major projects in the decade ahead.

The project is a cooperative international effort that involves the production of an atlas embracing the physical, geological, geographical, and biological aspects of the ocean. The first of its kind in the United States, the project was outlined in the Society's annual report released early this year.

Preliminary phases of the program were begun early in 1960. Since then, a general

base map and 16 sectional base maps of the North Atlantic have been, or soon will be, completed. These are being distributed to scientists in a wide range of specialties here and abroad. The scientists will plot their own findings--distributions of fish and plant life, temperatures, depths, winds, currents, bottom sediments, etc.--and then return the maps to the Society for evaluation, editing, and publication. Individual maps and map series will be published as they are completed. Now called the Serial Atlas of the Marine Environment (North Atlantic and Arctic Basin), it will serve as a model for atlases covering other oceans.



The President of the Society said the atlas would provide an essential tool for basic research. "Information about the oceans is piling up at such an unprecedented rate that the individual scientist can't keep up with it, and much of it goes unpublished or unreported," he said. "The atlas will integrate this data and point up interrelationships and variables that otherwise might be undetected. It will help to indicate the most scientifically profitable directions that future research ought to take; at the same time, it will also help to guide man in wisely exploiting the seas' resources."

Financial support for the project is being sought largely through corporations and foundations in this country, a number of which already have contributed substantial sums, the Society's President stated. "Long before it is completed," he said, "the atlas should be of fundamental value to many industries, including the commercial fisheries, transportation, communications, and oil industries."

The atlas project, under the general auspices of the Society, has the guidance of an advisory panel of the National Academy of Sciences-National Research Council.

Scientific bodies in Canada, Great Britain, and Europe have endorsed it, and cooperation is also expected from Soviet scientists.

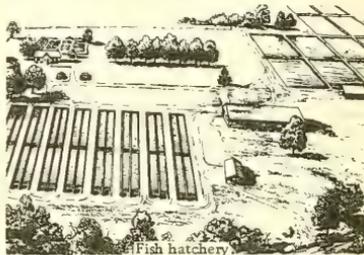
The American Geographical Society, New York City, was founded in 1852 and is the oldest geographical society in the United States.



Oregon

METHODS OF RELEASING HATCHERY-REARED SILVER SALMON STUDIED:

Between late March and early February 1961, 100,000 small silver salmon were taken by boat on the first step of the usual yearling silver's exodus down the Columbia River to the rich feeding grounds of the Pacific. The salmon were one-third of a 300,000-fish test release originating from the Oregon Fish Commission's Cascade Hatchery on Eagle Creek, a short distance above Bonneville Dam.



In an effort to develop better methods of releasing hatchery-reared salmon fingerlings, and to obtain additional information on the mortality of downstream migrating salmon fingerlings passing over Bonneville Dam, the 300,000 silver salmon yearlings involved were divided into three equal groups, each of which was handled in a different manner. Every fish was fin-clipped in a fashion that will identify it as to test group.

The first 100,000 fish were trucked downstream and released near the mouth of Tanner Creek immediately below Bonneville Dam. The second lot was released directly into Eagle Creek at Cascade Hatchery, the usual practice. The third lot was

transferred via tank truck into a screened-box barge designed for the purpose, and towed by boat downriver through the Bonneville locks. These fish were released into the Columbia just below the big dam.

The yearlings released at the Cascade Hatchery face the hazards of passing Bonne-



Bonneville Dam fish ladder. (A fish ladder is a series of adjoining pools to help fish get past dams or falls.)

ville Dam in addition to other dangers of the downstream trip. The fish will pass the dam by devious routes. Some will use the regular fishway designed for adult fish bound for the spawning grounds upstream. Others will go through the turbines, over the spillway, or through the locks while boats are being put through.

Although some of the males of this release will return as jacks this coming fall, it will be the fall of 1962 before the main body of mature fish returns to Eagle Creek. The returning adults will be trapped at the Cascade Hatchery racks during regular egg-taking operations. The numbers of fish in each of the three fin-marked test groups will be recorded at that time. Sampling by Fish Commission personnel will probably locate some of the marked fish in the catches of commercial and sports fishermen prior to the return to Eagle Creek during the 1962 spawning run.

* * * * *

SILVER SALMON REARED IN LAKES TO HELP RESTORE DEPLETED STOCKS:

Another step toward the rehabilitation of Oregon's coastal salmon runs was taken recently with the release by the Oregon Fish

Commission of 130,000 silver salmon fingerlings into the Tenmile Lakes system in northern Coos County. Hall Lake received 100,000 of the small salmon with the balance going into Schuttpelz Lake.



Salmon fingerlings.

This is the second Fish Commission planting of silvers into the coastal lake chain. In the spring of 1960, 106,000 fingerling silvers were released into Hall Lake on an experimental basis to determine the feasibility of using the Tenmile system as an extensive natural pond rearing facility.

A Fish Commission biologist, in charge of the Tenmile operation, reported that fingerlings released into these waters in 1960 grew from about 1½ inches in length to an average of 5 inches within a period of 11 months. This rate of growth, under natural conditions and with no supplemental feeding, is an indication of the good fish-producing potential of these waters.

The Commission's director of research, has tabbed the Tenmile system as one of the bright spots in the current salmon situation. He pictures the chain as an extensive series of rich, potentially highly productive natural rearing ponds where vast numbers of salmon could be produced at little cost other than for collecting and incubating the eggs.

Jack salmon (early maturing males) from last spring's release are expected to appear this fall, but it will be the following year before the main body of surviving adults return to the outfall below Hall Lake.

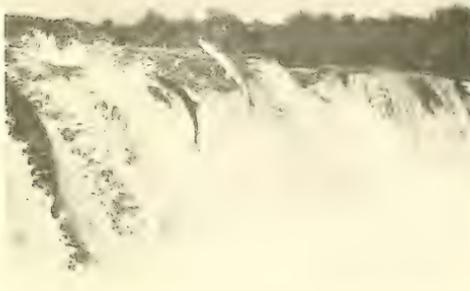
A trap will be constructed by the Commission at the lower end of Hall Lake where the outlet, flumed by the State Highway Department to stabilize the channel, offers an obstruction to ready passage. There returning adults will be captured and examined for identifying fin clips; also eggs will be taken for incubation to provide a continuous supply of fingerlings to keep the Tenmile Lakes stocked.

A screen located at the outlet below Hall Lake was recently positioned to prevent the young silvers from escaping until such time that water levels drop sufficiently to allow replacement of a downstream migrant trap damaged by recent floods. This trap is used to collect for fin clipping for future identification the yearling fish moving downstream to the ocean. It also provides for checking the rate of growth, physical condition, and the survival of fingerlings, so that more and better quality fish can be produced at lower cost.

* * * * *

SUCCESSFUL POND REARING MAY HELP REBUILD RUNS OF SILVER SALMON:

Nearly 80,000 young silver salmon were making their way down Oregon's Millicoma and Coos Rivers toward the sea following their release early in March 1961. The plant represents the successful climax to the second year of cooperative effort between the Oregon Fish Commission and a private lumber company in pond rearing of salmon at Millicoma Pond in Coos County.



Salmon jumping falls.

The 10-acre pond was formed when an oxbow-shaped section of the Millicoma River

was cut off by a logging road fill constructed by the lumber company. Inlet and outlet structures were positioned to allow water control, creating an excellent fish-rearing pond behind the fill at a minimum of cost.

The Oregon Fish Commission's Director of Fish Culture indicated that survival of the fingerlings in the rearing pond was high—about 80 percent of the 101,000 small silver salmon placed in the pond during the latter part of June 1960. Between that time and the release date in March this year the young silver salmon had grown from about 3 inches in length to an average of 6 inches. The fish were reared from eggs taken from Coos River system silver salmon. The 79,900 fingerlings released were in excellent physical condition, the natural food supply in the pond having been supplemented by regular feeding with the Commission's Oregon pellet, a nutritionally-complete fish ration developed in cooperation with Oregon State College scientists.

This is the second season Millicoma Pond has been used to rear salmon. Last year 211,000 fingerlings were held in the pond but a flood-damaged screen at the outlet allowed many of the fish to escape before they could be marked and counted. At least 80 jacks from this first brood of silvers returned to the pond outlet last fall. Both mature males and females are expected in numbers this fall as a result of the first year's release. Also scheduled to appear are numbers of jacks from the March 1961 release. All fish were fin-clipped for identification.

The Millicoma River is part of the Coos River system, the confluence of the two streams being about six miles above the Coos River's mouth on Coos Bay. By building up Millicoma River salmon runs, it is believed that sufficient eggs can be obtained from a proposed Millicoma fishing rack to provide adequate numbers of pond-reared fish to stock both the Millicoma as well as the South Coos River. Under such circumstances it would be possible to remove the Commission's rack from the South Coos, allowing natural spawning to take place in the limited suitable spawning area above the rack site, thus supplementing the proposed releases into this stream of yearling silver salmon reared at Millicoma Pond.

During 1957, splash dams on the South Coos above the rack were removed by the

owners. The company undertook this stream clearance project not only to give anadromous fish access to upstream spawning areas but also to halt the scouring of stream bed spawning gravels by splashing operations.

Plans for the 1961 season call for placing 0.5 million young silvers into the rearing pond, the most ambitious rearing project yet undertaken at this impoundment. This fall will see the return of mature fish from the first year's operation plus jacks from this year's release. There were encouraging returns last fall of jacks from the first brood reared in Millicoma Pond.



Salmon in hatchery pool.

In addition to increasing the numbers of fish to be reared at the Coos County pond this season, the Commission plans to establish a modern incubation station in the vicinity. Here eggs taken from adult silvers returning to Millicoma Pond will be handled to provide successive crops of young fish for stocking the impoundment. In view of the success of pond-rearing efforts at Millicoma, the Commission plans to concentrate efforts there and restrict present activities at the Coos Hatchery. This plan provides for the most productive use of the available fish and facilities.

The Oregon Fish Commission is fully aware of the need to rebuild the coastal salmon runs, its Director emphasized. The Millicoma development is part of the overall plan. Another step that has been taken in this direction includes the release of silver salmon in the Hall-Schuttpeiz Lakes section of northern Coos County's Tenmile Lakes chain. Research has shown this lake

system possesses a high potential, presently unused, for natural rearing of silver salmon fry to yearling size at no additional cost.

Restoration of spawning areas through the removal of log jams from debris-choked coastal streams and a comprehensive program of research involving the use of coastal lakes as natural rearing waters are among other Fish Commission activities directed toward the restoration of salmon production in Oregon's coastal waters.



Preservation

RADIATION OF FOODS SAFE:

A Stanford Research Institute team in Menlo Park, Calif., searching for hazards inherent in the sterilization of foods by irradiation, has concluded that radioisotope activation is not harmful.

The scientists said, "The quantity of radioactivity in treated food is small compared with natural environmental radioactivity, and food preservation can proceed safely."

The U. S. Army Quartermaster Food and Container Institute suggested the study.

An Institute spokesman said, "When food is subjected to high-energy radiation, radioactive isotopes may be produced in the food. Some isotopes have a half-life of only a few seconds; others emit radiation for years.

"It was essential to know if isotopes are produced by radiation sterilization of foods and in what quantity, and if they remained radioactive for significant periods," the spokesman said.

To find the answers, the researchers irradiated a variety of separate elements present in foods and examined them for induced radioactivity. This was repeated with whole foods--beef, bacon, shrimp, chicken, and green beans.

Container materials were irradiated and measured for induced radioactivity. A variety of radiation sources was used in each case, including cobalt-60, cesium-137, spent reactor fuel elements, X-rays, and high-energy electrons.

The research team pointed out that almost all "clean" food has trace amounts of radioactivity. This results from the naturally-occurring isotopes, potassium-40 and carbon-14.

The object of the project was to find radioactivity above these traces.

Small quantities of sodium-22 and rubidium-84, produced by high-energy X-rays and electron irradiations, were the only induced radioactivity found in the irradiated samples of whole food.

Many of the irradiated food elements, however, showed low levels. Almost all were from isotopes that have short half-lives (minutes to hours) and are not common food elements.

In no case were levels found above the recommended limits for drinking water by the team of scientists from the Institute.

All forms of containers were tested and found safe by the research team. (*Food Field Reporter*, March 13, 1961.)



Salmon

ALASKA'S BRISTOL BAY RED SALMON RUN FORECAST FOR 1961:

It is estimated that the total red salmon return to Bristol Bay in 1961 will be within plus or minus 30 percent of a most probable total of 22 million fish. This estimate assumes no Japanese fishing on the returning mature salmon in 1961 and average Japanese fishing on the immature salmon in 1960.

About two-thirds of the return of red salmon to Bristol Bay in 1961 will have spent three years in the ocean and thus will be large fish. The over-all average size will be about 12 fish to pack a case of 48 one-pound cans of salmon.

A very poor return of about 1.3 million fish is indicated for Nushagak district; a good return of about 15 million fish to the Naknek-Kvichak; a good return of over 2 million fish to the Egegik, although the cycle analysis upon which this is based is relatively weak; and an excellent return of over 3 million fish to the Ugashik, although in this instance, also, the margin of error is considerable and alternative analysis indicates reason for consideration of a 2-million figure.

There is a slim chance that the young fish which went to sea in the spring of 1959 did not visit the central Aleutian area in the summer of 1960. If that is the case, it would be a behavior pattern not experienced in the preceding five years of fishing. But it remains a possibility which may be checked by further fishing near the Aleutian Islands in the spring of 1961.

This is a forecast prepared jointly by the Alaska Department of Fish and Game, the Bureau of Commercial Fisheries, and the Fisheries Research Institute of the University of Washington. Scientists from these three agencies have exchanged and studied all pertinent data and believe that the forecast is the best that can be made.

* * * * *

NORTHWEST PACIFIC STATES PROPOSE COORDINATED REGULATION AND MANAGEMENT:

A "Summit on Salmon" meeting was held by the Governors of Washington, Oregon, and Idaho on February 6, 1961, in Boise, Idaho. Editorial comments in a Pacific Northwest newspaper indicated agreement was reached on:

(1) The establishment of a Governors' Columbia River Fisheries Management Committee.

(2) The State fisheries agencies have been directed to develop a joint program of regulation and management of the fishery resource.

(3) Putting additional "pressure on Congress and the Federal agencies for maximum protection for the fishery. Additional Federal research money and greater activity on the part of the states in regulation of the international deep-sea fishery."

The Governors also took under consideration the proposal for a Columbia River Interstate Salmon Commission, which apparently would be the outgrowth of an interstate compact between the three States for the purpose of regulating the fisheries as a unit and to obtain revenues from utilities, State general funds, foundations and grants, and from Federal appropriations.



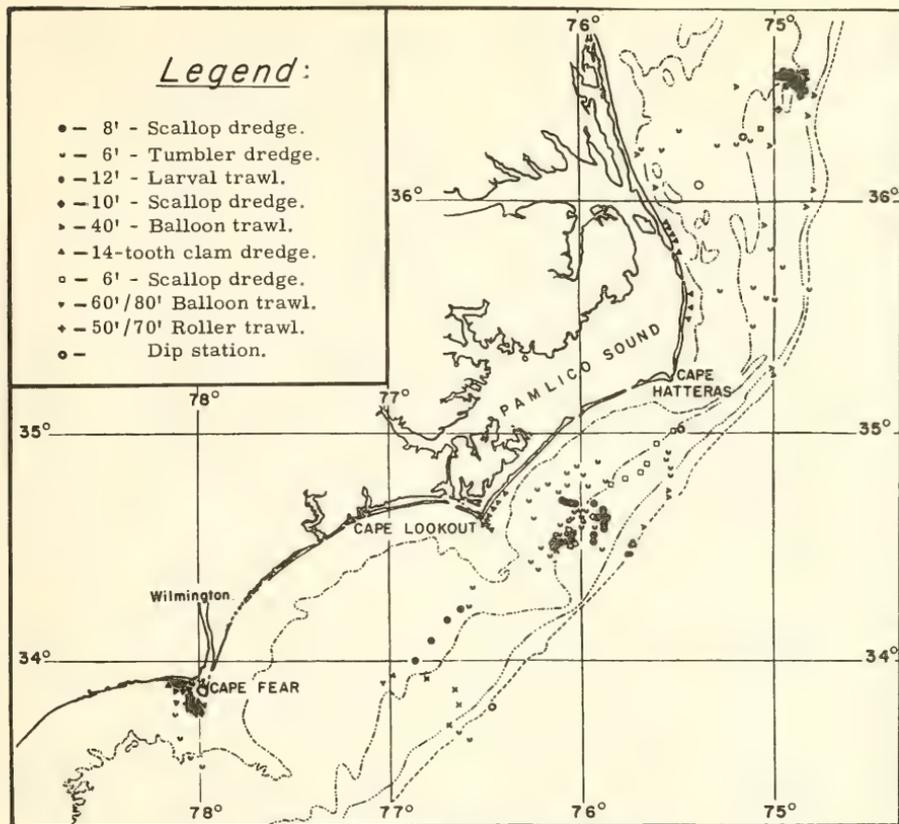
South Atlantic

Exploratory Fishery Program

FISH AND SHELLFISH RESOURCES OFF NORTH CAROLINA COAST SURVEYED:

M/V "Silver Bay" Cruise 29: On March 22, 1961, the M/V *Silver Bay* completed a 24-day exploratory fishing cruise along the Continental Shelf and Slope off North Carolina. A 6-foot tumbler dredge, 14-tooth Fall River clam dredge, 12-foot larval fish trawl, 8- and 10-foot modified Georges Bank-type scallop dredges and shrimp and fish trawls were used at 176 exploratory stations.

SCALLOPS: Calico scallops (*Pecten gibbus*) were relocated in 21 to 25 fathoms off Core Banks where catches of up to 16

M/V *Silver Bay* Cruise 29 (Feb. 27-Mar. 22, 1961).

bushels per half hour tow and yielding $4\frac{1}{2}$ pints of meats per bushel were made with a 6-foot tumbler dredge. A marker buoy was placed in the area and direct notification was made to the North Carolina fleet. These vessels started fishing within a few days and later reported catches of up to 400 bushels per 12 hours of fishing. Dredging was continued north of Cape Hatteras where calico scallops disappeared from the catches at about latitude $35^{\circ}47'$ N. Sea scallops (*Pecten grandis*) appeared in the catch at about latitude $36^{\circ}30'$ N., where catches of up to $2\frac{1}{4}$ bushels per 30-minute tow were made. These scallops averaged $5\frac{1}{2}$ inches (greatest diameter) and yielded 4 pints of meats per bushel (120 count).

HARD CLAMS: Catches of medium-size hard clams ($2\frac{1}{2}$ to $4\frac{1}{2}$ inches) off the Cape Fear River ranged up to 44 individuals per 15-minute tow. One live clam and dead shell were taken north of Cape Lookout Shoals. Dredging in 4 to 6 fathoms north of Cape Hatteras produced only dead shells.

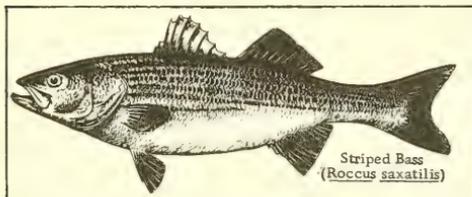
FISH: Fish trawling north of Cape Hatteras produced small catches of summer flounder (*Paralichthys dentatus*) up to 90 pounds per hour tow and a few silver hake or whiting (*Merluccius bilinearis*). One 60-minute tow in 23 fathoms with a 40-foot net produced 5,000 pounds of sea robins (*Prionotus* sp.) and one in $4\frac{1}{2}$ fathoms produced 2,785 pounds of spiny dogfish (*Squalus*

acanthias). In Onslow Bay, catches of mixed fish in 20 fathoms ranged up to 1,966 pounds per hour tow with puffers (*Sphaeroides* sp.) predominant.

Striped Bass

TAGGING RETURNS REVEAL MIGRATIONS ALONG ATLANTIC COAST:

Results of tagging 478 large fish (from 1955 to 1959) ranging in weight from 6 to 54 pounds and in age from 3 to 18 years reveal Atlantic Coast migration of large striped bass. Eighty-one fish were tagged on the North Carolina coast, in Albemarle Sound, and Roanoke River, North Carolina, and 300 fish in Chesapeake Bay and tributaries.



Catches by commercial and sport fisheries indicated that large striped bass concentrated on the coast of North Carolina in late fall and winter, on or near spawning areas for striped bass in North Carolina and Chesapeake Bay in late winter and spring, and along the coast north of Chesapeake Bay as far as Massachusetts in the summer and fall. Recaptures were made of 19 fish tagged on the North Carolina coast; 23 tagged in Albemarle Sound and the Roanoke River, North Carolina; 27 tagged in Chesapeake Bay and its tributaries; and 1 tagged in the Thames River, Connecticut. Some fish were recaptured near the tagging location but most of them migrated along the coast and were caught in other concentration areas during the season of greatest fishing pressure, according to U. S. Bureau of Commercial Fisheries biologists.



Tuna

PACIFIC TUNA BIOLOGY CONFERENCE:

An informal conference on the biology of Pacific tuna will be held at the University of

Hawaii, Honolulu, August 14-19, 1961, immediately preceding the Tenth Pacific Science Congress. The subjects for discussion include (1) distribution, (2) migrations, (3) subpopulations, (4) behavior, and (5) tuna oceanography. (Pacific Science Association Information Bulletin, January 1961.)

Further information may be obtained from the Director, Honolulu Biological Laboratory, U. S. Bureau of Commercial Fisheries, P. O. Box 3830, Honolulu, Hawaii.

SONAR GEAR TESTED AS AN AID TO STUDIES ON TUNA BEHAVIOR:

During a cruise aboard the commercial purse seiner *West Point*, biologists of the U. S. Bureau of Commercial Fisheries Biological Laboratory at San Diego evaluated the possible utility of the Simrad sonar gear for investigation of tuna behavior. In particular, the biologists are interested in determining whether or not the thermocline, or the plane at which the temperature makes a decided change, is a barrier to their movements.

Staff members have designed and constructed an instrument which can be attached to the ring or lead line of a seine and will record on a chart the depths reached by the ring line and the time at which those points were reached. If tuna escape by swimming under the net, it will be possible to determine the depth they reached. Measurements with other instruments during fishing operations show the characteristics of the water through which they moved.



United States Fishing Fleet^{1/} Additions

FEBRUARY 1961:

A total of 21 vessels of 5 net tons and over were issued first documents as fishing craft during February 1961--a drop of 5 vessels as compared with the same month of 1960. The Gulf area led with 7 vessels;



^{1/}Includes both commercial and sport fishing craft.

the New England and Pacific areas followed with 4 each; the South Atlantic, Puerto Rico, Chesapeake, and Great Lakes areas accounted for the remaining 6 vessels.

Table 1 - U. S. Vessels Issued First Documents As Fishing Craft By Areas, February 1961

Area	February		Jan.-Feb.		Total
	1961	1960	1961	1960	
	(Number)				
New England	4	1	7	2	34
Middle Atlantic	-	3	-	4	13
Chesapeake	1	4	4	9	76
South Atlantic	2	7	3	10	45
Gulf	7	3	18	7	85
Pacific	4	7	9	9	138
Great Lakes	1	1	1	1	17
Puerto Rico	2	-	2	-	-
Total	21	26	44	42	408

Note: Vessels assigned to the various areas on the basis of their home ports.

Fishing craft issued first documents

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft By Tonnage, February 1961

Net Tons	Number
5 to 9	8
10 to 19	3
20 to 29	1
30 to 39	4
40 to 49	3
60 to 69	1
70 to 79	1
Total	21

of the total during the 1961 two-months period.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JANUARY 1961:

Imports of edible fresh, frozen and processed fish and shellfish into the United States during January 1961 increased by 9.3 percent in quantity and 10.5 percent in value as compared with December 1960. The increase was due primarily to higher imports of groundfish fillets (up 9.4 million pounds) and frozen albacore (up 3.1 million pounds), and to a lesser degree, an increase in the imports of canned sardines in oil. The increase was partly offset by a 2.9-million-pound decrease in the imports of frozen tuna other than albacore and a 1.6-million-pound drop in canned tuna in brine.

Compared with January 1960, the imports in January this year were up by 4.2 percent in quantity and 10.5 percent in value due to higher imports of frozen albacore tuna (up

2.9 million pounds), groundfish fillets (up 8.9 million pounds), and frozen shrimp (up 3.7 million pounds). Compensating, in part, for the increases was a drop of about 7.2 million pounds in the imports of tuna other than albacore and canned salmon (down 4.5 million pounds).

United States Imports and Exports of Edible Fishery Products, January 1961 with Comparisons

Item	QUANTITY				VALUE			
	Jan. 1961		Year 1960		Jan. 1961		Year 1960	
	1961	1960	1960	1960	1961	1960	1960	
	(Millions of Lbs.)				(Millions of \$)			
Imports:								
Fish & shellfish:								
Fresh, frozen, & processed 1/	85.1	81.7	1,011.2	27.4	24.8	304.8		
Exports:								
Fish & shellfish:								
Processed only 1/ (excluding fresh & frozen)	2.5	6.6	48.7	1.1	1.8	19.2		

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

During 1960, about 1,011 million pounds (valued at about \$305 million) of edible fresh, frozen, and processed fish were imported. Imports in 1960 as compared with 1959 were lower by 5.5 percent in quantity and 1.6 percent in value from the 1,071 million pounds valued at \$310 million imported in 1959. From 1959 to 1960 imports of groundfish and other fillets dropped 33.1 million pounds, all frozen and canned products derived from tuna and tuna-like fishes were down 10.7 million pounds, and fresh, frozen, and canned salmon imports were down about 28.3 million pounds. In 1960 an increase in the imports of fresh and frozen American and spiny lobsters of 5.0 million pounds and a 6.8-million-pound increase in the imports of shrimp partially offset the drop in imports of other fishery products.

United States exports of processed fish and shellfish in January 1961 were lower by 47.5 percent in quantity and 45.0 percent in value as compared with December 1960. Compared with the same month in 1960, the exports this January were down by 61.7 percent in quantity and 38.9 percent in value. The lower exports in January this year as compared with the same month in 1960 were due mainly to sharply lower exports of California sardines and squid. Exports of edible fishery products in 1960 amounted to 48.7 million pounds valued at \$19.2 million, a drop of 28.4 percent in quantity and 15.8 percent in value as compared with 1959.

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1961 at the 12½-percent rate of duty is limited to 57,114,714 pounds. The quota for 1960 was 53,488,330 pounds. Any imports in excess of the quota are dutiable at 25 percent ad valorem.

Imports from January 1-March 4, 1961, amounted to 7,475,964 pounds, according to data compiled by the Bureau of Customs.

Imports in 1960 for the period January 1-February 27 amounted to 5,168,179 pounds.



Virginia

ROOFING TILE TO TRAP OYSTER DRILLS:

"Roofing tile commonly used in some parts of the world to protect houses against weather, may prove useful in protecting oysters from screwborers," a biologist of the Virginia Fisheries Laboratory reported on March 31, 1961. Screwborers or oyster drills, as they are sometimes called, have for many years been considered the number one enemy of oysters on Eastern Shore's (between Cape Charles and Maryland State line) vast planting grounds. Oystermen on that peninsula have spent much time and money to control this predatory snail which makes holes through the shells of small oysters and consumes the meat.

Eastern Shore planters frequently spend as much as 10 years to build up a good seed rock. This involves getting a firm crust of shells to support the seed oysters and to defend the young oysters against screwborers and other predatory animals. The most efficient device for protecting the grounds from creeping animals has been the drill traps, made of chicken wire and baited with young oysters. In recent years the cost of making these traps, baiting them, and fishing them has risen so high that many oystermen have debated whether to give up the whole idea.

Scientists from the Virginia Fisheries Laboratory are bringing to the Eastern Shore a new type of trap, which was developed in England. It is extremely simple and cheap, consisting merely of roofing tiles spaced at short intervals around and over the oyster beds. Planters estimate that wire-bag traps

baited with seed oysters cost about 63 cents each, and must be fished each week, otherwise the drills will eat up all of the bait. Roofing tiles, on the other hand, cost approximately 12 cents each and require no baiting. Furthermore, it is not necessary to fish tile traps at such frequent intervals. Although two-week intervals is recommended, the oysterman will lose nothing if he finds it impossible to fish them that frequently. They also make it easier to destroy more drills.

"The use of tiles for trapping oyster drills is based on information scientists have gained about these predators," the biologist stated. "They seem to need an elevated, shaded position for depositing their spawn, and during the spawning period they tend to gather together in large numbers. Curved roofing tile is ideal for these purposes, and the drills make good use of them.

He pointed out that it is necessary for the tiles to age in the water several months before they are most efficient, but they will begin attracting drills within a few weeks after placing them on the bottom. Besides the economy and ease of handling tile drill traps, they are more efficient than wire-bag traps because they collect large numbers of drill egg cases which can also be destroyed. Since egg cases contain around 12 eggs per capsule and the capsules are thickly placed in a small area, the destruction of egg cases is more effective, actually, than the destruction of the larger drills.

It will be 2 or 3 years before the success of using tiles for controlling drills can be evaluated. They are not considered to be barriers but rather traps for keeping down the drill population. The spacing of the tile around beds of oysters will not prevent some drills from passing through, but it will attract many which can be removed and, therefore, save many thousands of bushels of oysters.

"The screwborer was introduced into the British Isles about 50 years ago, when Virginia oysters were shipped to England," the biologist reported. "They have not spread widely from the areas where they were introduced but have increased in number until they have become a dangerous pest, and the British have made great efforts to control them."

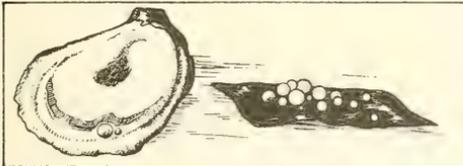
These destructive marine snails go by several names in this country. Eastern

Shoremen usually call them "screwborers." In some places they are called "screwdrivers" and scientists more often refer to them as "oyster drills." The English, on the other hand, call them "tingles." Their scientific names are Urosalpinx cinerea and Eupleura caudata, two different snails, both of which are destructive of oyster spat and young oysters.

* * * * *

QUALITY OF 1960/61 OYSTER HARVEST GOOD:

According to careful records made at the Virginia Fisheries Laboratory for the past six years, oysters from tidewater Virginia have been fatter during the 1960/61 season than any time since the study began and are probably the best since 1948.



Oysters are a treasure, with or without the pearl. A nutritive treasure, that is.

The Laboratory's mollusc physiology unit began keeping records on the fatness of oysters in 1955. A system has been devised for measuring the plumpness of oysters and comparing the data obtained from year to year, and from one area to another.

The Laboratory's research is designed to determine what factors affect the fatness of oysters. Through carefully controlled experiments, it has been found that oysters will fatten on vitamin-enriched flour and even on pure corn starch which contains no vitamins or minerals. These foods were fed to the experimental oysters at a rate of about one pound for every 45,000 gallons of water.

The biologists are interested in finding out why oysters fattened better than usual in the York and Rappahannock Rivers this year. In answering this question it is necessary to determine what foods oysters eat, whether they require living food, and whether it is possible that they get a great deal of their nourishment from non-living debris on the bottom and in the water. This will necessitate a study of the oyster grounds to find out how they control oyster growth and why they are more productive at one time than another.

Wholesale Prices, March 1961

The March 1961 wholesale price index for edible fishery products (fresh, frozen, and canned) at 131.9 percent of the 1947-49 average dropped slightly from the preceding month (0.8 percent), but was up about 6.9 percent from March 1960. Between mid-February and mid-March this year lower prices for shrimp, oysters, frozen haddock fillets, and frozen dressed salmon more than offset higher prices for fresh drawn haddock, fresh haddock fillets, frozen dressed salmon, fresh round whitefish, and canned Maine sardines. From March a year ago to this March, all the fishery products making up the fishery index were priced higher except for fresh-water fish.

The fresh and frozen drawn, dressed, and whole finfish subgroup index for March this year increased less than one percent from the preceding month. Higher prices for haddock ex-vessel at Boston, frozen dressed Pacific halibut, fresh round whitefish, and fresh yellow pike just about balanced out lower prices for dressed king salmon and drawn whitefish. When compared with March last year, the subgroup index for this March rose 8.6 percent due to higher prices for frozen dressed halibut (up 12.0 percent), fresh drawn haddock (up 4.7 percent), and frozen dressed king salmon (up 12.5 percent). These increases were only partially offset by lower prices for fresh round and drawn whitefish and yellow pike.

From February to March this year, the fresh processed fish and shellfish subgroup index declined 3.2 percent due to a 2.8-percent drop in the fresh shrimp price at New York



Old Fulton Fish Market, New York City (original market).



Remodeled Fulton Fish Market completed in 1939.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, March 1961 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/		Indexes (1947-49=100)			
			(\$)		Mar. 1961	Feb. 1961	Jan. 1961	Mar. 1960
			Mar. 1961	Feb. 1961				
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					131.9	133.0	130.9	123.4
Fresh & Frozen Fishery Products:					146.8	148.9	146.2	137.6
Drawn, Dressed, or Whole Finfish:					161.3	160.2	162.7	148.5
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.12	.10	122.4	100.5	125.2	116.9
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.33	.32	101.1	99.0	92.8	90.3
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.88	.91	196.6	205.0	202.2	174.7
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.70	.75	173.6	186.0	179.8	195.8
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.70	.63	141.6	126.4	126.4	144.7
Yellow pike, L. Michigan & Huron, rnd., fresh .	New York	lb.	.70	.69	164.2	161.8	152.4	181.8
Processed, Fresh (Fish & Shellfish):					150.1	155.1	145.9	142.2
Fillets, haddock, sm., skins on, 20-lb. tins . . .	Boston	lb.	.42	.34	141.2	114.0	132.7	117.4
Shrimp, lge. (26-30 count), headless, fresh. . .	New York	lb.	.85	.83	134.3	138.2	118.5	127.2
Oysters, shucked, standards	Norfolk	gal.	7.00	7.50	173.2	185.6	185.6	167.0
Processed, Frozen (Fish & Shellfish):					115.1	117.4	116.0	109.1
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	100.8	102.1	102.1	98.1
Haddock, sm., skins on, 1-lb. pkg.	Boston	lb.	.34	.36	105.2	113.0	109.9	89.5
Ocean perch, skins on, 1-lb. pk.	Boston	lb.	.31	.31	122.8	122.8	118.8	114.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.70	.70	107.2	108.0	107.2	104.5
Canned Fishery Products:					111.2	110.9	107.9	103.8
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . .	Seattle	cs.	23.00	23.00	146.1	146.1	143.5	127.8
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.00	11.00	79.3	79.3	79.3	77.9
Sardines, Calif., tom, pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	7.75	7.75	91.0	91.0	91.0	93.9
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.75	8.50	93.1	90.5	90.5	93.1
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.								

City and a 6.4-percent lower price for fresh shucked oysters at Norfolk, Va. These decreases were partially offset by a higher price for fresh small haddock fillets at Boston. In March this year, the subgroup index rose 5.6 percent from the same month of 1960. All the subgroup prices were higher in March this year as compared with March a year ago.

Wholesale prices this March for frozen processed fish and shellfish were off about 2.0 percent from the preceding month. During this period prices dropped for frozen haddock fillets by 6.9 percent, flounder fillets by 1.3 percent, and frozen brown shrimp at Chicago by 0.7 percent. Prices for frozen ocean perch fillets were unchanged from February to March this year. However, the subgroup index rose 5.5 percent from March 1960 to this March because of higher prices for frozen haddock fillets (up 17.5 percent), frozen flounder fillets (up 2.8 percent), and ocean perch fillets (up 7.0 percent). In ad-

dition, frozen shrimp prices at Chicago were up about 2.6 percent.

Wholesale prices for canned fishery products from February to March this year were up slightly (up 0.3 percent), but rose 7.1 percent from last March to this March. The only change in prices for canned fishery products from February to March 1961 was an increase of 25 cents a case for canned Maine sardines. Due to the very short supplies of canned pink salmon and California sardines, primary prices for those products were purely nominal in March this year. From March 1960 to March this year the canned fishery products subgroup index rose 7.1 percent due primarily to a 14.3-percent increase in canned pink salmon prices. During the period canned tuna prices rose slightly and Maine canned sardine prices were unchanged.





International

CENTRAL AMERICAN COMMON MARKET TREATY SIGNED:

A General Treaty of Central American Economic Integration (Tratado General de Integración Económica Centroamericana)¹ has been signed by Guatemala, El Salvador, Honduras, and Nicaragua. The treaty reaffirms the intention of the contracting parties to unify their economies and jointly promote the development of Central America.

A protocol to the Central American Convention on Equalization of Import Charges to accelerate the establishment of uniform import duties on imports from outside the region was signed at the same time, December 13, 1960. A further agreement was signed creating a Central American Bank for Economic Integration to finance regional economic integration.

A "common market" is to be established among the contracting parties within 5 years of the entry into force of the General Treaty. Except for the special treatment for certain commodities described in Annex A of the treaty, the contracting States grant one another immediate free trade for all natural and manufactured products originating in their respective territories.

These commodities are exempted from import and export duties, including consular fees, and from all other taxes, surcharges, and imposts incurred by imports and exports, or charged by reason thereof, be they national, municipal, or of any other kind. Normal

¹The General Treaty, which is similar to the Treaty of Economic Association signed in February 1960, broadens the scope and sets up more specific means of financing economic integration. It incorporates the provisions of the Convention for the System of Central American Integrated Industries, to permit the four contracting parties to proceed with industrial integration. It also retains the provisions in the "Central American Convention on Equalization of Import Charges." Provisions of all other regional agreements and bilateral treaties among the Central American States are superseded by those of the General Treaty, except where the treaty does not deal with provisions of those agreements.

handling and storage charges as well as existing exchange rate differentials continue to apply to these commodities. Goods originating in the territory of the signatory nations will enjoy national treatment in all of them, except for the usual controls for reasons of health, safety, or the enforcement of law and order.

The temporary exceptions provided in Annex A apply to specific products which, if made immediately subject to regional free trade, would cause injury to existing producers. With few exceptions the products in Annex A are to be incorporated automatically into the free trade system no later than at the end of the fifth year in which this treaty is in effect.

Meanwhile a schedule of duty reductions is specified for each commodity in the list of products receiving special treatment. These items are contained in the series of bilateral exception lists which constitute Annex A, and any change in the lists or duty schedules may be accomplished only through multilateral negotiation.

Most manufactured products do not achieve free-trade status until the beginning of the sixth year.

The signatories further agree that the immediate 20-percent reduction in import duties on the natural and manufactured products of the respective participating countries, provided for in the Protocol to the Central American Convention on Customs Charges: Central American Tariff Preference, shall not be applied to the items receiving special treatment in Annex A of the General Treaty.

The contracting parties undertake to establish a customs union among their territories. For this purpose, they agree to effect a Central American free-trade zone within 5 years and to adopt a uniform Central American customs tariff under the terms of the Cen-

International (Contd.):

tral American Convention on Equalization of Import Charges signed at San Jose, Costa Rica, on September 1, 1959.

The second Protocol to the Central American Convention on Equalization of Import Charges was signed at Managua at the same time as the new Treaty of Economic Integration. In order to unify customs and transit treatment of items free traded in the Common Market area, and to simplify the application of a common external tariff, the signatory nations agree to conclude special protocols adopting a Standard Central American Customs Code and necessary transportation regulations. This is to be done within a year from the effective date of the General Treaty.

The industrial development laws and regulations, and other pertinent legislation of the contracting states, are to be made as uniform as possible re incentives offered for industrial development in the respective countries.

To that end, these nations will sign, within 6 months after the effective date of the General Treaty, a special protocol setting forth standard industry classifications, benefits, benefit periods, and administrative provisions to be applied to applicants in the signatory countries.

As for the "integrated" industries, special protocols are to be concluded within 6 months of the effective date of the General Treaty, stipulating the industrial plants that will be covered by it initially, and the benefits and obligations to which they will be subject. The provisions of the Convention on the System of Central American Integrated Industries is made part of the General Treaty in order to expedite the "integration" of industries in the region.

The Central American Bank for Economic Integration, provided for in the General Treaty and described in detail in a separate Protocol, is to serve as an instrument for financing and promoting regional economic integration. Nonetheless, members of the Bank (governments) may not obtain guarantees or loans from this institution until they have deposited instruments of ratification to the following international agreements: The General Treaty of Economic Integration, signed December 13, 1960; Multilateral Treaty of Central American Free Trade and

Economic Integration, signed June 10, 1958; Convention on the System of Central American Integrated Industries, signed June 10, 1958; Central American Convention on Equalization of Import Charges, signed September 1, 1959, and the second Protocol signed December 13, 1960.

Under the new General Treaty, execution of the resolutions of the Economic Cooperation Committee is made a function of a Central American Economic Council. The Economic Cooperation Committee, a policy-determining body composed of the Ministers of Finance of the Central American countries, was formed in 1952.

In addition, an Executive Council will be created to apply and administer the General Treaty and to carry out the actual tasks required to achieve Central American economic union. The membership of the Executive Council will consist of one principal delegate and an alternate for each of the contracting parties.

The signatories agree not to conclude unilaterally with countries outside Central America any new treaties that affect the principles of Central American economic integration. As in previous agreements, they also agree to maintain the "Central American Exception Clause" in commercial treaties entered into on the basis of most-favored-nation treatment with countries other than the Central American states. This clause limits the application of most-favored-nation treatment by permitting the existence of special benefits to the countries of Central America which are not extended outside the area.

In other matters affecting third country interests, reference must be made to earlier agreements since the General Treaty does not cover them. Thus, under the Multilateral Treaty of Central American Free Trade and Economic Integration, the contracting parties agree to renegotiate or if this is not possible, to denounce, any commercial agreements in effect with third countries which violate the principles of the Central American Convention on Equalization of Import Charges. This is to be done by each party within one year of its deposit of its instrument of ratification of that Convention.

The General Treaty will become effective among the ratifying states eight days after the third instrument of ratification has been deposited and for the fourth state on the date

International (Contd.):

of deposit of its instrument of ratification. The ratifying instruments are to be deposited with the General Secretariat of the Organization of Central American States (ODECA) in San Salvador.

Costa Rica has been invited to join and may adhere to the treaty at any time. Panama is also free to adhere to this treaty.

The General Treaty is to remain in force for 20 years from the initial date of its entry into force and may be extended indefinitely. Denunciation by any contracting party may be made after the 20-year period, to have effect 5 years after such notice is given. The treaty remains in force among its adherents, however, so long as two States continue to apply it. (Foreign Commerce Weekly, March 16, 1961.)

EAST AFRICA

MEETING ON MARINE BIOLOGY AND FISHERIES OF AFRICA'S EAST COAST:

A Symposium on Marine Biology and Sea Fisheries of Africa's East Coast was convened in Cape Town, Union of South Africa, from September 12 to 17, 1960, under the auspices of the Commission for Technical Cooperation in Africa, South of the Sahara (C.C.T.A.). The chairman was Professor

J. Millot of the Malagasy Republic and the General Secretary was Dr. E. Postel who serves C.C.T.A. as its Inter-African Coordinator for Oceanographic, Marine Biological, and Sea Fisheries Research.

The Symposium was attended by delegates from the Malagasy Republic, Portugal, and the Union of South Africa. A paper from the East African Marine Fisheries Research Organization, Zanzibar, East Africa, was also presented, although the East African Territories (Kenya and Tanganyika) sent no delegates. Two observers represented the Food and Agriculture Organization. Some 15 papers were read to the Symposium.

The Symposium was opened by the South African Secretary for Commerce and Industries, who stressed the need for fishing research along Africa's east coast. He pointed out that, according to FAO statistics, Africa south of the Sahara accounted for only six percent of the world's fish catch and of this share, "the waters off the west coast of Central and Southern Africa are yielding more than ten times as much fish as the seas along the eastern seaboard." Calling for international coordination of research efforts, the South African Secretary for Commerce and Industries referred hopefully to the forthcoming International Indian Ocean Expedition.

List of Working Papers Presented at the Symposium of Marine Biology and Sea Fisheries on the East Coast of Africa, Cape Town, September 12-17, 1960

Title	Author	Language ^{1/}
1. Agenda	-	E & F
2. Report by the Portuguese Delegation	-	F
3. Contribution by Division of Fisheries, Dept. of Commerce and Industries, Union of South Africa	-	E
4. Notes on the Prawn Fishery Potential in Madagascar	A. Crosnier and D. Charbonnier	F
5. Crawfish Fishing in the Fort Dauphin Region (South-East Madagascar)	P. Fourmanoir, A. Crosnier & D. Charbonnier	E & F
6. Nosy-Be Station Publications by the Oceanography Branch of the Madagascar Institute for Scientific Research Issued or in Printing at 1 September 1960	-	E & F
7. Campagne d'Océanographie physique en Canal de Mozambique	-	F
8. Marine Fisheries Research in East Africa: A review of the important activities of the East African Marine Fisheries Research Organization	D. Hall	E
9. Progress Report on Arrangements for a World Meeting on Tunas and Related Species	Fisheries Div., FAO	E
10. Essai de palangres "Long Lines" a Madagascar	-	E
11. Resume du travail en cours de publication de P. Fourmanoir concernant les requins de la Cote Ouest de Madagascar	-	F
12. Hydrography of the East and South Coasts of the Union of South Africa and Possible Effects on Fishery Problems	M. E. L. Buys	E
13. East Coast Thunnidae	F. H. Talbot M. J. Penrith	E
14. Notes on Marine Invertebrates of Commercial and Possible Commercial Importance	-	E
15. Not listed.	-	-
16. Communication provisoire sur la repartition des copepodes planctoniques marins de l'Afrique du sud.	A. de Decker	F
17. Planktonic Polychaeta as Indicators of Ocean Currents Around South Africa	J. H. Day R. Weber	E

^{1/}E - English only; F - French only; E & F - English and French.

International (Contd.):

The Symposium was divided into several sessions, each on a different aspect of the East African region of the Indian Ocean. First, the physical and biological environment of the area, which for the Symposium's purposes covered the waters from Cape Point to Somalia, was discussed. The second session dealt with the research work done by the countries represented. Some of the research stations had done interesting experimental fishing, particularly for shrimp. Efforts to develop tuna fishing were discussed. South Africa's representatives mentioned their work with midwater trawls in the Union's east coast waters.

The third and fourth sessions dealt with fish, lobster, shrimp, and plankton. The fifth session discussed what is known of the productivity of the Indian Ocean, what further methods of measuring this productivity might be employed, and the present extent of commercial fisheries in the East African waters of the ocean.

The sixth session was devoted to an inventory of regional resources for marine biological and sea-fishery research, the need for international cooperation, and the part C.C.T.A. could play in coordinating efforts.

At the final session numerous recommendations were approved. Among them were recommendations to increase the size and number of research establishments in the East African area of the Indian Ocean; to train more scientists for work in the area; to increase scientific exchanges among the interested countries; to pay special attention to the study of shrimp in the area for the better exploitation of the shrimp resource; to make a coordinated systematic study of tuna in the area; and to draw up a bibliography of all research reports and other scientific information on the area in collaboration with C.C.T.A. It was also recommended that closer coordination be effected within the group and with the International Indian Ocean Expedition.

The Director of the Union's Fisheries, when interviewed, made the following comment. He felt, after the Symposium, that the Malagasy Republic offered interesting possibilities to overseas fishing interests. The waters of the Mozambique Channel ap-

pear to him to have rich enough resources, but the Malagasy fishery at present lacks capital, modern equipment, and skills to take advantage of the resources.

An official from the South African Museum stated that the subject of a concentrated, systematic study of tuna was taken up in detail at another C.C.T.A. symposium he attended, which was held in Dakar from December 12 to 17, 1960. There it was decided to coordinate both the west coast (Atlantic) and east coast (Indian Ocean) tuna studies for southern Africa, but not to centralize control of the study. (United States Consulate, Cape Town, January 31, 1961.)

FISHING LIMITS

SWEDISH-NORWEGIAN TALKS ON FISHING LIMITS:

Swedish-Norwegian negotiations regarding extension of the Norwegian fishing limits were held in Oslo, Norway, February 3 and 4, 1961. (As of April 1, 1961, Norwegian fishing limits will be extended to 6 miles and from September 1, 1961, to 12 miles). The negotiations are considered preliminary only and the meeting was arranged for the purpose of establishing the items of discussion at a later meeting in Stockholm, Sweden.

Swedish fishermen hope that the right to fish inside the four-mile limit in the Oslo fiord (mainly for shrimp) will continue. According to a 1955 agreement between Sweden and Norway, which expires on June 30, 1961, Swedish fishermen are permitted to fish for shrimp inside the four-mile limit in the Oslo fiord and Norwegian fishermen have been permitted to fish inside the Swedish four-mile limit along the Swedish coast. It is now claimed by Norwegian fishermen that the Norwegian fishing along the Swedish coast is of insignificant value, whereas the Swedish catches along the Norwegian coast reach a value of several million crowns. Whether Swedish fishermen will be permitted to fish up to the four-mile limit in other areas is, however, uncertain, but it is hoped in Goteborg that Swedish fishermen will be permitted to do so in the Skagerack area. (United States Consulate, Goteborg, February 10, 1961.)

FISH MEAL

PERU AND WEST GERMANY SIGN AGREEMENT ON MARKETING OF FISH MEAL:

The Governments of Peru and the Federal Republic of Germany in Lima on January 27,

International (Contd.):

1961, signed a joint declaration pertaining to the market for fish meal. The Joint Declaration follows:

"Animated by the common desire to stimulate to a greater extent the economic relations between their two countries, the Governments of the Peruvian Republic and of the Federal Republic



of Germany agreed, in accordance with the spirit of the Commercial Agreement of July 20, 1951, to hold conversations regarding the normalizing of the market for fish meal. Said conversations were carried on in the city of Lima between the accredited Delegations of the Governments between January 17 and 27, 1961.

"I. Both Delegations proceeded to a full exchange of ideas about production, the market, and the sale of fish meal in the world market, examining in detail the exports of fish meal from Peru to the Federal Republic of Germany. The Parties agreed that a normalizing of the trade in said product would be in the interest of both countries.

"II. The Delegation of the Peruvian Republic, in the course of the conversations, made it known that the National Fisheries Society, with a view to contributing to the normalizing of the world market for fish meal, had taken the following measures:

"(a) Agreement of the producers of fish meal of Peru, reached in September 1960, establishing export regulations which will permit the equilibrium of the buying markets and the improvement of prices. This agreement entered into force January 1, 1961.

"(b) Agreement of Paris, among representatives of the principal fish-meal producing and exporting countries--signed October 1, 1960. This agreement fixed the bases for normalizing the conditions of import markets, indicating world-wide export figures which are related to the demand of consuming markets. That agreement established the Peruvian export figure of approximately two-thirds of world-wide exports.

"(c) Supreme Decree No. 18 of December 16, 1960, issued by the Government of

Peru, approving the Agreement of Export Regulations as well as the Agreement of Producers signed in Paris, giving the National Fisheries Society the authority necessary for the proper functioning of both measures.

"III. The Delegation of the Peruvian Republic agrees that, on the basis of Paragraph II, the National Fisheries Society is in a position to declare:

"That exports to the Federal Republic of Germany will be so channeled as, adjusting to subsections (a) and (b) of Paragraph II and possible future agreements, to lead to the normalizing of the market and prices for fish meal.

"Likewise, and within this regulation, the National Fisheries Society, upon authorizing export licenses for fish meal to countries other than the Federal Republic of Germany, will take appropriate precautions to the end that such shipments may not be re-exported to the said Republic, which will take appropriate measures to prohibit the importation of fish meal not originally declared for that destination.

"IV. Both Governments will continue to observe carefully the development of the world market for fish meal and, if it should become necessary, undertake new negotiations in Bonn.

"In witness whereof, the present Joint Declaration is signed in the city of Lima, January 27, 1961, in four originals, two in Spanish and two in German, establishing the valid text in both languages." (United States Embassy, Lima, February 15, 1961.)

FOOD AND AGRICULTURE ORGANIZATION

INTERNATIONAL FISH MEAL MEETING:

Market Problems Studied: The tumbling price of fish meal and the effect it has had on the incomes of fishermen and producers made a meeting on the subject advisable, and 23 countries accepted invitations to the International Meeting on Fish Meal, March 20-29, at the Food and Agriculture Organization headquarters in Rome. Governments indicating their intention to send representatives were: Belgium, Cambodia, Canada, Colombia, Denmark, Germany, Iceland, Iran, Japan, Morocco, the Netherlands, Norway, Peru, the Philippines, Portugal, Somalia, Spain, Sweden, Tunisia, the Union of South Africa, the United

International (Contd.):

Kingdom, the United States, and Yugoslavia.

The meeting was convened by FAO at the request of governments and with the financial backing of the world's fish-meal industry, and considered practical steps towards increasing effective demand for fish meal and ensuring stable conditions in the market.

United States Represented: The U. S. Departments of State and Interior and United States fish meal producers were represented at the FAO intergovernmental meeting in Rome, Italy, March 20-29, 1961. The emergency meeting was requested by member fish-meal producing countries as a result of a rapid increase in the world's productive capacity causing accumulation of stocks and substantial reduction in prices. Less than full use is being made of this valuable protein material which goes directly or indirectly into feed, and the incomes of fishermen and others involved in the production of fish meal are being seriously curtailed.

The meeting was expected to assess the world's demand for fish meal, both short- and long-term, in relation to productive capacity; consider ways and means of increasing the effective demand by action on the part of government and industry individually or in concert, such as in the feeding of protein-undernourished peoples; and explore possibilities of ensuring stable conditions in the international market for fish meal without resort to restrictive measures.

The following were the members of the United States Delegation to the meeting at Rome, March 20-29.

Chairman: Clarence W. Nichols, Special Assistant to the Assistant Secretary for Economic Affairs, Department of State. **Vice Chairman:** Donald L. McKernan, Director, Bureau of Commercial Fisheries, Department of the Interior.

Advisers: Donald Y. Aska, Chief, Branch of Marketing, Bureau of Commercial Fisheries, Department of the Interior; Thomas A. Barber, J. Howard Smith, Incorporated, Port Monmouth, N. J.; Michael P. Boerner, Office of International Trade, Department of State; Charles Butler, Acting Chief, Division of Industrial Research, Bureau of Commercial Fisheries, Department of the Interior;

Charles Carry, Executive Secretary, California Fish Cannery Association, Terminal Island, Calif.; W. M. Chapman, Director, The Resources Committee, San Diego, Calif.; Lawrence I. Clarke, President, Atlantic Processing Company, Amagansett, Long Island, N. Y.; J. Steele Culbertson, Director, Industrial Products Division, National Fisheries Institute, Incorporated, Washington, D. C.; Ursula H. Duffus, Economic Officer, American Embassy, Rome; Ammon G. Dunton, Chairman of the Board, Reedville Oil and Guano Company, Incorporated, White Stone, Va.; Allen W. Haynie, President, Reedville Oil and Guano Company, Incorporated, Baltimore, Md.; William C. Herrington, Special Assistant for Fisheries and Wildlife, Office of the Under Secretary of State; Frederick C. June, Jr., Chief, Menhaden Investigations, Bureau of Commercial Fisheries, Department of the Interior, Beaufort, N. C.; Stanley W. Letson, President, Maine Marine Products, Incorporated, Portland, Maine; John B. Lowry, Menhaden Vessel Captain, Reedville, Va.; John Franklin McCammon, Ralston Purina Company, St. Louis, Mo.; Harry I. McGinnis, Wallace Menhaden Products, Incorporated, New Orleans, La.; George R. Wallace, President, Wallace Fisheries Company, Morehead City, N. C.; Clayton E. Whipple, Agricultural Attache, American Embassy, Rome.

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INTERNATIONAL FISH MEAL MEETING IN ROME:

The fullest support of the Food and Agriculture Organization (FAO) for any measure contributing to the more extensive and profitable use of the world's fishery resources was pledged on March 20, 1961, by the FAO Deputy Director-General, at the opening session of the International Meeting on Fish Meal, Rome, Italy.

The meeting with 123 participants from 27 nations plus observers from four international nongovernmental organizations considered measures to assure stability in the fish-meal market. A sharp increase in the production of fish meal (up by some 700,000 tons in five years) caused the price of fish meal to drop from about \$130 a ton to \$75 a ton.

The participants named Dr. Augusto Assettati, Minister Plenipotentiary in the Italian Ministry of Foreign Affairs, as Chairman. Also elected were a chief rapporteur, three vice-chairmen, and six other chairmen of working committees. This group of ten constituted the meeting's Steering Committee.

The broad aim of the meeting was to assess the world demand for fish meal, now and in the future, and to explore all possibilities of achieving stability in the industry on the basis of consolidation and expansion of production and trade, without recourse to any restrictive measures which could be avoided by an exchange of information, experience, and views.

The Deputy Director-General pointed out: "You know that the expansion and development of the fish-meal industry has occurred with astonishing rapidity and offers an impressive demonstration of the results of applying modern technology and science to the exploitation of natural resources scarcely

International (Contd.):

touched by the limited, often primitive, operations of earlier generations of fishermen.

"At the same time, the suddenness with which the market for fish meal deteriorated at a certain moment demonstrates just as impressively how delicate the balance may be between supply and demand and how powerful has been the incentive to increase production provided by the strength of the market up to 1959."

The widespread anxiety in the fish-meal industry has underlined the importance of timely international consultation. This applies with special force to fisheries, for unlike agriculture, fisheries are concerned with markets and natural resources that exist outside national boundaries.

"I must express my gratification that, in the present emergency, the Governments and the industry alike considered it appropriate to turn to FAO as the agency which could and should provide an international forum for an objective discussion of their problem," said the Deputy Director-General. Costs of the meeting were subscribed by the participating countries and their fish-meal industries. The industry also arranged for translations at the meeting into Japanese in addition to FAO's three official languages.

Two opportunities involving the use of fish meal and moving towards relieving hunger and malnutrition and falling within the scope of FAO's Freedom-from-Hunger Campaign were indicated to the meeting by the FAO spokesman.

"One concerns the possibility that the expansion and improvement of livestock production in many countries, where fish meal is scarcely known or unavailable at present, may eventually promote a much heavier demand for fish meal if certain problems of cost, foreign exchange, and farmers' education can be solved.

"The other concerns the possibility of promoting the use of fish meal and similar products for human consumption, a possibility which has been explored only very tentatively so far. A very great deal remains to be done in the way of nutritional and processing research, consumer education, and home economics before the significance of this possibility can be properly assessed."

The six working committees were: Group A, production of fish meal for animal food; group B, production of fish meal for human food; group C, research and productive capacity in the industry; group D, increasing the demand for fish meal for animal food; group E, increasing demand for use as human food; group F, studies towards the stabilization of conditions in the international fish-meal market.

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SUCCESSFUL TESTS OF FISH MEAL IN FOOD FOR HUMANS:

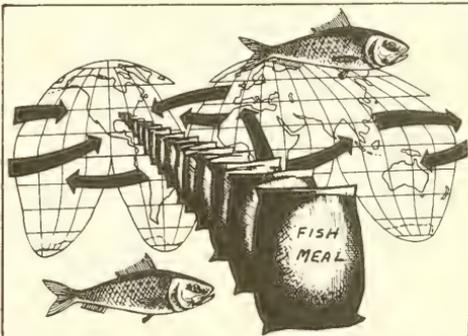
A note of optimism over the possibilities of refined fish meal or fish flour for human feeding was voiced on March 22, 1961, at the International Meeting on Fish Meal by delegations from countries where mass human feeding of fish flour has been successful.

The Moroccan delegate told the 27-nation meeting at the Food and Agriculture Organization (FAO) in Rome, that campaigns promoting the use of fish flour still needed to be developed.

"Our experiments with fish flour started two years ago," said the Moroccan delegate. "The results have been extremely satisfying, the acceptability complete. We made the population realize that it is deficient in protein. During 1959-

1960, we doubled the human consumption of fish flour in Morocco. We hope to increase it in 1961. Two plants now manufacture biscuits that contain 15-percent protein derived from fish flour. The Government, with the assistance of international organizations such as FAO, has undertaken a mass campaign to increase the demand for fish flour. Our Government recognizes that 40 percent of the population still suffers from malnutrition."

The Moroccan opinion was seconded by the representative from the United Nations Children's Fund (UNICEF), whose organization also had been active in the Moroccan fish flour campaign. "I do not believe that adequate promotional campaigns have been made in countries where protein malnutrition exists," said the UNICEF representative. "Experiments in the Union of South Africa and Sweden were done among a population that had a wide range of choice among other protein foods."



In discussing the acceptability of fish flour, the Peruvian delegation, who described his country as the world's largest producer of fish meal, said tests began two years ago in Peru. "The fish flour was put into bread and was accepted very well by the children," said the Peruvian delegate. "The main difficulty is to convince the population that this type of food is food for them to combat protein malnutrition. The introduction of fish flour into their diets would be of great help."

The Swedish delegation reported that in Sweden the use of fish flour was still in the experimental stage. However, it had been used with success in rye bread and porridge.

A United States delegate said that fish flour products had been offered in the United States and that the Government was testing the products and running feeding tests. Plans called for studies in the engineering process needed to manufacture fish flour products more cheaply.

Discussing the production of fish meal, almost every country said its production could be greatly increased. The Norwegian delegation said its winter herring catch should rise again in 1964 and so would its fish-meal production. The same was the case with Iceland.

The Danish delegation reported that with a 10- to 20-percent rise in the world price for fish meal, Danish production would increase again to 50,000-60,000 metric tons. The delegation said that it did expect such a price rise.

"Small producers can only continue if prices are good," said the French delegate. "French producers of fish meal have had to reduce the price. If fish is already cheap, as it is in France, we must find means of keeping the price up if we are to keep the industry growing. In France, the manufacture of fish meal is not a primary industry."

The Moroccan delegate said that 70 percent of fish processed within his country went into fish meal. "Morocco

International (Contd.):

could double its fish-meal production if financial resources were available," he said. "The price now is set by the Government and is very low."

"Our resources are probably among the greatest of the world," said the Peruvian delegate. "However, measures have been taken to produce only 3 million metric tons of fish for fish meal during this year in order to preserve these resources. But studies are still under way on the resources to see what would be the best level of production. We are building fishing boats up to the 200-ton capacity. Plants and various operations have been modernized and we are improving the quality of the product."

A United States delegate, representing the second-largest producer of fish meal, said prices would still be a factor and would keep its production this year at last year's level. However, the delegate said the United States was capable of producing 15,000 tons of fish meal per hour if all its plants and boats were fully utilized. This meant production could be doubled if the economic situation warranted it.

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FISH MEAL MEETING CONFIDENT OF PRICE RECOVERY:

A partial recovery in the world price for fish meal was declared an "absolute certainty" by an FAO consultant on fish-meal utilization, speaking at the International Meeting on Fish Meal in Rome on March 23. The visiting associate professor of the University of California told a committee concerned with increasing the demand for fish meal for human food that the price rise in the past several months will continue. The price of fish meal, which had dropped from \$139 a ton to \$75 a ton, last October began to rise and currently ranged from \$100 to \$105 a ton. "The fish-meal market has radically changed in competition with other high protein feeds," said the associate professor. "The premium which fish meal can expect to command over other high-protein feeds will be a bit lower. But this does not mean that the price will be at all unfavorable to the industry. I think that some recovery of price is absolutely certain."

The professor went on to sketch some of the "completely unfortunate" conditions that had combined to depress the price of fish meal during the past several years. He named oceanographic factors affecting the supply of raw fish, a drop in hog and poultry production, a sudden increase in competition from soyabean feeds, and additional production of fish meal by Peru. Some of these factors have been overcome, others are changing. The hog and poultry production is picking up. The price of fish meal is going to rise within the next six to nine months.

"With the great increase in supply last year, fish meal was being pushed into markets where it was already being used," said the professor. "It then became valuable only for its crude protein. Now, supplies are being reallocated, new markets developed. Fish meal will come to be evaluated in the terms of its plus factors, such as sulphur-containing amino acids. The general market situation has altered from what it was several years ago."

The professor's optimism was reflected by the adviser to the delegation from the Union of South Africa, whose country is the world's second-largest exporter of fish meal. Although income from fish meal was \$1.5 million less in 1959 in South Africa than in 1960, the adviser said that optimism prevails in the South African fish-meal industry. However, he pinpointed continuity of supply as one of the main factors that lead to market stability. "We have had a policy of carrying stocks over a 12-months period," he said, "where the average producer only has supplies during the 6 to 7 months when he is actually producing. Unless exporting countries are prepared to carry stocks over 12 months, so they can give a rea-

sonable spread of supply, they cannot give consumers confidence that stocks will be available during all the year."

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MEETING DISCUSSES ROLE OF FISH MEAL IN ANIMAL FEED:

The continued and expanded use of fish meal in feed for animals will depend on steps being taken by the fish-meal industry to standardize the quality, supply, and price of its product, the International Meeting on Fish Meal in Rome was told on March 22, 1961. A professor of the University of Maryland told a working group of the meeting that if these factors are "relatively constant," and if better use is made by the industry of scientific and economic information about its product, "in most areas the use of fish products for animal feeding can be increased."

The working committee, which was to report to a plenary session on March 23, was concerned with factors affecting the demand for fish meal in compounds of animal feed. Despite a vastly increased supply in the past year, and a sharp drop in prices, fish meal had not regained its traditional place as the high-protein component of compound feeds. One reason advanced was that feed manufacturers had, in an earlier period of high fish-meal prices and short supply, converted to the use of synthetic amino acids. Improved technology and lower prices in the production of synthetics had made manufacturers reluctant to change back to fish meal.

Other speakers pointed out that, with the assurance of constant supply of high-quality fish meal at a moderate price, feed manufacturers would adjust their mixtures to include more fish meal. While competition from other sources of protein was held to be growing stronger, it was felt that fish meal was still a "good buy" in terms of its nutritive value.

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MEETING ON ECONOMIC EFFECTS OF FISHERY REGULATIONS:

The economic effects of fishery regulations, a field of study that is rapidly gaining international importance with the increasing size and range of fishing fleets and with the extensive exploitation of the high seas, will be further evaluated at a meeting of experts from June 12-17, 1961, at Ottawa, Canada.

Sponsored by the Food and Agriculture Organization (FAO), the meeting is the result of four conferences, beginning in 1956, on the economic effects of regulations in selected fisheries. FAO member governments and interested intergovernmental organizations have been invited to send participants with expert knowledge in this field.

The purpose of the meeting is to add to the theoretical knowledge of the economic management of fisheries and to improve the value of regulation as a means towards attaining basic objectives of fishery policy. Until recently, attention was focussed primarily on regulating fishery resources as a means of protecting these resources and to maintain a steady yield. Just before the Second World War, it was pointed out that a rate

International (Contd.):

of fishing that produces maximum steady yield may not necessarily be the most economical one.

The effects of regulation on the incomes of those whose livelihood depends on the exploitation of fishery resources, is of utmost importance. For example, on certain fishing grounds, cost factors may be too high for the economic exploitation of the fishery by a great number of fishermen. In such cases, it might be necessary to give consideration to alternate measures, such as the exploitation of these grounds by only a limited number of fishermen so that each could derive a greater income from the fishery.

The problem of determining and ensuring an economic level of fishing intensity is rather complex, since it requires not only an evaluation of biological and economic factors but also agreement among nations as to the best exploitation of fish stocks that are often property common to all.

Regulations have been closely examined from a theoretical and economic standpoint in a working paper, "The Economics of Regulating Fisheries," prepared by Anthony Scott of the University of British Columbia (Canada) for the meeting. "The criterion against which methods of regulations and their results are assessed is that of the efficiency of the whole economy, in which the fishery is just one industry," the paper points out. "It should be asked of each fishery regulation whether it assists or retards efforts to make the best joint use of manpower, capital, and natural resources."

Using this criterion, the meeting would examine and evaluate the economic effects of the different types of fishery regulations (e.g. closed areas, closed seasons and quotas, limitations on technology, gear and entry) as applied in selected fisheries.

Numerous agreements among countries interested in the protection and exploitation of certain fishery resources are now in force. The meeting is to provide an opportunity for discussion on experience gained in the Northwest Atlantic lobster and the Northeast Pacific halibut industries, the South African pilchard industry, the whaling industry, and the Japanese trawl fishery.

OCEANOGRAPHY

INTERGOVERNMENTAL CONFERENCE:

The Intergovernmental Conference on Oceanographic Research, convened by UNESCO, met in Copenhagen, Denmark, July 11-16, 1960. The Conference adopted resolutions for the General Conference of UNESCO in November 1960, concerned with: (a) the establishment within the framework of that agency of an International Oceanographic Commission made up of representatives of nations willing to participate in oceanographic programs which require concerted action by the nations; (b) the assistance and strengthening of national and regional research training institutions, especially in relation to the International Indian Ocean Expedition; (c) the study of the feasibility and advisability of operation by UNESCO of an international research and training vessel (which study should be undertaken by the Intergovernmental Oceanographic Commission) and the necessary steps taken to start such an operation if recommended by the Commission.

In November 1960 the UNESCO Council authorized establishment of an Office of Oceanography as a part of UNESCO. At the same time, it set up an Intergovernmental Oceanographic Commission. (Pacific Science Association Information Bulletin, January 1961.)

WHALING

PRICE HIGHER FOR 1960/61 SEASON
ANTARCTIC WHALE OIL:

The International Association of Whaling Companies reports that about 220,000 tons of whale oil of the 1960/61 season have been sold by the British, Dutch, Japanese, and Norwegian whaling companies. About 190,000 tons have been bought by a large British firm and about 30,000 tons by the three Norwegian hardening plants. In addition, the British firm has purchased 10,000 tons of whale oil from the stocks held by the British Ministry of Food. The price for the entire quantity is reported to be £73 10s. (US\$205.80) a long ton or £1 (\$2.80) more than the price for oil produced in the 1959/60 season. It is also reported the entire Norwegian production of 10,500 tons of sperm oil has been sold.

Although the Norwegian expeditions planned to continue operations until April 7, the weather in the Antarctic was reported to be very unfavorable and it was uncertain wheth-

International (Contd.):

er the Norwegian expeditions would reach the quota of 5,800 blue-whale units. United States Embassy, Oslo, March 24, 1961.)



Angola

SUBSIDY ON FISH MEAL EXPORTS ENDED:

With the close of 1960, the Angolan Institute of Fishing Industries ceased granting subsidies to exporters of fish meal. The funds provided for this purpose were sufficient only for the period July 1 to December 31, 1960; the authority governing this expired and was not renewed. The subsidy has been withdrawn because of the need for the Government to economize and divert money to more important projects and because the world market price for machine-dried fish meal has risen to about \$85 per metric ton. That figure roughly approximates the costs of production of many Angolan producers, according to the Fishing Institute. (United States Consulate, Luanda, February 24, 1961.)



Argentina

SHRIMP LANDINGS FROM THE RAWSON AREA POOR:

According to the January 4, 1961, issue of the Argentine newspaper *La Prensa*, over half of the 40 fishing vessels that sailed to the shrimp grounds near Rawson, Province of Chubut, returned to northern waters because of a scarcity of shrimp this season. Returning fishermen attribute the scarcity to the large catches of the past five years which supposedly included young and breeding shrimp.

Last year also was an extremely poor year for the Argentine shrimp industry. However, the fishermen's explanation that overfishing is creating the scarcities is not substantiated by scientific investigators. There is no satisfactory answer for the fluctuations in the shrimp fishery in the Rawson area. A poor catch in 1961 will seriously affect those firms which were organized in the past four years to export shrimp to the United States. (United States Embassy, Buenos Aires, January 4, 1961.)



Australia

SHRIMP INDUSTRY:

There was a sharp decrease in the amount of Australian shrimp exports, particularly to the United States in the fiscal year ending June 30, 1960. Total exports, which had risen to more than 427,000 pounds in 1958/59, dropped to only 209,795 pounds in 1959/60 and are estimated to be running at an annual rate of under 200,000 pounds this fiscal year, July 1, 1960-June 30, 1961. Even more marked has been the decrease in exports to the United States (including Hawaii) which fell from 385,932 pounds (90 percent of total shrimp exports) in 1958/59 to 35,330 pounds in 1959/60 (only 27 percent of total shrimp exports). Exports to the United States for 1960/61 are estimated to be about 26,000 pounds.

Table 1- Australian Shrimp Export by Country of Destination, 1959/60 and 1960/61

Destination	1960/61 ^{1/}		1959/60	
	July 1- June 30		July 1-June 30	
	Green Shrimp	Cooked Shrimp	Green Shrimp	Cooked Shrimp
	(Lbs.)			
United States	6,000	-	6,640	-
Honolulu	20,000	10,000	28,890	15,199
New Guinea Area	100,000	25,000	96,676	25,622
New Caledonia	2,000	23,000	1,627	23,005
Fiji, New Hebrides	1,000	11,000	788	11,292
Others	100	200	60	196
Total	129,100	69,200	134,481	75,314

^{1/}Estimated.

The Australian Fisheries Division can offer no explanation for the sharp reduction in shrimp exports to the United States, which has taken place in spite of the considerable rise in total heads-on landings from over 6.7 million pounds in 1958/59 to 7.8 million pounds in 1959/60. Officials are only able to speculate that a rapid increase in the catch and availability of large banana shrimp has attracted Australian consumer attention, and domestic demand and prices for all kinds of shrimp have risen as a consequence. Coupled with this is the fact that consumer demand for shrimp in nearby New Guinea has also risen sharply. With local demand apparently sufficiently high to support profitable prices, fishermen have turned away from the distant United States markets to local and nearby markets.

The main shrimp fishing grounds are located on the east coast of Australia between Nowra in New South Wales and Yeppoon in Queensland. Shrimp fishing is not carried out along the entire length of this coastline, but is concentrated around ports such as Nowra, Newcastle, Maclean, and Evans Head in New South Wales, and Southport, Moreton Bay, Tin Can Bay, Bundaberg, Gladstone, and Yeppoon in Queensland. Over 90 percent of the Australian shrimp landings come from that area. The remainder comes from Southern New South Wales, Victoria, and Western Australia.

Shrimp are available from the above areas, which run from tropical to temperate zones, over most months of the year. In Queensland, banana shrimp (*Penaeus merguianus*) are obtained in Hervey Bay and off Yeppoon from May to August. King shrimp (*Penaeus plebeius*) are taken off Fraser Island from July to September and off Moreton Island from November to February. In New South Wales school shrimp (*Metapenaeus macleayi*) and king shrimp are taken during the December-April period.

Although there are 5 plants in New South Wales and 8 in Queensland registered to process shrimp by freezing for export, they do not all export their production. One firm in New South Wales, which is registered to can shrimp for ex-

Australia (Contd.):

port, has packed less than 20,000 pounds to date, all of which have been sold on the Australian market. There is very little trend towards mechanization in the existing plants. In most plants, sorting, peeling, and heading, etc. are carried out by female labor. Only one plant uses automatic grading machines; there are no peeling machines in Australia.

Most vessels built for Australian fisheries are designed so that with slight modifications they can be used in other fisheries. Therefore, there is no specific shrimp fleet as such and there is no specific construction program for shrimp vessels. All existing shrimp fishing vessels are owned by Australians or Australian companies.

There are at present no export controls, subsidies, or taxes levied on shrimp exports by the Australian Government. The wages paid to employees in Australian processing plants are: (1) Full-time employees receive the basic wage plus a margin for skill. The basic wage in New South Wales and Queensland is £14 14s. (US\$ 33.36) and £13 16s. (\$31.32) per week, respectively. The margins range up to approximately £1 10s. (\$3.40) per week. (2) Employees on piece work who are generally females, are paid on the quantity handled. The most recent data available (1957) for Queensland is: grading 1d. (0.9 U.S. cent) a pound; heading and grading 1.5d. (1.4 cents) a pound to 2d. (1.8 cents) a pound, layer packing 1d. (0.9 cent) to 2d. (1.8 cent) a pound according to grade. The greater the number of shrimp per pound the higher the rate.

Payment to the fishermen varies slightly but in all cases full payment for shrimp delivered is made within one month of delivery.

No accurate data are available on fishermen's income. However, as the majority of shrimp fishermen engage in other types of fishing it can be assumed that the income from shrimp fishing alone is insufficient for economic operation of the fishing vessel.

With further exploratory shrimp trawling in waters adjacent to the northern coastline of Australia there is a good possibility that the Australian shrimp catch will be increased.

Shrimp in Australia probably include the banana, tiger, and western king shrimp (*Penaeus latusulcatus*), which are suitable for export to most countries.

The banana shrimp which is expected to be found in commercial quantities in the tropics has already been exported to the United States where it is classified as a "white" shrimp. The western king shrimp may be suitable for export to the United States as a "pink" shrimp. (United States Embassy in Canberra, November 30, 1960.)

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CANNED FISH IMPORT STATUS CHANGED FROM QUOTA TO REPLACEMENT BASIS:

All Australian canned fish imports were transferred on January 1 from a quota to a replacement basis.

Norms will be established on the basis of twice the value of Category A quotas held by importers at December 31, 1960. The value of outstanding licenses will be taken into account in calculating the amounts initially available under norms. The replacement system enables licenses to be granted to new importers.

The application, last April, by the Fish Cannery Association of Australia for a Tariff Board hearing on canned fish has been granted. The Association will ask for increased import duties.

The Board will report whether assistance should be given to the Australian fish-canning industry; if so, what assistance; and, if assistance should be given by Customs tariff, what the rates of duty should be. (Australian Fisheries Newsletter, February 1961.)

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TUNA LANDINGS IN NEW SOUTH WALES SET NEW RECORD:

The 1960/61 tuna season in New South Wales, which began badly with some weeks of unfavorable weather, by January 10 had produced record landings of 2,250 short tons. The fish were delivered to the cannery at Eden. It was also the first time the Eden deliveries had topped the 2,000-ton mark.

Between December 15 (when it seemed that the season was tapering off) and January 10, the cannery received 300 tons of tuna. On January 12 some boats were still out looking for more fish.

To the Eden deliveries of 2,250 tons must be added tuna taken to South Australia by refrigerated trucks and fishing boats, the minor normal buying by a Sydney cannery, and some tuna used for other purposes. But even at 2,250 tons, the 1960/61 New South Wales tuna catch is well above the previous record of 1,964 tons in 1959/60.

The tuna were taken this year in bursts, which sometimes overtaxed the Eden freezer. The cannery notified the Tuna Boat Owners' Association of Australia daily of the quantity of fish it could handle.

In 1953/54, the New South Wales tuna catch first reached the substantial total of 526 short tons.

New South Wales tuna landings, in short tons, 1953/54-1960/61 were as follows: 1960/61^{1/2}, 2,250; 1959/60, 1,964; 1958/59, 1,945; 1957/58, 965; 1956/57, 841; 1955/56, 327; 1954/55, 460; and 1953/54, 526. (Australian Fisheries Newsletter, February 1961)

^{1/2}To January 10, 1961.



Austria

FISH MEAL MARKET:

Austria, an inland country, has no marine fishing industry and no domestic production of fish meal. The quantity of fish meal consumed is equal to the quantity imported.

Consumption of fish meal is insignificant when considering that approximately 1.3 million metric tons of grains plus large quantities of hay and other feeds are fed to livestock annually, and that only about 12,800 metric tons of fish meal were imported in 1959.

Imports of fish meal and fish waste unfit for human consumption (tariff #23.01-B) are duty-free and liberalized from both the dollar and European areas. Imports are effected by importers and wholesalers of feed-stuffs and a few large producers of mixed feeds.

The most important countries of origin of Austrian fish meal imports are Angola, Norway, and Peru, which supply about 90 percent of the imports.

Austria's Imports of Fish Meal, 1959

Country of Origin	Quantity Metric Tons	Value	
		AS 1,000	US\$ 1,000
West Germany	105	479	18
Italy	33	142	5
Belgium-Luxembourg	352	1,465	56
Great Britain	40	176	7
Iceland	35	177	7
Netherlands	80	329	13
Norway	2,794	13,222	509
Portugal	340	1,328	51
Switzerland	7	38	1
Japan	94	417	16
Angola	6,457	26,625	1,024
South African Union	50	264	10
United States	5	21	1
Argentina	47	175	7
Peru	2,279	8,905	343
Australia	105	577	22
Total	12,823	54,340	2,090

Practically all of the imported fish meal is used for the production of mixed feeds.

Prices range from 2,600 to 3,800 schillings a metric ton (US\$100.00-146.15 a metric ton) free on Austrian border, according to country of origin, quality, protein content, and world market fluctuations. (United States Consulate, Vienna, February 20, 1961.)

Note: US\$1.00 equals about 26.0 Austrian schillings.



Belgium

FISH-MEAL PRICES, MARCH 1961:

Belgium fish-meal prices early in March 1961 were about unchanged for domestic fish meals but slightly higher than a month earlier for imported fish meals. Imported Meal: 65 percent protein, US\$80.60 per metric ton or about \$73.12 a short ton, c.&f. Antwerp (80-90 percent digestible). Domestic Whole Meal (fish solubles added): 62 percent protein \$99.20 a metric ton or about \$90.00 a short ton f.o.b. plant (93-94 percent digestible). Domestic Regular Meal: 50-55 percent protein, \$69.50-76.45 a metric ton or about \$63.05-69.36 a short ton f.o.b. plant (about 90 percent digestible). (United States Consulate, Antwerp, March 6, 1961.)



British North Borneo

SHRIMP RESOURCES OFF NORTH BORNEO SURVEYED:

The Kagawa Prefecture Overseas Fisheries Co. in Shikoku has sent four vessels-- the Kagawa Maru No. 1, 215 tons, and Kagawa Maru No. 2, 75 tons, and two trawlers of the 40-ton class from Takamatsu, Kagawa Prefecture, to Sandakan (located in the northeastern section of British North Borneo on the Sulu Sea), to explore the shrimp-fishing potential in that area.

The contract on the fishing vessels can be renewed at the end of three months, but whether or not a joint company may be established depends upon the results of the exploratory fishing. Besides the Kagawa Prefecture firm, two other Japanese fishery firms are also participating in the enterprise. (The Suisan Tsushin, January 7, 1961.)

SHRIMP FISHERY OF STATE OF BRUNEI UNDEVELOPED:

According to a statement by the Government of the British North Borneo's State of Brunei, there is no organized shrimp industry in Brunei.

Shrimp are usually caught near the shore. The fishermen wade into the water, at times shoulder high, each one pushing a net in front of him. Little or no shrimp fishing is done from boats. Therefore, the catch at times is considerable and at other times negligible.

British North Borneo (Contd.):

Catches are seasonal and depend on localities. It is said that large catches are obtained in Brunei Bay during one short period in the year, usually about February. From the open seas the shrimp come inshore in large numbers, perhaps once every one or two months.

Shrimp fishing is a village industry. There are no freezing, canning, or other plants in Brunei. The catch is normally made into paste (Belachan) or dried. Such processing is done by the fisherman and his family. A small portion of the catch is sold fresh in the local market.

No statistics are available for the total annual landings of shrimp, which are made up of two varieties. The smaller and more abundant variety is known locally as "bubok buy-ah." The larger, averaging about 1½ inches in length, is locally known as "bubok tambak."

There is no export of shrimp or shrimp products from Brunei. The catch is insufficient to meet local demand and all shrimp fishing is a family-type venture.

Any possibility of expanding the industry is dependent on the discovery of further fishing grounds. However, little or nothing is known on this aspect and considerable research would be required before a substantial expansion could be attempted. (United States Consulate, Singapore, February 14, 1961.)

Note: The State of Brunei is west of the San Dakar area where the Japanese are surveying the shrimp resources of the Sulu Sea.

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Canada

BRITISH COLUMBIA DOGFISH LIVER LANDINGS AS OF MARCH 15:

The dogfish liver landings in British Columbia under the Government Subsidy Program as of March 29, 1961, totaled 910,711 pounds and the subsidy paid for the livers amounted to C\$109,285.

The subsidy on British Columbia dogfish livers was raised from 10 cents to 12 cents a pound in October 1960. The Canadian Government voted C\$150,000 for special payment on dogfish livers, for the season ending March 31, 1961. This represents a 12 cents subsidy on 1,250,000 pounds of dogfish livers.

In the 1959/60 season, which started in mid-August 1959 and ended on March 31, 1960, a total of 1,500,000 pounds of livers were taken under the subsidy plan. The Government spent \$150,000 at 10 cents a pound. Although \$250,000 was available for the subsidy in 1959/60, not enough dogfish were caught to use all of that amount. (Western Fisheries, October 1960.)

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BRITISH COLUMBIA HERRING LANDINGS AND PRODUCTS, 1955/56-1960/61:

Herring landings in British Columbia during the 1960/61 season amounted to 171,941 short tons as compared with 185,153 tons landed in the 1959/60 season. Fishing activities in both the 1960/61 and 1959/60 seasons were curtailed somewhat due to market conditions for fish meal and disputes over ex-vessel prices. The yield of herring oil in

British Columbia Herring Landings and Products, 1960/61 Season with Comparisons

Season Ending:	Unit	March 18, 1961 ^{1/}	March 12, 1960 ^{1/}	March 14, 1959	March 15, 1958 ^{1/}	March 16, 1957	March 10, 1956
Landings:							
District No. 2:							
Northern	Tons	47,088	23,239	10,980	11,286	31,004	11,055
Central	"	43,505	10,919	40,628	14,965	36,213	50,084
Queen Charlotte Is.	"	2,896	3,121	23,058	13,774	29,089	92,637
District No. 3:							
Lower East Coast	"	31,309	55,582	51,648	18,284	43,389	48,978
Middle East Coast	"	10,023	20,014	10,183	9,932	20,001	30,156
Upper East Coast	"	2,978	10,005	15,015	3,470	15,045	951
West Coast	"	34,142	62,273	78,122	12,624	5,202	19,535
Total	"	171,941	185,153	229,634	84,335	179,943	253,396
Products Produced:							
Bait	"	1,619	848	1,046	2/	1,116	1,175
Meal	"	31,014	34,492	42,307	14,886	32,555	47,314
Oil	Imp. gals.	2,956,948	4,585,307	4,545,845	1,900,775	3,452,762	4,391,230
Canned	48-lb. cases	2/	2/	2/	2/	2/	2/

1/Limited operations.

2/Less than three companies reporting.

Source: Canadian Department of Fisheries (Pacific Area), Vancouver, B. C.

Canada (Contd.):

1960/61 was the lowest per-ton of raw her-
ring in the past six years.

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**NEW BRUNSWICK FISH-MEAL
PRICES, MID-MARCH 1961:**

Fish-meal prices (60 percent protein)
quoted by New Brunswick, Canada, producers
in mid-March this year were C\$87-90 a short
ton (C\$1.45-1.50 a protein unit), up about
C\$6.00 a ton from the prices of mid-Febru-
ary 1961. Prices in February were C\$81-84
a short ton (C\$1.35-1.40 a protein unit) for
both domestic and export sales. (United
States Consulate, Saint John, N.B., March 14,
1961.)



Ceylon

**MOTORIZATION OF PRIMITIVE CRAFT
RAISES FISHERMEN'S CATCH:**

In 1951, the Government of Ceylon de-
cided to start mechanizing fishing boats,
using the advice of Food and Agriculture
Organization (FAO) experts and utilizing
boat designs first developed by FAO naval
architects in India for Indian fishing vessels.
Many hundreds of existing boats were me-
chanized. Then in 1958, an ambitious plan
called for 8,000 mechanized boats to be built
within the next 10 years. An FAO naval ar-
chitect was requested and a Finnish expert
in the mass production of boats, engines,
and tools was sent to Ceylon.

The Finnish expert studied the Ceylonese
methods of boat building and the purpose for
which the boats were needed. Then he de-
signed a boat which introduced many im-
provements and is included among the 600
mechanized boats built in Ceylon during 1959
and 1960.

But the Finnish expert's most interesting
work began when he proved that even the
most primitive rafts (the teppans or sailing
rafts) could be mechanized with outboard
motors, boosting the Ceylonese fishermen's
catch by almost 600 percent and their in-
come by 300 percent. (The teppans are shal-
low craft built of several logs lashed to-
gether.)

He put 5-hp. outboards on big teppans and
recorded the results. Without the engines,
the boats averaged a catch of 358 pounds of
fish monthly valued at 185 rupees (US\$38.94).



Teppans or catamarans--fishing craft built of several pieces of
wood put together very simply and a sail--are the type of craft
used by many Ceylonese fishermen.

With the engines enabling the teppans to reach
the distant and deeper fishing grounds, the
mechanized rafts averaged 2,435 pounds of
fish monthly, a catch valued at 1,462 rupees
(\$307.79). This 580-percent increase in catch
was recorded in August 1960, which is con-
sidered a bad fishing month.

"There is a difference between mecha-
nizing a boat, designing it for an engine plus
net-handling gear, and motorizing a boat by
the use of an outboard motor," said the Fin-
nish expert. He added, "some 2,500 of the
7,500 large 30-foot teppans used in northern
Ceylon could be motorized. We should try
to use the local craft, with its many advan-
tages such as shallow draft and no need of
harbor facilities as much as possible, espe-
cially until the other mechanized boats and
harbors are built."

The Finnish expert, who has returned to
Ceylon to work with the mechanization pro-
gram there until the end of 1962, plans to
start experimenting with motorizing the
small 16-foot teppans used in southern Ceylon

Ceylon (Contd.):

to see if the outboard motors will bring as good results as they did on the larger tepsans in northern Ceylon.

The need for fish in Ceylon is obvious, for although the island country has 90,000 fishermen, it still has to import fish. The marketing and distribution system there needs to be streamlined, said the expert, for old-fashioned methods of marketing still keep the price of fish up.



Chile

EXPORTS OF FISH MEAL AND OIL, 1960 AND JANUARY-FEBRUARY 1961:

All exports of fish meal and oil during the first two months of 1961 by Chile originated with fish meal plants in Arica and Iquique which operate with a 20-30 percent subsidy. The export price of fish meal early in March was \$72-\$75 a metric ton (\$65.32-68.04 a short ton). There has been an increase of about \$10 a metric ton since the first of the year. This increase results from the shortage of Peruvian meal, according to trade sources.

Table 1 - Chilean Exports of Fish Meal and Oil, January-February 1961

Destination	Quantity		Average Price	
	Metric Tons	US\$	US\$/Metric Ton	US\$/Short Ton
January Exports				
Fish Meal:				
United States	797	50,400	63.22	57.35
Netherlands	1,647	123,850	75.19	68.21
Germany	295	25,200	85.57	77.63
Brazil	208	14,625	70.15	63.64
Totals and Averages	2,947	214,075	72.63	65.89
February Exports				
United States	99	9,182	92.75	84.14
Netherlands	648	55,725	86.00	78.02
France	120	7,440	62.00	56.25
Totals and Averages	867	72,347	83.44	75.70
January Exports				
Germany	508.1	65,462	128.84	116.88
February Exports				
Germany	100	13,500	135.00	122.47

Source: El Informativo. Organo oficial de la Camara Central de Comercio de Chile y de la Camara de Santiago. Official export figures are published by the Central Bank of Chile.

The Central Bank of Chile has published revised statistics for the year 1960. These data show a substantial increase (from 26,433 metric tons valued at US\$1,990,690 to 28,155 tons valued at \$2,011,600) in the exports of

fish meal obtained earlier from the same source. The revised figures, which are still preliminary, are as follows:

Table 2 - Chilean Exports of Fish Meal and Oil, 1960

Destination	Quantity	Value	Average Price	
	Metric Tons	US\$ 1,000	US\$/Metric Ton	US\$/Short Ton
Fish Meal^{1/}:				
United States	19,025	1,352.5	123.65	112.18
Netherlands	3,141	213.0	67.82	61.53
Germany	1,479	112.6	76.14	69.07
Spain	1,467	88.7	60.47	54.86
France	1,189	100.6	84.60	76.75
Belgium	933	73.4	78.65	71.35
Italy	739	57.4	77.66	70.45
Mexico	100	6.8	68.41	62.06
Great Britain	59	4.3	73.01	66.23
Bolivia	23	2.3	99.57	90.33
Totals and Averages	28,155	2,011.6	71.45	64.82
Fish Oil^{2/}:				
United Kingdom	2,259	330.7	146.42	132.83
Germany	1,951	224.5	150.81	136.81
Norway	1,012	115.3	113.93	103.36
Denmark	600	73.7	126.17	114.46
Netherlands	150	18.5	123.09	111.67
Bolivia	2	0.2	86.96	78.89
Totals and Averages	5,974	762.9	127.70	115.85

1/Revised preliminary data.
2/Preliminary data.
Source: Boletín de Embarques, Banco Central de Chile, Departamento de Comercio Exterior Sección Exportaciones, February 1961.

In March the three modern fishing boats brought to Chile for experimental fishing under a U. S. International Cooperation Administration contract moved to Iquique to fish for a fishing company in that port. Each trawler has about 70 tons capacity and is equipped with all the modern fishing aids. (United States Embassy in Santiago, March 7, 1961.)

Note: Also see *Commercial Fisheries Review*, March 1961 p. 49.

FISHING FLEET RECONSTRUCTION AIDED BY FINNISH EXPERT:

A Finnish boat-building expert who has been aiding the Ceylonese fishing industry under the auspices of the Food and Agriculture Organization was detailed to Chile for three months after the earthquakes and tidal waves struck that country in May 1960, to aid in rebuilding the southern Chilean fishing fleet. His task was to organize the building of 400 small fishing boats and build them better than before.

A check of the southern Chilean shipyards showed that the builders were again building large rowboats, which are traditionally used for fishing and transportation among the islands of southern Chile, one of the largest archipelagos in the world.

Chile (Contd.):

"These boats have room for passengers, but not for fishing," the Finnish expert stated. So he modified the boats by designing an 8½-meter (27.9 feet) fishing boat, with a high bow and large open space to take in nets.

However, still with the idea of proving what mechanization can do when coupled with traditional methods of fishing, even using something as unlikely as a rowboat, the expert recommended that 30 two-man rowboats be equipped with outboard engines and nylon nets and that the results be recorded.

"I estimate that the catch nearly will double with one nylon net," said the Finnish expert. "The catch will more than double when a 5-hp. engine is added and it will go up 7 times when three nylon nets and a 10-hp. engine are used. The outboards will enable the rowboats to get to better and farther fishing grounds," he added.



Denmark

FISH MEAL AND SOLUBLES PRICES,
FEB. 26-MAR. 4, 1961:

Export prices for Danish herring meal were being quoted at 725-790 Danish kroner per metric ton (US\$95.37-103.92 a short ton) f.o.b. Esbjerg, during the week of February 26-March 4, 1961. One large shipment of fish meal to Poland brought 895 kroner a ton (\$117.74 a short ton).

There were no export sales of fish solubles during the week ending March 4, 1961, but during the preceding week a substantial shipment was made to West Germany at an export price of 520 kroner per ton (\$68.40 a short ton). (United States Embassy, Copenhagen, March 20, 1961.)



France

FISH MEAL AND OIL PRICES,
DECEMBER 1960:

Average fish meal and oil prices reported for December 1960 by the head of the French Fish Meal Manufacturers Association were as follows:

	Protein Content (%)	NF/Metric Ton	US\$/Short Ton
Fish Meal:			
French fish meal ^{1/}	55	450	82.81
" " " "	60	500	92.01
" " " "	65	600	110.41
Peruvian fish meal ^{2/}	60-65	520	95.69
Angola fish meal ^{2/}	65	550-570	101.21-104.88
Norwegian herring meal ^{2/}	73	730	134.33
Fish Oil:			
French oil (herring, dark)	10	550	101.21
" " " " (light)	5-6	600	110.41

^{1/} Ex-plant loaded aboard car or truck, 15 metric tons minimum.
^{2/} Loaded aboard car/French port, customs paid, 15 metric tons minimum.
Note: Values converted at rate of 4.93 new francs equal US\$1.

(United States Embassy, Paris, January 16, 1961.)



German Federal Republic

REPORT ON WORLD-WIDE FISH MEAL PRODUCTION AND DEMAND:

A study of world-wide fish-meal production and demand has been made by the head of the Fisheries Section of the West German Food Ministry. The study was prompted by the fact that West Germany is the second largest consumer of fish meal in the world and that recent developments in the world market for fish meal have had a detrimental impact on the West German fishing trade.

After reviewing in his study the significance of fish meal for feeding purposes and of fish flour for human consumption, as well as postwar production developments, the head of the Fisheries Section arrived at the conclusion that until 1959 the world supply of fish meal was about 100,000-200,000 metric tons a year short of demand. In his opinion, this shortage was responsible for the relatively high fish-meal prices which prevailed until 1959. In spite of the upswing in world production of fish meal, caused primarily by expanded production in Peru beginning in 1959, he believes it is doubtful that there is actually an oversupply of fish meal in the world market. He attributes the slump in fish-meal prices which began in early 1960 primarily to ruinous competition among Peruvian exporters, and he believes that increasing demand will probably cause fish-meal prices to rise again in 1961, although not to presump levels.

In his analysis of future developments, the head of the Fisheries Section states his belief that world fish-meal production will continue to rise, not only because countries with highly developed fisheries will increase the utilization of fish offal for reduction purposes, but primarily because developing countries with plans for expanding their fisheries will find fish-meal production the easiest way of utilizing their catches. He believes that demand for fish meal will increase also, but that fish meal will have to meet competition from vegetable-protein feeds (for instance, soya meal), enriched by synthetic amino acids and vitamin concentrates. He states that price will determine the future sales of fish meal, and quotes experts as saying that fish meal, delivered c.i.f. European seaport, will probably find a price ceiling of about \$100-110 per metric ton.

In his opinion, fish-meal producers should make special efforts to open up new markets for fish meal (for instance, in Spain, Yugoslavia, Greece, and Israel) and that the production of fish flour should receive more attention. The German official is finally of the opinion that the more advanced

German Federal Republic (Contd.):

fishery nations, particularly those in Europe, will have to adapt themselves to future developments by utilizing their fish catches primarily for human consumption and by restricting fish meal production to the processing of fish offal and whatever landings cannot readily be absorbed by the market.

In advancing the opinion that the catching of fish solely for reduction purposes will eventually cease to be a profitable business for the more advanced fishery countries, particularly those in Europe, the West German expert apparently believes that the more developed countries cannot compete in this field with the developing countries.

Despite the difficulties which prompted this study, West Germany has so far not taken any measures to cope with the problems which have arisen for its fishery trade and its fish-meal industry as a result of the price slump following the expansion of Peruvian fish-meal production. Although only recently the West German Deep-Sea Trawlers Association again requested the Government to introduce an import levy for fish meal to operate in the same manner as the levy for grain, the German Federal Government, according to trade sources, has delayed action because it wanted to negotiate first with Peru, and also because there has been a certain opposition from the farmers against raising the price of fish meal. (United States Consulate, Bremen, March 3, 1961.)

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FISH MEAL PRICES,
MARCH 10, 1961:

Prices reported at Hamburg Commodity Exchange as of March 10, 1961, for fish meal delivered ex-Hamburg warehouse, or c. & f. West German sea port (see table).

Fish meal prices on the Hamburg exchange on March 10, 1961, were somewhat lower for both domestic and imported fish

Type of Fish Meal	Protein Content (%)	Delivery	DM/Metric Ton	US\$/Short Ton
German fish meal	50-55	Mar.-May 1961	465	105.46
" " "	60-65	" " "	480	108.86
" " " std. brands	60-65	March 1961	572.50	129.84
Peruvian fish meal	65-70	prompt	435-440	98.66-99.79
" " "	65-70	Apr.-June 1961	455	103.19
Angola fish meal	65-70	prompt/Apr. 1961	535	121.34
Icelandic herring meal	63-68	Aug.-Oct. 1961	595	134.95
Icelandic cod meal	65-70	Mar. 1961	605	137.21
Danish herring meal	70-75	Apr.-June 1961	605	137.21

Note: Values converted at rate of 4.00 deutsche marks equal US\$1.

meal on prompt delivery, but trended higher on futures. (United States Consulate, Bremen, March 13, 1961.)



Guatemala

JAPANESE-Guatemalan
SHRIMP FISHERY PLANNED:

Preparations were being made in mid-February 1961 for two Japanese companies to establish a joint Japanese-Guatemalan firm to fish for shrimp off Central America. Experimental operations by a Guatemalan fishery company beginning December 1960 proved extremely satisfactory. Using 10 fishing boats of the 50-ton class (chartered Panamanian vessels), the shrimp catch was some 80 tons per month, several times as much as the yield of shrimp fishing in the East China Sea area.

The experimental operation was carried out under Japan's technical guidance and investment, and the fishing ground at its nearest point is 5-6 miles offshore where water is only about 10 meters deep. The cost of the operation is small. For the present, there is only a small cold-storage plant at Champerico, and its capacity is not large enough to take care of landings which have been far beyond expectation.

The new joint Japanese-Guatemalan fishery company is expected to be established in April-May 1961 with a capital of \$1 million (49 percent supplied by Japanese and 51 percent by Guatemalan interests). Landings of 300 tons a month, using some 30 fishing vessels, or 3,500 tons per year are planned.

meal, (The Suisan Tsushin, February 18, 1961.)

Note: Champerico is on the Pacific Coast of Guatemala where shrimp fishing is good year-round.



Iceland

FISHING INDUSTRY LABOR DISPUTE SETTLED EXCEPT FOR WESTMAN ISLANDS:

The fishermen's unions at Reykjavik, Hafnarfjordur, and Akranes reached agreement with the motorboat owners on February 19, 1961, regarding wage and share terms which cover primarily the inshore spring cod and haddock fisheries. The only remaining labor trouble as of February 23 in the industry was in the Westman Islands. The settlement conformed to the agreement reached January 24 as the result of countrywide bargaining, with a few minor adjustments covering local conditions.

During the month-long labor dispute, many of the fishermen signed on vessels in other towns and the vessel owners in the Reykjavik, Hafnarfjordur, and Akranes areas were unable to find sufficient crewmen. (United States Embassy, Reykjavik, February 23, 1961.)

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GOVERNMENT RESOLUTION TO SETTLE FISHING LIMIT DISPUTE WITH BRITISH:

On February 27, 1961, the Icelandic Government submitted for Althing approval a resolution authorizing the Government to settle the dispute with the British over fishing limits. The four main points of the resolution are:

- (1) Britain recognizes immediately the 12-mile fishery zone of Iceland.
- (2) Britain recognizes important changes in the base lines in four places around the country which extend the fishery zone by 5,065 square kilometers.
- (3) British vessels will be permitted to fish within specific areas between the 6- and 12-mile limits for a limited length of time each year during the next three years.
- (4) The Government of Iceland declares that it will continue to work for implementation of the parliamentary resolution of May 5, 1959, regarding the extension of the fisheries jurisdiction around Iceland, and that any dispute on actions that may be taken be referred to the International Court of Justice. (United States Embassy, Reykjavik, March 7, 1961.)

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REGULATIONS ON TRAWLING WITHIN 12-MILE FISHING ZONE ISSUED:

The Government of Iceland has issued new trawling regulations applicable both to foreign and Icelandic vessels for the waters off Iceland, effective March 11, 1961. These regulations are complicated, but in essence, where British trawlers have gained advantages, Icelandic trawlers have been given at least comparable treatment. Trawling by vessels of all other nations must take place outside the 12-mile fishing limits. Changes in base lines, allowed by the British agreement, have pushed the 12-mile limits seaward, embracing an additional 5,065 square kilometers of fishing grounds.

The Government instructed the Icelandic Coast Guard to deal leniently with non-British vessels which might engage in trawling within the new protected area set up by the bilateral agreement between Iceland and Great Britain. The Coast Guard charged the British fishing vessel Othello of Hull with trawling within the protected area on March 19. The vessel was brought to Reykjavik and fined the equivalent of over US\$6,000. Its catch and fishing gear also were confiscated. However, the trawler captain has appealed the case to the Icelandic Supreme Court, the United States Embassy in Reykjavik reported on March 24, 1961.

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TRAWLER OWNERS CONTINUE AGREEMENT NOT TO LAND FRESH FISH IN BRITAIN:

The Icelandic Trawler and Fishing Vessel Owners continued their voluntary agreement not to land fresh fish in British ports, despite the settlement on March 11, 1961, of the fisheries dispute with Great Britain with reference to Icelandic fishing limits.

The Icelandic press reported that the British Trawler Officers Association has threatened to go on strike if Icelandic vessels began fresh fish landings. The Association had demanded that the British Government offer assurances that Iceland would not further extend its fishing limits, states a March 24, 1961, dispatch from the United States Embassy in Reykjavik.



Japan

CONSTRUCTION OF TUNA VESSELS CONTINUE INCREASE:

Japanese construction of pelagic tuna vessels continues to increase and every shipyard has more orders than they can handle. The two shipyards in Shimizu, Shizuoka Prefecture, are building more than half of the tuna vessels being constructed in Japan.

In 1960 one of the shipyards in Shimizu constructed 28 vessels (9,740 tons), of which 26 were tuna vessels. The second shipyard built 39 vessels (12,450 tons), of which 26 (9,190 tons) were tuna vessels. The construction of tuna vessels by the two shipyards in 1960 was 60 percent greater than the 33 vessels (11,400 tons) built in 1959. These tuna vessels are of the 300-ton class, and the vessel owners are located in Shizuoka Prefecture, including Yaizu and Omaezaki, also in Ibaragi and Kanagawa Prefecture.

The construction of tuna vessels after World War II became active in 1947 and 1948 to replace those that became useless or were sunk during the war. It was called the first construction boom of tuna vessels. The second boom occurred in 1952 and 1953 when the MacArthur Line was abolished and building of larger fishing vessels became possible under a new law; and 10,000 tons to 18,000 tons of tuna vessels were built in Japan.

The third boom arrived in 1956 with the development of the fishing grounds in the Indian Ocean in 1955, and larger vessels became the rule. The average vessel tonnage rose from 370 tons in 1953 to 500 tons in 1956 when 18,000 tons were built.

The present boom began in 1959, reflecting the favorable conditions of the industry in general and coincided with the replacement of vessels constructed after the war. In that year in Japan, a total of 76 tuna vessels (25,000 tons) were launched. The development of fishing grounds in the Atlantic and a decline in salmon fishing and Antarctic whaling encouraged the tuna vessel boom and the increase in the prices of fishing-vessel rights accelerated it.

Three years have elapsed since the beginning of the last tuna-vessel building boom, and signs indicate that it will continue unless there is a business setback.

So far orders for more than 60 vessels have been received at both Shimizu shipyards this year, and conditions are such that no space is available for setting up another keel before the end of the year. How to handle orders that are expected for the balance of this year is said to be a problem for those in charge of construction work at the shipyards. (Fisheries Economic News, March 4, 1961.)

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INDIAN OCEAN BLUEFIN TUNA FISHING POOR:

Concern is being expressed over the unexpected poor fishing by Japanese tuna vessels for Indian bluefin tuna in the Indian Ocean and in the waters off the Java coast and to the west of Australia. This fishery for Indian bluefin tuna, which is highly prized on the Japanese market as "sashimi" (raw fish cut in thin slices and flavored with soy sauce), normally starts in October and extends to April of the following year.

According to reports, poor fishing during the early part of the current season has com-

elled many vessels to remain on the fishing grounds for longer periods, as long as 20 days, thereby compelling them to miss the profitable New Year's trade. Catches in late November to mid-December are said to have averaged less than three metric tons a day, or about half of what they were a year ago.

Fishing picked up in late December, with catches averaging about 6 metric tons a day per vessel; catches then dropped to about 3 metric tons a day in early January, increased to 10 metric tons in mid-January, and dropped drastically in late January. Fishermen believe that this 10-day cyclical change in fishing conditions may be associated with the moon-phase. They claim that catches fell drastically on moonlit periods.

Due to the difficulty in finding good fishing grounds and fluctuating catches, some of the larger long-line vessels engaged in this fishery switched to the big-eyed tuna fishery east of 100° E. longitude, where catches of 10 metric tons a day of big-eyed tuna were reported.

However, exploratory fishing conducted by the Shizuoka prefectural research vessel Daifuji Maru in the area south of 35° S. latitude indicates that catches may fluctuate periodically but bluefin should be available over a wide area until April. (Nippon Suisan Shimbu, February 13, 1961.)

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NORTH-BORNEO TUNA FISHING ENTERPRISE TO EXPAND:

The Japanese fishery firm engaged in a North Borneo-Japanese tuna-fishing enterprise is said to have decided to expand the operations established in cooperation with the British North Borneo Government in May 1960.

The Japanese-North Borneo enterprise was established with 100 percent investment by the Japanese firm at a base on a small island, using the Ginyo Maru, freezer-factory-ship of the 4,000-ton class, and six skipjack hook-and-line boats of the 35-ton class. The catch is processed into dried skipjack sticks and exported to Ceylon.

The Japanese firm intends to strengthen operations on land as well as at sea and early in 1961 a cold-storage facility was planned for the base and a new fishing ground may be developed using a purse-seiner of the 160-ton class. The cold-storage facility will have a capacity of 60 tons and ice-making

Japan (Contd.):

capacity of 20 tons a day. Since the use of small skipjack hook-and-line vessels limits the efficiency of the operation, the skipjack purse seiner (Taiho Maru) will be added and experimental fishing will be carried out in the Sulu Sea and around the island base. If successful, the Japanese company intends to replace the inefficient small vessels with larger vessels. (Fisheries Economic News, January 3, 1961.)

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JAPAN-URUGUAY TUNA FISHING ENTERPRISE:

The Eikyo Maru, 300 tons, belonging to a large Japanese fishery firm, left Tokyo for Uruguay early in 1961 to participate in joint tuna fishing between another Japanese fishery firm and a Uruguay fishing group. It was scheduled to arrive at its destination in mid-February 1961. The vessel was expected to start tuna fishing with a base at Montevideo under a 3-year contract and to land some 1,000 metric tons, principally yellowfin and albacore, per year. (The Suisan Tsushin, January 4, 1961.)

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TUNA FISHING TRENDS IN THE ATLANTIC OCEAN:

The Kanagawa Prefecture Fisheries Experimental Station in Japan reported on tuna fishing conditions in the Atlantic Ocean as experienced by Japanese fishing vessels.

According to the report, tuna fishing in the Atlantic is carried out by an increasing number of vessels. The Japanese began fishing in the Atlantic in 1956. In 1959, 36 Japanese vessels operated in the Atlantic and the number increased to 50 in 1960. The increase in vessels fishing in the Atlantic is attributed (1) to the fact that tuna fishing, both in the Pacific and Indian Ocean, is believed to have reached its saturation point and (2) larger vessels of up to 1,000 tons are capable of fishing in distant waters.

In 1960, the fishing grounds in the eastern section of the Atlantic yielded a catch rate of 7.5-11.25 tons per trip in the beginning, but the rate dropped to 4.5-4.9 tons. In the western region of the Atlantic, the catch rate also started to decline in 1957. The absolute quantity of tuna decreased

while the number of vessels fishing increased. In 1961, the Japanese plan to conduct research in the Atlantic to determine the causes for the decreasing catch rates and also study the biology of Atlantic tuna.

The principal landing ports for tuna caught by Japanese vessels fishing in the Atlantic are Freetown (Guinea), Montevideo (Uruguay), Las Palmas (Canary Islands), Venice (Italy), Cristobal (Canal Zone), and others. (Japanese newspaper, March 3, 1961.)

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FISH-SAUSAGE MAKERS ASK FOR MORE TUNA:

The Japanese Fish Sausage Association has thrown its support to the Tuna Mothership Council in its bid to obtain a larger tuna quota. The Association is asking for an increase in the tuna mothership quota and that the increase be set aside for fish-sausage production.

According to the Association, production of fish sausage in 1955 totaled 9,417 metric tons and in 1959, 71,516 metric tons. Production in 1960 will likely be over 85,000 metric tons; in 1961 over 100,000 metric tons. Use of tuna as an ingredient for fish sausage has increased from two percent of total tuna landings in 1954 to over 20 percent (14,300 metric tons) in 1959. Supplies are becoming increasingly inadequate. Thus, the Government should authorize increases in the tuna mothership quota, and such increases utilized for fish-sausage production. (Shin Suisan Shimbun Sokuho, February 15, 1961.)

* * * * *

EXPORTS OF FISHERY PRODUCTS, 1960:

In 1960, Japan exported a total of 175,627 metric tons of fishery products other than canned, valued at US\$58.4 million. The United States, the greatest single customer for those products, bought 45 percent of the total, or 79,087 tons valued at US\$28.8 million. In addition, Japan exported 131,074 metric tons of canned fishery products, valued at US\$116.2 million. The United States again was the most important single buyer and bought 22 percent of the total, followed closely by the United Kingdom with 17 percent (see table 1).

In 1960, Japan also exported 234 million pounds of marine oils valued at US\$23.7 million. The leading buyers were the Nether-

Japan (Contd.):

Product and Country of Destination	Quantity		Value	
	Metric Tons	1,000 Yen	US\$1,000	
Fish and Fish Products, Crustaceans and Molluscs, not in Airtight Containers:				
United States	79,087	10,387,483	28,838	
Ryukyu Islands	6,842	616,625	1,712	
Hong Kong	2,210	856,196	2,377	
Formosa	684	120,915	336	
Malaya	323	45,770	127	
Singapore	1,274	206,774	574	
Burma	2,101	121,819	338	
United Kingdom	2,262	884,158	2,455	
Italy	19,393	1,544,216	4,287	
Canada	1,832	317,422	881	
Puerto Rico	6,301	706,211	1,961	
Hawaii	2,745	546,855	1,518	
American Samoa	11,685	1,132,560	3,144	
Others	38,888	3,552,184	9,862	
Total	175,627	21,039,188	58,410	
Fish and Fish Products, Crustaceans and Molluscs, in Airtight Containers:				
United States	29,329	10,392,174	28,851	
Ryukyu Islands	4,077	476,706	1,323	
Hong Kong	1,127	140,648	390	
Malaya	1,811	188,483	523	
Singapore	2,220	254,874	708	
Philippines	14,912	1,873,038	5,200	
Indonesia	541	63,668	177	
Burma	2,381	211,768	588	
Ceylon	3,407	365,683	1,015	
Saudi Arabia	333	81,669	227	
Sweden	350	195,320	542	
United Kingdom	24,421	16,572,166	46,008	
Ireland	491	206,001	572	
Netherlands	2,167	707,525	1,964	
Belgium-Luxembourg	4,942	1,463,577	4,063	
West Germany	6,892	1,578,614	4,383	
Switzerland	1,361	362,837	1,007	
Italy	363	115,194	320	
Canada	3,040	859,011	2,385	
U. A. R. (Egypt Region)	4,250	592,002	1,644	
Ghana	2,995	450,837	1,252	
South Africa	326	134,515	373	
Australia	3,758	1,567,124	4,351	
Hawaii	385	184,329	512	
Others	15,195	2,802,708	7,781	
Total	131,074	41,840,471	116,159	

lands, West Germany, United Kingdom, Belgium, Sweden, in order of importance. The

United States was not as important a buyer as the countries mentioned (table 2).

Product and Country of Destination	Quantity	Value	
	1,000 Pounds	1,000 Yen	US\$ 1,000
Oil from Fish and Marine Animals:			
United States	3,508	764,759	2,123
Lebanon	60	4,228	95
Norway	1,016	88,618	246
Sweden	11,291	367,807	1,021
United Kingdom	52,279	1,715,017	4,761
Netherlands	72,122	2,276,339	6,320
Belgium	33,702	1,050,095	2,915
France	471	269,108	747
West Germany	52,786	1,604,347	4,454
Canada	59	29,396	82
Others	6,743	319,581	888
Total	234,037	8,519,295	23,652

Japanese exports of canned fishery products to the United States in 1960 were 31.1 percent below those for 1959. On the other hand, total exports for the same period were down only 10.4 percent.

Japan's total shipments of fish and shellfish other than canned in 1960 were up 8.4 percent as compared with 1959, but exports to the United States dropped 4.7 percent (table 3). On the other hand, exports to countries other than the United States were up 22.2 percent.

Japan's exports of fish and marine animal oils to the United States in 1960 were only

Japan (Contd.):

Table 3 - Japan's Exports of Principal Fishery Products, 1959-60

Product and Destination	1960			1959		
	Quantity Metric Tons	Value		Quantity Metric Tons	Value	
		1,000 Yen	US\$ 1,000		1,000 Yen	US\$ 1,000
Fish and Fish Products, Crustaceans and Molluscs, not in Airtight Containers:						
United States	79,087	10,387,483	28,838	83,061	10,523,453	29,207
All Others	96,540	10,651,705	29,572	78,985	9,013,037	25,015
Total	175,627	21,039,188	58,410	162,046	19,536,490	54,222
Fish and Fish Products, Crustaceans and Molluscs, in Airtight Containers:						
United States	29,329	10,392,174	28,851	42,568	15,075,258	41,840
All Others	101,745	31,448,297	87,308	103,731	29,673,384	82,355
Total	131,074	41,840,471	116,159	146,299	44,748,642	124,195

Table 4 - Japan's Exports of Marine Oils, 1959-60

Product and Destination	1960			1959		
	Quantity 1,000 Pounds	Value		Quantity 1,000 Pounds	Value	
		1,000 Yen	US\$ 1,000		1,000 Yen	US\$ 1,000
Oil from Fish and Marine Animals:						
United States	3,508	764,759	2,123	3,405	663,923	1,843
All Others	230,529	7,754,536	21,529	224,951	7,815,573	21,691
Total	234,037	8,519,295	23,652	228,356	8,479,496	23,534

slightly greater than in 1959. Total exports were up 2.5 percent (table 4). (Monthly Return of the Foreign Trade of Japan, Ministry of Finance, Tokyo, December 1960 and December 1959.)

Note: Values converted at rate of 360.2 yen equal US\$1 in 1960 and 360.3 yen equal US\$1 in 1959.

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FISH-MEAL PRICES, NOV.-DEC. 1960 AND JAN. 1961:

Average wholesale and export fish-meal prices for January 1961 and revised wholesale prices for November and December

Japanese Fish-Meal Prices, Nov.-Dec. 1960 and January 1961				
	Domestic Wholesale Prices		Export Price (f.o.b.)	
	US\$ Per Metric Ton	US\$ Per Short Ton	US\$ Per Metric Ton	US\$ Per Short Ton
1961:				
January . .	2/160.00	145.15	1/	1/
1960:				
November	2/157.50	2/142.88	138.00	125.19
December	2/158.06	2/143.39	136.80	124.10

1/Not available. 2/Revised.

1960 quoted by the Aquatic Oils Association of Japan are shown in the table. (United States Embassy, Tokyo, February 27, 1961.)

* * * * *

PERMISSION TO IMPORT FISH SOLUBLES FROM U. S. REQUESTED:

A Japanese grain company in February 1961 filed an application with the Ministry of International Trade and Industry (MITI)

to import 1,000 tons of fish solubles from the United States at a price of \$80.55 per metric ton c.i.f. MITI is studying the proposal carefully since it bears some connection with fish-meal imports. There is also the problem of dollar allocations, which would have to come from the 1961 budget.

Fish solubles for animal feed presently sell for 26,000 yen (US\$72.22) a metric ton in Japan. This is somewhat cheaper than imports. However, demand for animal feed is expected to increase, and it is felt that a profit can be made even after paying higher prices for imports.

Production of fish solubles in 1960 is reported to be 450 tons from fish-meal factories, 15,000 tons from coastal meal operations, plus an additional 250 tons from miscellaneous sources. Domestic animal-feed producers utilized most of the production but some quantities were exported to Formosa and Okinawa. (Nippon Suisan Shimibun, February 20, 1961.)

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OVERSEAS FISHERY OPERATIONS FOR 1960:

According to a list of Japanese overseas fishery operations (as of December 1, 1960) compiled by the Japanese Fisheries Agency, the number of such enterprises was the highest recorded since World War II. It is expected that the number reported in 1961

Japan (Contd.):

will be even greater. (The Suisan Tsushin, February 17, 1961.)

The development of fisheries overseas in 1960 was as follows:

Japanese Overseas Fishery Operations as of December 1, 1960		
Country	Type of Operation	Types of Fishery
Brazil	Joint investment	Tuna, whale
Brazil	Sale of fish	Tuna
Argentina	Chartered vessels	Trawling
Cuba	Sale of fish	Tuna
Thailand	Fishing labor	Trawling
Ceylon	Fishing labor	Tuna, stick-nets, hook and line
Ceylon	Sale of fish	Tuna
Malaya	Sale of fish	Tuna
Ryukyu	Chartered vessels	Mackerel hook and line
Ryukyu	Chartered vessels	Tuna
North Borneo	Capital investment	Skipjack cold-storage and processing
North Borneo	Chartered vessels, sale of fish	Skipjack purse seine
North Borneo	Chartered vessels	Trawling
Philippines	Fishing labor	Coastal Fisheries
Iran	Chartered vessel	Trawling
Italy	Sale of fish	Trawling
Italy	Fishing labor	Furse seine, tuna
Netherlands	Joint whaling operation	Freezer-carrier
Tonga	Fishing labor	Coastal fisheries
Israel	Sale of fish	Tuna

* * * * *

OYSTER PACKING SEASON BEGINS:

The Japanese packing season for canned oysters in the Hiroshima area began early in March. This year's pack is expected to total 8.3 million pounds or 220,000 actual cases (100,000 cases of "smoked" and 120,000 cases of "boiled"). Including 40,000 cases (10,000 cases of "smoked" and 30,000 cases



Packing oysters.

of "boiled") planned to be packed in the Sanriku area, the total Japanese pack will be 260,000 cases.

There are 70,000 cases of "smoked" on hand from last year's pack. This means that the amount available for marketing this year will be 330,000 actual cases (180,000 cases of "smoked" and 150,000 cases of "boiled"). (Suisan Tsushin, March 9, 1961.)

* * * * *

APPLICATIONS FOR TRAWLING SOUTH OF ALASKA PENINSULA REJECTED:

The Japanese Fishery Agency has rejected applications for permits to Japanese trawling firms to fish in waters south of Alaska Peninsula. These applications were filed late in 1960 by the leading Japanese fishing firms. The reason for rejecting the applications was the possibility of the trawling operations catching halibut.

* * * * *

PLAN TO FISH HERRING AND BOTTOMFISH SOUTH OF ALEUTIAN ISLANDS:

Four large Japanese fishery firms are planning to send fleets to fish herring and bottomfish south of the Aleutian Islands during the fishing season beginning in April. The Japanese industry wants to limit the participants to the three companies that carried out experimental operations last year. One of the companies is said to be making preparations for herring fishing with a freezer-mothership of the 2,000-ton class even if authorities are not inclined to permit bottomfish fishing. (Suisan Tsushin, March 9, 1961.)

* * * * *

SARDINE PACK QUOTA FOR 1961 SET:

The Japanese sardine packers association held its directors meeting in February 1961 and approved 1961 regulations. The regulations are almost identical to those for 1960 and the total pack quota for sardines is 1,005,000 cases--525,000 cases for the fixed base quota, 225,000 cases for the free-based quota, 5,000 cases for the newcomers, and 250,000 cases for the reservation quota. The limit for each member's use of the free-base and reservation quotas is 10,000 cases. (The Suisan Tsushin, February 23, 1961.)



Liberia

JAPANESE FIRM TO BUILD FISH STORAGE AND PROCESSING FACILITIES:

One of the largest Japanese fishing companies, in combination with European and Liberian interests, is preparing for the establishment of a large fish-processing and storage facility in Monrovia, Liberia. To be built for an estimated US\$1 million, this facility will service a fleet of between 17 and 23 tuna vessels operating in West African waters.

Plans call for construction of a \$400,000 processing and freezing plant with a daily processing capacity of 20 tons of frozen tuna, and a frozen storage capacity of 2,000 tons. It will also include an ice-making plant to supply the vessels. The facility will take 18 months to build and, when completed, will employ 5 Japanese and 35 or more Liberians. Eventually it is hoped that the plant will handle as much as 20,000 tons of fish per year with a commercial value of \$4 million or more.

Pending completion of its new plant, the Japanese firm has already begun limited operations in Liberia based on use of a mothership now berthed at the Free Port of Monrovia. This ship is being fed by 4 or 5 vessels now fishing off the Liberian coast. This fishing fleet will be increased gradually as the new plant approaches completion, at which time the mothership will be withdrawn.

The plant will be located on about 2.5 acres of reclaimed land inside the north breakwater of the Free Port, about a quarter mile from shore. In addition to the production facility, this area will include office and living quarters for the administrative staff as well as a 20-bed rest home for the crews of the fishing fleet, and a Diesel-electric plant to provide a completely self-contained operation. Eventually the firm may even build its own dry-dock for repair of its vessels from the entire West-African Coast. The Japanese firm for the last three years has operated this fleet of up to 23 vessels from a base in Sierra Leone. (United States Embassy in Monrovia, March 22, 1961.)



Mexico

SCIENTISTS FIND FISH FLOUR PROMISING AS AN ADDITIVE TO FOODS:

A group of doctors headed by the Director, Hospital Infantil de Mexico, for the past several years, has been experimenting with deodorized whole fish flour as an additive to diets for human consumption. Some of their conclusions to date are:

Metabolic Balance Studies: "Although it is still necessary to compare a larger number of cases, what has been observed so far is a clear evidence of the high biological value of fish flour to enrich a poor quality basal diet."

Clinical Studies: "The results of the clinical study may be summarized: (1) Adding fish flour complement to the normal diets we gave to malnourished children did not modify the satiety index. (2) The expected tendency of the growth curve was not changed. (3) No allergic manifestations resulted. (4) No toxic manifestations resulted."

Dietetic Study: "So far, 2,600 different assays have been carried out with the following results:

"We could not find a practical way to add fish flour to infants' formulas, whatever the mixture used in their preparation: broths prepared with cereals, vegetables, etc.

"We found it possible to add, in varying percentage, fish flour to soups, beans, hard biscuits, cereals, tortillas, bread, pureed vegetables."

"The percentage we have, so far, found practical are: corn meal (for tortillas) 5 to 7 percent, bread 10 percent, beans 5 to 7 percent, noodles 10 to 15 percent, hard biscuits 10 percent, cereals 5 percent, doughnuts 10 percent, and pastries 10 percent."

"Fish flour may be added to corn meal before it is ground. To hard biscuits, it is easily added at the bakery during the baking process. To noodles (dry doughs for soups) it may also be added during the process of preparation. The complement may be added to beans after cooking, or after they are ground and ready for frying."

"The stability of foods treated with fish flour has been found indefinite for hard biscuits and noodles. The stability is less for foods of immediate consumption, such as tortillas, bread, purees, soups, beans, pastries, etc.; but it is sufficiently good to permit the easy and tasteful consumption on the same day of preparation, or on the next one."

"As fish flour is not detected in any of the foods mentioned, or at the most, there is a slight darkening of the usual color, the human groups (adults and children) in whom we tested the acceptancy, did not become aware they were consuming food with varying percentages of the complement added to it."

In another section of the report the doctors state:

"However, we believe we are on the verge of reaching a feasible and practical solution with the use of a complement of high biological value, and great nutrient power, which would be added to basic foods without changing their taste or their odor, but that would remarkably reinforce the values of the diet. We are referring to deodorized fish flour." (United States Embassy, Mexico, D. F., March 7, 1961.)

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SHRIMP FISHERY TRENDS, JANUARY-MARCH 1961:

Excellent shrimp landings by the Salina Cruz (Pacific Coast) shrimp fleet and con-

Mexico (Contd.):

tinued northers in the Gulf of Mexico, which have hampered operations of the Carmen-Campeche fleets, have been the highlights on the Mexican shrimp scene during January-February 1961.

Salina Cruz trawlers were reported to be landing from 4 to 6 metric tons of headless shrimp per trip. Trips are usually about 12 days.



Shrimp boat.

At Carmen and Campeche landings averaged about 1,000 and 1,500 pounds of headless shrimp each trip with pinks predominating. A continual succession of northers

Shrimp Ex-Vessel Prices at Carmen and Campeche (All Species), January 5, 1961, and March 1, 1961

No. Headless Shrimp Per Lb.	January 5, 1961	March 1, 1961
	(U.S. Cents Per Lb.)	
10-14	53	56
15-20	52	54
21-25	47	49
26-30	43	44
31-35	38	39
36-40	33	34
41-50	28	29
51-65	23	24
Over 66	18	19

slowed down fishing operations. Conditions were not expected to improve much until April. Ex-vessel prices at Carmen and Campeche increased from 1 to 3 U. S. cents a pound since early January 1961. (United States Embassy, Mexico, D.F., March 6, 1961.)



Morocco

FISH MEAL AND OIL EXPORT PRICES, DECEMBER 1960:

Prices for fish meal and oil in Morocco are not readily available. Some indication of fish meal and oil prices can be obtained from the data supplied by the Office Chérien de Contrôle et d'Exportation which represent official customs statistics. Prices are f.o.b. the Moroccan ports from which the product was shipped and are those assigned by the Customs authorities for imposition of an export tax. They do not necessarily represent actual prices paid for the product.

Average Moroccan Export Prices for Fish Meal and Oil, December 1960

Product & Destination	Average Export Prices	
	Mt/Metric Ton	US\$/Short Ton
Fish Meal:		
Switzerland	1/172,000	308.38
Mali	1/170,000	304.78
Madagascar	71,933	128.21
Algeria	60,198	107.29
Spain	52,410	93.41
Singapore	49,004	87.35
France	47,250	84.22
Poland	32,000	57.03
Fish Oil:		
Denmark	55,003	98.03
Germany	53,229	94.87
Holland	36,132	64.40

1/ Presumably edible fish flour.

Note: 506 Moroccan francs equal US\$1.

No distinction is made in Customs nomenclature between fish meal and edible fish flour. (United States Consulate, Casablanca, February 23, 1961.)



Netherlands

FISH MEAL AND OIL INDUSTRY AND MARKET, 1959-60:

The average import price in the Netherlands for fish-body oil at the end of October 1960 was \$153 per long ton (6.9 cents a pound). During the same period, fish meal (protein about 70 percent) prices were about fl. 245 (US\$64.93) a metric ton.



A 5.5-percent turnover tax is levied on the imported value of fish meal, the same tax levy as on domestically-produced fish meal. There are no other duties or quantitative restrictions on the imports of fish meal and fish oil.

The Netherlands fish meal and oil reduction industry uses conventional production methods. The Netherlands fishing fleet does not catch fish especially for reduction. Reduction plants obtain fish when they cannot be sold for human consumption.

There are three reduction plants in the Netherlands, located at Ymuiden, Rotterdam, and Son.

The United States is the largest supplier of fish oil to the Netherlands. Fish-oil im-

Netherlands (Contd.):

ports from the United States in 1959 amounted to 12,000 metric tons or 57 percent of the total fish-oil imports of 21,000 tons, and in the first half of 1960 totaled 7,500 tons or 68 percent of the total imports of 11,000 tons. The Netherlands margarine and soap industries are the principal buyers of fish oil. Because the United States already supplies such a large portion of the Netherlands fish-oil requirements, there is not much opportunity for expansion of United States fish-oil exports to the Netherlands. (United States Embassy, The Hague, November 10, 1960.)

Note: Values converted at the rate of one guilder (fl.) equals US\$0.265.

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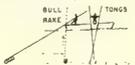
GOVERNMENT AID PLANNED FOR OYSTER AND MUSSEL CULTIVATION:

The Netherlands Government has decided to go ahead with plans for a 9-million-guilder (US\$2,386,000) salt-water basin in the Veerse Gat, Zeeland estuary, for the cultivation of an estimated 10 million oysters a year to compensate for the loss of existing oyster-breeding grounds when the giant Delta Plan reclamation works are carried out in Zeeland province. Cultivated Dutch oyster and mussel exports are valued at about 15 million guilders (US\$3,977,000) annually. Production of cultivated oysters averages about 20-25 million oysters annually. Therefore, the new program would provide for only about 50 percent of the current annual crop.

The Dutch Government made its decision on the recommendation of marine biologists who recommended the construction of a basin with a surface area of eighty hectares (197.7 acres).

Construction of the artificial basin will start next year and it will be 1969 or 1970 before it is known whether the new form of oyster cultivation will be a commercial success. The necessary bills have been submitted to Parliament.

The mussel cultivation, which is now located in the same Zeeland area as that now used for oyster cultivation, will be moved to the northern part of the Netherlands in the Wadden Zee. (United States Consulate, Rotterdam, February 20, 1961.)



Norway

AGREEMENT WITH BRITAIN ON EXTENSION OF NORWAY'S FISHING LIMITS APPROVED:

The Norwegian Parliament, on February 13, unanimously ratified the agreement with Great Britain on extension of Norway's fishing zone. Under the pact, British trawlers will be permitted to fish in a zone between 6 and 12 nautical miles off the Norwegian coast until October 31, 1970. After that date, they will have to stay outside the 12-mile limit.

The British-Norwegian agreement is contingent on Parliamentary approval of a Government bill proposing a two-stage extension of the fishery zone off the Norwegian coast and the island of Jan Mayen. The bill calls for extending the limit from 4 to 6 nautical miles on April 1, 1961, and from 6 to 12 miles on September 1, 1961. In this connection, the Government has requested a supplementary appropriation of Kr. 3,870,000 (US\$541,800) to strengthen Norway's fishery enforcement service by chartering six whaling vessels. Equipped with guns, these vessels would be manned and operated by the Norwegian Navy. (News of Norway, February 23, 1961.)

* * * * *

GOVERNMENT'S PROPOSED TRAWLER BAN CONTESTED:

Norway's Prime Minister, at a press conference early in March 1961, expressed hope that the Parliament's expanded Foreign Affairs Committee, which now is examining the Government bill on extension of the Norwegian fishery zone, would be able to work out a compromise on trawling inside the 6-mile limit. He said it was up to Parliament to evaluate the conflict of interest involved in the proposal that only trawlers of less than 300 tons be permitted to fish between 4 and 6 miles.

The proposal is endorsed by Norges Fiskarlag--the national association of fishermen. But, according to A/S Findus, the ban on larger trawlers would force a sharp cut in operations of the firm's big filleting and freezing plant at Hammerfest, now in the midst of a major expansion.

The fleet of 11 large trawlers supplying raw material for the Findus plant, it is asserted, get most of their catch inside of the 6-mile limit. The company's Director has warned that unless Findus trawlers are ex-

Norway (Contd.):

empted from the proposed ban on trawlers of more than 300 tons, the plant would have to curtail operations radically.

The Government bill calls for a 2-stage extension of the fishery zone off the Norwegian coast and Jan Mayen. On April 1, 1961, the limit would be extended from 4 to 6 miles, and on September 1, 1961, from 6 to 12 miles, subject to Parliament approval (News of Norway, March 9, 1961.)

* * * * *

PROSPECTS FOR 1961

WINTER HERRING
FISHING SEASON:

Norway's 1961 winter herring season is expected to yield the smallest catch since 1934 and may be the fourth successive year that the catch has been extremely small.

Winter herring furnish the raw materials for a large share of the fish-body oil and fish meal produced by Norway.

The 1961 catch is expected to be about 200,000 short tons—one-third below the poor catch of 1960 and the smallest since the near-failure in 1934. Unfavorable weather and difficulty in locating shoals of herring account for the expected small catch. In the mid-1950's, several winter herring catches exceeded one million tons.

A catch of 200,000 tons will supply but little raw material to byproducts processors. From 1955 through 1959 an average of 235,000 tons was used annually for purposes other than for oil and meal. Most of this tonnage was used for export as fresh herring and for home consumption after being salted and canned.

Disposition of Winter Herring in Norway from 1954 Through 1960			
Year	Total Catch	Processed for Oil and Meal	Used for Other Purposes
	..... (1,000 Short Tons)		
1960 (est.) . .	330	155	175
1959	459	239	220
1958	381	196	185
1957	877	645	232
1956	1,283	1,006	257
1955	1,064	791	273
1954	1,204	974	230

Oil yield from the winter herring catch is normally around 10 percent, with fish caught early in the season usually having a higher oil content than end-of-the-season catches.

Norwegian fisheries experts believe that the shoals of winter herring spawning off the Norwegian coast are small from natural causes rather than excessive fishing. The experts also predict a continuation of the small stocks for 1 or 2 more seasons.

In 1956, Norway produced almost 25 percent of the 565,000-ton world output of fish oil. However, in 1960, because of the small winter herring catch, Norway's share of the 490,000-ton world production dropped to less than 10 percent. In 1950-54, Norway's share averaged 22 percent of

world production and 17 percent in 1955-59. (Foreign Crops and Markets, March 13, 1961.)

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WINTER HERRING CATCH
WORST SINCE 1934:

Norway's important winter herring fishery, so-called because it centers on high-priced fat herring, was called off at midnight February 28, 1961. The result was the worst since 1934. Part of the loss may be recuperated during the spring herring season, which started March 1. But with prices reduced because of the lower fat content, prospects for a substantial improvement are very slim. Besides, the herring had already begun to leave their spawning grounds off West Norway.

According to reports from Aalesund, main port for the herring fleet, only about 42,000 metric tons of fat herring, with a first-hand value of less than Kr. 15 million (US\$2.1 million), had been landed at the end of the winter herring season. Last year, when the season was one week longer, the fat herring catch totaled some 225,000 tons, worth about Kr. 70 million (US\$9.4 million) ex-vessel. This year, the season had barely started when the drop in fat content forced the Cooperative Herring Sales Association to switch to the lower spring herring price.

The 1961 winter herring catch, smallest in 27 years, means a raw material loss of some Kr. 250 million (US\$35 million) compared with 1957, which was the last good season. And, according to experts, the failure will reduce Norway's gross national product by approximately Kr. 500 million (US\$70 million).

The failure did not come as a surprise. For the past three years there have been signs that the herring stock was petering out. Both fishing vessel operators and the fish-processing industry, therefore, have been girding for the worst.

On-the-spot reports from Aalesund say that, in contrast to customary practice, owner-operators of herring vessels have not gone deep into debt prior to the start of the fishery season. This year their loans have been cautiously kept within manageable proportions. Thus, few are expected to run into financial difficulties because of the total fishery failure. Equipment firms, too, would

Norway (Contd.):

seem able to weather the storm. Worst off is the herring oil and meal industry, which so far has received only some 7,000 tons for processing, as against 700,000 tons at the same time three years ago. Such a radical drop in the supply of raw material may prove disastrous for some firms.

However, according to the Director of the enterprising Aalesund Project Council, the fishery failure is not catastrophic for that port or the Sunnmøre district in general, though individual fishermen and processing plants will undoubtedly be hard hit. In recent years, the economy has been greatly strengthened by the growth of new industry. On the whole, therefore, the district is now well able to bear the sizable income loss caused by the poor herring fishery.

Another important factor is that the herring supplied to processing plants is being utilized far better than even a few years ago. Pound for pound, the herring yield a much better profit than formerly. Moreover, the same quantity of landed herring provides more jobs at processing plants than in former years. (News of Norway, March 9, 1961.)

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HERRING MEAL AND OIL SUPPLIES LOW:

Due to the low Norwegian herring catch this season (about 41,850 metric tons), deliveries of raw material to the reduction plants were negligible this year. The production of herring oil and meal is therefore substantially reduced. The supply of raw material for the marine-oil hardening industry will therefore also be reduced and larger imports will be needed.

A Norwegian trade representative stated that Norway has purchased 7,500 metric tons of menhaden oil from the United States so far this year and further purchases are expected during the coming months. Also the supply of herring meal will be substantially reduced with the result that the demand by Norway for other protein concentrates, such as soybean products, will increase. (United States Embassy, Copenhagen, March 13, 1961.)



Peru

EXPORT PRICES FOR FISH MEAL, FEBRUARY 1961:

The Peruvian National Fisheries Society (the trade organization for the fisheries industry) reported that export prices for fish meal (65-67 percent protein) during February 1961 were US\$72.00-75.00 a metric ton (US\$65.32-68.04 a short ton), an increase of about 2.8 percent over the January 1961 average of \$64.86 a short ton. (United States Embassy in Lima, March 13, 1961.)

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FISHERIES TRENDS 1960:

The major development in the Peruvian fishing industry during the fourth quarter of 1960 was the strenuous effort of fish meal producers to work out a solution of the problems faced by the industry during the year--overproduction, falling prices, and threatened restrictions against Peruvian fish meal in foreign markets. This effort showed marked promise of success at the end of the quarter. An export quota system, evolved at a meeting in Paris (October 1960) of fish meal producers from a number of countries, and given the force of law for Peruvian fish meal exporters by a decree of December 20, 1960, limited Peru's exports of fish meal during 1961 to 600,000 metric tons. From January 1 this year, the prior approval by the National Fisheries Society was required for the issuance of export licenses by the Ministry of Agriculture. The formula used in assigning quotas to individual producers was not made public, but it is understood that provision is made for deducting from quotas for shipments in subsequent quarters made on futures contracts which may be in excess of assigned amounts. Peru's actual fish-meal production capacity is considered to be only slightly above 500,000 tons, despite higher estimates. Therefore, the 600,000-ton quota may have little meaning beyond the stabilizing influence of a known, rather than an unknown, limit on exports.

As a complementary measure, Peruvian fish-meal producers undertook to organize a marketing organization (Consorcio Pesquero del Peru, S. A.), through which all member-producers are to export. According to the regulations of the organization, between 90 and 95 percent of Peru's production had to be represented in the membership before the consortium could become operative. It became a functioning organization February 15, 1961, with slightly over 90 percent of Peru's exportable fish-meal production represented in the membership.

Exports of fish meal are high among Peru's leading exports. In latest data showing commodity exports, for the first nine months of 1960, fish meal ranked third, after copper and cotton. For the full year 1960, the value of fish-meal exports stood at 1,056.4 million soles (US\$38.7 million).

Table 1 - Exports of Fish Meal from Peru, 1958-1960

Year	Quantity Metric Tons	Value	
		Million Soles	Million US\$
1960	507,042	1,056.4	38.7
1959	277,600	860.5	31.3
1958	105,777	271.1	11.8

Exports of other fishery products during the first nine months of 1960 were lower. There was a 50-percent drop in the quantity and a 52-percent drop in the value of frozen tuna exports, and slight reductions in canned bonito and tuna

Peru (Contd.):

Table 2 - Peruvian Exports of Fishery Products, January-September 1959 and 1960

Product	Jan.-Sept. 1960			Jan.-Sept. 1959		
	Qty. Metric Tons	Value/ Million Soles	US\$ 1,000	Qty. Metric Tons	Value/ Million Soles	US\$ 1,000
Frozen Fish:						
Tuna	5,941	18.0	658	11,929	37.7	1,378
Skipjack	6,925	19.1	699	4,729	14.8	541
Swordfish	126	1.6	59	102	1.2	44
Shrimp ("Langostinos")	97	2.4	88	51	1.2	44
Total frozen fish	13,089	41.1	1,504	16,811	54.9	2,007
Canned Fish:						
Bonito	10,777	107.2	3,921	12,859	136.8	5,000
Tuna	360	3.5	128	568	4.5	164
Total canned fish	11,137	110.7	4,049	13,427	141.3	5,164
Fish Byproducts:						
Fish meal	383,600	850.2	31,097	184,090	583.9	21,341
Fish oil	23,728	67.9	2,484	13,814	36.3	1,327
Sperm oil	9,489	32.5	1,189	7,904	26.3	961
Whale meal	1,513	2.6	95	2,525	7.8	285
Total byproducts	418,330	953.2	34,865	208,333	654.3	23,914
Grand Total	142,556	1105.0	40,418	238,571	850.5	31,085

1/F.o.b. values converted at rate of 27.36 soles equal US\$1 for first nine months of 1959 and 27.34 soles equal US\$1 for first nine months of 1960.
Source: Statistical Department, Callao Customhouse.

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Japanese sardines that it will give preference to United States brands that are popular with Philippine consumers.

NAMARCO's policy may create an opening for United States exporters that have not yet entered the Philippine market, (United States Embassy, Manila, February 18, 1961.)

DECONTROL HAS LIMITED IMPACT ON CANNED SARDINE IMPORTS FROM U. S.:

An initial assessment of the effect of the Philippine decontrol program on trade with the United States, based on a comparison of the trade in May through November 1960 with that of the same period of 1959, shows that so far the impact has been limited.

Most of the severe declines in imports from the United States that have occurred since the decontrol program was instituted can be explained by factors other than decontrol, which in April 1960 relegated about 25 percent of imports to the more expensive free market and in November an additional 25 percent. These factors include foreign competition, increased domestic production, and stringent regulations imposed by the National Marketing Corporation (NAMARCO) on its suppliers.

Among the categories of goods imported from the United States that declined most in the first 7 months of decontrol (November 1960 is the latest month for which statistics are available) were fish products.

Imports of United States fish products in May through November 1960 amounted to slightly over \$1 million, compared with over \$3 million in the like period of 1959. This drop occurred despite retention of sardines in the highest-priority and preferred-rate category of "decontrolled items" and can be attributed primarily to lack of stocks in the United States and the restrictive import policies of NAMARCO, which in April 1960 initiated much more stringent marking and labeling requirements for the items it imports. This Government organization is by far the largest importer of fish products. But only the drop in imports of squid, changed from "unclassified items" to "nonessential consumer goods," can be attributed to the decontrol program.

The decontrol program, however, is moving rapidly from the time when most goods

Table 3 - Average f.o.b. Prices/ for Peruvian Fish Meal Exports by Quarters, 1959 and 1960

	1960		1959	
	Metric Ton	Short Ton	Metric Ton	Short Ton
	(US\$)			
1st Qtr.	83.00	75.30	146.00	132.45
2nd. Qtr.	73.33	66.52	128.33	116.42
3rd. Qtr.	81.67	74.09	95.00	86.18
4th Qtr.	76.33	69.25	90.65	82.26
Average	78.58	71.29	115.00	104.33

1/Prices for fish meal with minimum content of 65 percent protein for future delivery.
Source: Fish Meal Producers Association.

exports. It is in the byproducts sector, including fish meal and fish oil, where unusual increases occurred. In the first nine months of 1960 as compared with 1959, those exports increased 46 percent in value, from 654.3 million soles (\$23.9 million) to 953.2 million soles (\$34.9 million), (United States Embassy in Lima, March 1, 1961.)



Philippine Republic

U. S. CANNED SARDINES PREFERRED:

Two Philippine trade sources have indicated that the National Marketing Corporation (NAMARCO) is very likely to give preference to United States canned sardines in its next award for this product. The time for the next sardine tender has not yet been announced, but both businessmen expected it to be some time in March.

In the past each of the two firms has represented Japanese sardine suppliers, but according to their sources at NAMARCO, the Government agency is so dissatisfied with

Philippine (Contd.):

were imported at the official 2-to-1 rate to a period in which the largest proportion of imports will be at the free-market rate. The most recent changes, which occurred last November, provided that importers of "essential producer goods," "essential consumer goods," and special "unclassified items," previously permitted importation at the preferred rate, must import such items half at the free-market rate and half at the official rate. Inasmuch as the selling rate to exporters has gone up from 2.30 pesos to 2.50 pesos to the dollar while the free-market rate has declined from 3.2 to 3 pesos to the dollar from 4 to 3.6 pesos, including the margin, a unified rate providing for a minimum distortion of existing patterns of trade may soon emerge. (Foreign Commerce Weekly, March 6, 1961.)



Poland

FISHING FLEET AND SEA FISHERIES INCREASED SHARPLY, 1949-59:

Between 1949 and 1959 the Polish fishing fleet doubled and the landings from sea fisheries rose by 146 percent. The increase in the number of large ocean-going trawlers increased from zero in 1949 to 39 vessels in 1959, and the smaller inshore craft (cutters)

Fishing Craft	1959	1958	1955	1949
Gross registered tons	58,000	55,100	34,300	15,250
	(Number)			
Supertrawlers	39	30	8	-
Trawlers	15	17	20	20
Luggers and trawlers	50	52	34	-
Luggers	3	3	3	3
Cutters	502	476	397	279
Total	609	578	462	302

^{1/}Source: Concise Statistical Yearbook of the Polish People's Republic, 1960.

jumped from 279 vessels in 1949 to 502 vessels in 1959. The sharp rise in the landings was due to increases in the landings of herring or herring-like fish. Apparently the

Product	1959	1958	1955	1949
	(Metric Tons)			
Codling	36,700	38,400	40,300	36,900
Herring	84,300	70,600	52,000	12,000
Sprats	15,300	11,300	5,100	1,100
Other	9,600	6,400	9,700	9,300
Total	145,900	126,700	107,100	59,300

super-trawlers have concentrated on the herring fishery as the landings of this species jumped sixfold from 1949 to 1959. The increase in the landings of sprat or sardines was even more pronounced. Landings of species other than herring and sprat were about the same in 1959 as in 1949.



Portugal

CANNED FISH EXPORTS, JANUARY-DECEMBER 1959-1960:

Portugal's exports of canned fish declined from 76,985 metric tons or 4.2 million cases in 1959 to 65,137 tons or 3.6 million cases in 1960. The amount of each product exported was less in 1960 (see table). West Germany

Product	January-December			
	1960		1959	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	54,790	2,883	60,760	3,152
Chinchards	1,731	91	1/	1/
Mackerel	503	20	3,236	129
Tuna and tunalike	3,432	123	4,006	141
Anchovy fillets	4,284	428	6,359	635
Others	397	20	2,624	137
Total	65,137	3,565	76,985	4,194

^{1/}1959 data for chinchards probably included with "others."

remained the principal buyer of Portugal's canned fish exports in 1960 with 14,631 tons, followed by Great Britain with 8,139 tons, the United States with 6,890 tons, and Italy with 6,417 tons. Exports for those countries in 1959 were: West Germany 16,899 tons, Italy 10,199 tons, Great Britain 7,688 tons, and the United States 7,340 tons. (Conservas de Peixe, February 1960 and 1961.)

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CANNED FISH PACK, JANUARY-DECEMBER 1959-1960:

The Portuguese pack of canned fish in oil or sauce increased from 62,459 metric tons or 3.5 million cases in 1959 to 70,204 tons or 3.8 million cases in 1960. Sardines again accounted for the bulk of the pack in 1960 with 82.5 percent as against 80.5 percent in 1959; however, tuna and tuna-like fish replaced anchovy fillets as Portugal's second leading canned fish in 1960 (see table).

Matosinhos remained Portugal's leading sardine port in 1960, accounting for 63.1 per-

Portugal (Contd.):

cent of total sardine landings as against 71.3 percent in 1959.

Product	Portuguese Canned Fish Pack, January-December 1959-1960			
	January-December			
	1960		1959	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	57,929	3,054	50,290	2,646
Chinchards	1,879	99	1/	1/
Mackerel	492	19	583	23
Tuna and tunalike	5,335	191	4,495	161
Anchovy fillets	3,919	392	5,624	562
Others	650	34	1,467	78
Total	70,204	3,789	62,459	3,470
1/1959 data for chinchards probably included with "others."				

Tuna landings for January through October 1960 amounted to 1,912 tons and bonito 112 tons as compared with 1,310 tons and 288 tons, respectively, for the same period in 1959. (Conservas de Peixe, February 1960, January and February 1961.)



Senegal

TUNA FISHING TRENDS, LATE 1960:

Two major events highlighted the tuna fishing industry in Senegal, West Africa, during the last quarter of 1960, one being the start of the 1960/61 fishing season and the other being a continued and growing interest on the part of United States firms in commercial aspects of the tuna fishery.

The 1960/61 season started officially on November 15, 1960, with a total of 57 clippers (24 from France) and 16 freezerships taking part. Preparations for the new season had centered around the hope that Senegal could combat the excessively high costs of the local industry and thereby enter world markets. However, lack of cooperation on the part of the fishermen, who raised prices to 40 percent above world market levels, vitiated these hopes and any export outside the franc zone area will be attributable only to the fact that the Senegalese Government is forcing local canners to sell 3,500 metric tons of canned tuna at world prices if they wish to sell to France the 10,000 tons France has agreed to purchase at the artificially-high prices. In addition, 5,000 tons of frozen tuna outside the agreement will be purchased by France, and 6,000 tons by United States firms. The fishermen's attitude has caused Senegal to start looking for fishermen other

than the French to catch and land the fish, though up to February 14, 1961, no agreement was reached with anyone.

United States interest in the Senegal tuna industry has been emphasized by visits of representatives of United States tuna canneries.

A meeting of fishery scientists took place in Dakar from December 12 to 17, 1960. It studied various aspects of tuna life-history, as well as encouraged increased research on tuna in African waters. It encouraged the establishment of an international regulatory commission to prevent overfishing. (United States Embassy, Dakar, February 14, 1961.)



South-West Africa

FISHING VESSELS AND GEAR, JUNE 1960:

As of June 1960, the South-West African fishing fleet consisted of 111 vessels, over half of which were engaged in the pilchard-maasbanker (jack mackerel) fishery. Most of the balance fished for spiny lobsters.

South-West Africa's Motor Fishing Vessels and Gear as of June 1960	
Fishing Gear Used by Vessel	No. of Vessels
Lampara purse net (Power Winch)	67
Lampara purse net and spiny lobster nets (Power Winch)	2
Spiny lobster nets (Power Winch)	31
Spiny lobster nets	6
Hand lines	2
Lines and nets	3
Total	111
Notes: (1) All vessels are Diesel-powered with hp. ratings from 44 to 230.	
(2) Vessel sizes range from 43 to 69½ feet; most of the vessels are between 50 and 60 feet.	
(3) All lampara purse-net (pilchard) vessels are harbored at Walvis Bay; 19 of the spiny lobster vessels are stationed at Cape Town (some 400 sea miles from Luderitz); the remainder at Luderitz.	

There are no other trawlers registered in South-West Africa. (The South African Fishing Industry Handbook and Buyers' Guide, 1960/61.)



Spain

SHRIMP INDUSTRY:

The Spanish shrimp industry is concentrated in southern Spain in the provinces of Huelva, Cadiz, and Malaga. Shrimp operations are carried on throughout the year.

Spain (Contd.):

On December 31, 1959, there were 784 fish-processing plants in Spain. These plants usually process a variety of species rather than one type, such as shrimp. At present there are insufficient freezing facilities for developing a large frozen fish industry to supply local supermarkets, and for regulating the supply of fresh fish to the markets and to the canning industry. Freezing plants in the South Atlantic region are located in Cadiz, Malaga, and Huelva with a total freezing capacity of 25, 10, and 2 tons of fish per day, respectively. The National Investment Institute has had a plan for several years for the development of cold-storage and freezing facilities in every major port in Spain. Under the plans of the National Freezing Network, plants can be installed directly by National Institute of Industry (INI) or by private companies, but with location and capacity subject always to INI approval.

In 1959 there were 505 canning plants located along the Spanish coast for handling all kinds of fish. Out of the total, 70 have a processing capacity of up to 200 metric tons yearly; 249, up to 600; 148, up to 1,300; 23, up to 2,000, and 15 for over 2,000 tons. Some 65 of the total are located in the provinces of Huelva, Cadiz, and Malaga, and most of them have a medium operating capacity.

The major part of the Spanish-canning industry is made up of a large number of small, antiquated units. These units must be renovated for the industry to meet foreign competition in the domestic market.

Statistics on shrimp landings are not broken down by the size of shrimp caught. Landings of heads-on shrimp amounted to about 13,900 metric tons in 1959, which represented about 65 percent of the total landings of crustaceans (estimated by the Fish Syndicate at 20,400 tons in 1959). Approximately 11,000 of the 13,900 tons were caught in the areas of Huelva and Cadiz.

Shrimp are caught in trawling operations. The only available data on the number of ves-

Table 1 - Spanish Landings of Shrimp and Spiny Lobster, 1956-59

Year	Shrimp (Heads-on)	Langostinos
		(Heads-on Large Shrimp and Spiny Lobsters)
	(Metric Tons)	
1959	13,902	322
1958	11,905	366
1957	14,321	298
1956	13,804	398

sels devoted to the shrimp fishery is for the province of Huelva. The Directorate General of Fishing reports that there are approximately 204 motor boats of different tonnage in that area. The largest vessel (142 tons and 400 hp.) belongs to the port of Huelva. The remainder average four tons with a power capacity of some 20 hp. Sail boats and rowboats are also used in shrimp catching. Vessels often are owned by local fishermen who carry on private operations.

Due to the multiple exchange rates, export prices of shrimp and spiny lobsters prior to June 1959 are difficult to determine. According to official sources in Cadiz, prices of frozen shrimp in 1960 for export to the United States average about 83 U. S. cents a pound for first-grade shrimp and 53 U. S. cents a pound for second-grade shrimp at official rate of 60 pesetas to US\$1.

Table 2 - Spanish (Cadiz Area) Exports^{1/} of Frozen Spiny Lobsters and Shrimp, 1956-59 and January-June 1960

Year	Country of Destination	Quantity
1960 (January-June)	United States	1,000 Lbs.
1959	United States	79.0
1958	United States	142.6
	Great Britain	25.6
		8.6
1957	United States	181.3
	Denmark	30.4
	United States	155.4
	Germany	100.0
1956	Sweden	95.9
	Great Britain	3.3
	Denmark	2.2

^{1/}1956-59 data are for frozen lobsters; data for 1960 are for shrimp. In 1960 the lobster catch was small and frozen Moorish shrimp (similar to crayfish, very large and red) were substituted for export.

Official sources in Huelva report that the major species exported to the United States were frozen shrimp (Moorish) and frozen spiny lobster tails. The average quantity of frozen shrimp and spiny lobster tails exported to the United States was about 136 metric tons a year; the average amount of boiled and frozen shrimp exported to France was about 200 metric tons per year.

No export taxes are levied on shrimp because of the Government's interest in expanding exports. As is true for all products, however, export licenses must be obtained from the Ministry of Commerce. The fish industry continues to benefit from the 1959 decree which increased taxes on petroleum products, but specifically excluded petroleum products sold to fishing vessels.

The national labor regulations for the fish-canning industry which were approved by the Ministerial Order of October 13, 1958, fixed

Spain (Contd.):

wage rates for personnel working in those industries. The monthly wages for technicians fluctuate between about 1,500 pesetas and 3,300 pesetas (US\$25.00-55.00). Administrative positions are rated between 1,000 and 2,500 pesetas (\$16.67-41.67) per month. For common laborers the hourly rate fluctuates between 15 and 46 pesetas (25 to 76.7 U. S. cents). The employee's real income is at least 40-45 percent higher than his basic salary because of the payments for overtime, premiums, and bonuses.

Salaries for fishermen are fixed by the national labor regulations for the fishing industry dated October 26, 1956. Rates depend on the type of fishing and on the duties of the laborer on the vessel. Premiums given on the total amount of the catch must be added to the basic salary. Fishermen engaged in the shrimp fishery are usually self-employed and their income is derived from the sale of their catches. (United States Embassy, Madrid, March 1, 1961.)



Tunisia

EXPORTS OF SELECTED FISHERY PRODUCTS TO UNITED STATES, 1956-60:

Tunisia's exports of products usually associated with fisheries to the United States

estimated at 6,800 metric tons valued at TL 10,725,000 (US\$1.2 million), an increase of 160 percent in quantity and 200 percent in value over 1959. Prices (f.o.b.) were up an average of 20 percent. The increased catch came as a surprise to local experts who expected that bonito and tuna, which make up the large majority of Turkish fish exports, were running "off cycle." The fall run, which is normally heavier than the spring run, was so productive that fishermen halted operations on several occasions because cold-storage facilities were unavailable and local prices were falling rapidly. Prices on the local market varied at times up and down as much as 50 percent from the seasonal average. Exporters enjoyed a substantial premium. Principal markets were canneries in Italy and Yugoslavia.

The fishery cooperative movement gained new ground during the year as organizations were able to export on their own account for the first time.

Trade sources now predict another successful year in 1961 when the bonito run is expected to continue, the United States Consulate in Istanbul reported on February 23, 1961.



Tunisian Exports of Selected Fishery Products to the United States, 1956-60

Products	Quantity					Value				
	1960	1959	1958	1957	1956	1960	1959	1958	1957	1956
	(Metric Tons)					(US\$)				
Sponges	-	-	-	-	-	-	-	-	-	2,328
Cuttlefish bone	27	20	25	24	45	7,092	7,160	9,325	6,738	18,529
Snails ^L	23	24	37	34	54	7,576	7,523	9,215	5,616	7,233
Octopus, dried	-	-	-	1	-	-	-	-	-	476
Sea shells	-	-	-	4	7	-	-	-	1,518	1,384
^L Land snails.										

between 1956 and 1960 were confined largely to cuttlefish bone and land snails, plus small quantities of marine shells and dried octopus. (United States Embassy, Tunis, February 20, 1961.)



Turkey

TUNA AND BONITO EXPORTS HIGHER IN 1960:

Exports of bonito and tuna caught by the Istanbul fishing fleet in 1960 were officially

Union of South Africa

FISHING VESSELS AND GEAR, JUNE 1960:

As of 1960, South Africa's powered fishing fleet consisted of 549 vessels using purse nets, spiny lobster nets, and lines, plus 62 otter trawlers. The fishing fleet other than otter trawlers was made up of the following: 153 vessels, 30-40 feet long; 165 vessels, 41-50 feet long; 146 vessels, 51-60 feet long; 82 vessels, 61-70 feet long; and 3 vessels over 70 feet in length. The steam-powered otter trawlers ranged in length from 86.5 to 176 feet and the Diesel-powered trawlers from 50 to 129 feet in length. Vessels other than otter

Union of South Africa (Contd.):

South Africa's Motor Fishing Vessels and Gear as of June 1960	
Fishing Gear Used by Vessels	No. of Vessels
Lampara purse net (power winch)	172
Lampara purse net	6
Lampara purse net and spiny lobster nets (power winch)	6
Lampara purse net and spiny lobster nets	6
Hand lines	95
Hand lines (power winch)	6
Lines and nets	67
Lines and nets (power winch)	22
Spiny lobster nets	42
Spiny lobster nets (power winch)	24
Spiny lobster nets and hand lines	74
Spiny lobster nets and hand lines (power winch)	29
Otter trawlers (steam power)	26
Otter trawlers (Diesel power)	36
Total	611

trawlers are practically all Diesel-powered. (The South African Fishing Industry Handbook and Buyers' Guide, 1960/61.)



U.S.S.R.

FISHING INDUSTRY EXPANDING:

In 1960 a total Russian fishery catch of over 3 million metric tons (6.6 billion pounds) was reported from operations in waters stretching from Kamchatka to Newfoundland and from Greenland to Takoradi. It seems probable that the seven-year-plan goal of 4,626,000 tons in 1965 will be reached, according to a report in Fiskets Gang, (January 26, 1961), a Norwegian fishery periodical.

The constant increase in the Russian catches is due to centralized planning and leadership, the use of large fleets, stern trawlers, and large conventional ocean trawlers combined with individual exploratory fishing vessels, and the exploitation of new fishing grounds. For example, stern trawlers now sail from Kherson on the Black Sea and Kalingrad on the Baltic Sea to the West African coast for sardines.

Fleet expansion and modernization have moved ahead rapidly. Numerous 230-foot stern trawlers have been built in Poland, Russia, and East Germany. Sixty of these are slated for tropical fishing for tuna and sardines, and will be delivered by East Germany in the period from 1961 to 1965. Conventional 540-hp, 140-foot fishing trawlers will be re-equipped with 600-800 hp. engines to increase their speed and all trawlers will be equipped with refrigerated holds. At the same time the coal-fired trawlers will be converted to oil to increase the operating range, and old coastal trawlers will be scrapped and replaced by a smaller number of vessels equipped with Danish seines. Crews from the coastal vessels will be transferred to the North Atlantic ocean trawlers.

The present methods are being changed gradually, and the tendency is toward complete processing aboard the vessel. Processing and cargo space has been increased in the large trawlers, and their capacity for processing products now is double that of a normal or average trip. The first full load on a trip is delivered to a transport vessel while the second is carried directly home.

The older cargo-freezing vessels which were converted to motherships have been found to be ineffective, unsatisfactory, and to have too little refrigerating capacity. Seven

of these are being completely re-equipped and mechanized, but only one new vessel--Severdovinsk--has been built.

The herring fisheries are becoming more and more important. Before long all of the conventional 140-foot vessels will fish herring exclusively, using gill nets and midwater trawls. The herring will be frozen and delivered directly to the home ports. The midwater trawl appears to have been perfected for the stern trawlers, and new materials, such as plastics, make it possible for the stern trawlers to fish to a depth of 500 fathoms. A new trawl, designed for rough bottom, is under development and, likewise, steerable outer boards. New hydroacoustic equipment is being installed in all ocean-fishing craft.

Russian consumers have become more particular, and in the attempts to satisfy them, the Fishery Ministry has discovered that it is more profitable to deliver good-quality and well-prepared fishery products in an appealing form. One result is that the volume of fish fillets in the stores in 1960 was five times that in 1958.

In order to meet the increased supply and increased demand, the processing plants in Murmansk have been greatly expanded and a number of refrigerated railroad cars have been placed at their disposal for the distribution of fish over the whole of European Russia.

In all, the Russian fishing industry presents a healthy picture.

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FLOATING DRYDOCK FOR FISHING VESSELS EN ROUTE TO PACIFIC COAST:

A report from Helsingborg, Sweden, states that on February 19, 1961, a large Soviet tug-boat passed through Oresund towing a giant floating dock. The dock, it is said, was built in Lithuania. It is being towed to the Soviet Pacific Ocean coast via the North Sea, English Channel, around Africa and through the Indian Ocean. The journey, it is estimated, will take about three and one-half months. The floating dock, according to reports, will be stationed in "Port Pripiski" where it will serve as a repair shop for Soviet fishingboats and trawlers. (United States Consulate in Goteborg, February 20, 1961.)

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NEW HERRING FACTORYSHIP FOR FAR EAST:

The newly-constructed vessel Sovjetskij Sakhalin has arrived at Nevelsk in South Sakhalin, U. S. S. R., according to the Russian periodical Vodny J. Transport for February 7, 1961 (as reported in February 23 Fiskets Gang, a Norwegian fishery periodical). The vessel was built in a Polish shipyard for the U. S. S. R. as a mothership and factoryship for the herring fleet in the Far East. The vessel displaces 17,000 tons.

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

**PACIFIC SALMON PROBLEMS
SUBJECT OF CONFERENCE:**

It was reported from Petropavlovsk-Kamchatskiy, U. S. S. R., that Soviet scientists and fish industry specialists late in 1960 participated in a conference on problems of the salmon economy of the Far East. The conference discussed results of many years' research on the condition of fish reserves, improvement of artificial reproduction, and improvement of conservation and regulation of salmon fisheries in the northwestern part of the Pacific Ocean. The reports and speeches noted that in recent times, despite the measures adopted by Soviet organizations for improvement of reproduction of Far Eastern salmon, in an overwhelming majority of fishing regions of the Far East a rapid fall in the commercial catch has been observed. This is accompanied not only by destructively subnormal replenishment of basic species, but also a destructively low level of fish reproduction.

To prevent a further drop in salmon reserves, industry workers took steps to reduce the intensity of fishing, closed several fish combines, canning plants, and considerably reduced the size of the fishing equipment.

But all these steps have not given and will not give the proper results, since the basic reason for the sharp reduction in Far Eastern salmon is the extraordinarily intensive, irrational fishing conducted by the Japanese fishing industry in the northwestern part of the Pacific Ocean, and primarily in the southern region of the sea breeding grounds. Several at the conference spoke on this subject in particular.

The conference noted the positive role of the Soviet-Japanese Fishing Convention, which has somewhat adjusted the salmon catch in the open sea. But at the same time, it was deemed necessary to take further active steps to regulate fishing conducted by the Japanese fishing industry, in order to prevent possible destruction of the fishing value of Far Eastern salmon.

Decisions and recommendations were made on further development of scientific research, improvement of fishing regulations, and strengthening of artificial reproduction of salmon. The reserves of Far

Eastern salmon, a national resource of the Soviet Union, must not only be restored, but increased, according to the conference. (United States Embassy, Sapporo, Japan, March 8, 1961.)



United Kingdom

**FISHERY LOANS INTEREST
RATES REVISED:**

The British White Fish Authority in February 1961 announced that, as a result of changes in the rates of interest charged to them by H. M. Treasury, their own rates of interest on loans made as from February 20 will be as follows:

Fishing vessels of not more than 140 feet, new engines, nets, and gear:

On loans for not more than five years-- $5\frac{3}{4}$ percent; decrease $\frac{1}{4}$ percent.

On loans for more than five years but not more than 10 years-- $6\frac{1}{4}$ percent; increase $\frac{1}{4}$ percent.

On loans for more than 10 years but not more than 15 years-- $6\frac{3}{8}$ percent; decrease $\frac{1}{8}$ percent.

On loans for more than 15 years-- $6\frac{3}{4}$ percent; no change.

Processing plants:

On loans for not more than 20 years--7 percent; no change.

The rates on loans made before February 20, 1961, are unchanged. (Fish Trades Gazette, February 25, 1961.)

Note: See Commercial Fisheries Review, January 1961 p. 84.

* * * * *

FISH MEAL PRICES, MARCH 1961:

Fish meal prices reported by a British trade periodical between November 19, 1960, and March 4, 1961 (see table p. 66).

As of March 4, 1961, imported fish meal prices were up from 2.2-9.7 percent as compared with February 4, 1961. Domestic fish meal prices on March 4, 1961, were down about 5.3 percent for white fish meal and unchanged for herring meal from a month

United Kingdom (Contd.):

Type of Fish Meal	Protein Content	Date Quoted	£/s./d. per Long Ton	US\$	
				Long Ton	Short Ton
Imported:					
S. Africa (white fish)	65	11/19/60	48/15/0	136.50	121.87
Peru (branded)	65	3/4/61	39-40/0/0	109.20-112.00	97.50-100.00
Peru (avg. quality)	65	3/4/61	37/0/0	103.60	92.00
Iceland (white cod)	70-73	11/26/60	42/0/0-48/16/0	117.60-136.64	105.00-122.00
Iceland (herring)	70	3/4/61	46/7/6	123.85	115.94
Denmark (herring)	73	3/4/61	49/5/6	137.97	123.19
Domestic:					
White fish,	60	3/4/61	153/10/0	149.80	133.75
Herring 2/	68-71	3/4/61	50/0/0	140.00	125.00
1/ In bags, ex-factory Hull or Grimsby.					
2/ In bags, ex-factory.					
Note: Imported fish-meal prices are c.i.f. current shipments, and domestic-meal prices (net cash) are ex-plant, in 6 long-ton lots and bagged, unless otherwise reported.					

earlier. (United States Embassy, London, March 17, 1961.)

SUPER TRAWLER LAUNCHED IN GERMANY:

The largest and most revolutionary trawler ever built for the British fishing fleet was launched on January 14, 1961, in Bremerhaven, Germany. Named the Lord Nelson, the trawler cost £400,000 (US\$1,122,000). Besides being Britain's largest and first distant-water freezing stern-trawler (as distinguished from the Fairtry-type factory-trawlers which also fish from the stern).

Specifications are as follows; tonnage, 1,200; over-all length, 238 ft. 10 in. (30 feet longer than the largest existing conventional British trawler); breadth, 36 ft.; depth (from 2nd deck), 15 ft. 9 in., and draught, 14 ft. 4 in. Her variable-pitch propeller is stainless steel and controlled from the bridge. Fittings and auxiliary equipment will be supplied by the British, such as radio, radar, radio-telephone, and fish-finding aids. The all-welded vessel has baths, showers, cabins, and a modern sick bay. It is expected to join the fleet out of Hull, England, by May 1961, and will stay out longer than the present 21 days for distant-water vessels. Her turbo-charged six-cylinder engine develops 2,000 hp. at 250 r.p.m., developing a speed of 15 knots. The Lord Nelson has 2 main generators of 105 kilowatts each, one driving the winch and the other for main power supply. These generators are directly driven by the shaft--a first for this type vessel. If the main engine breaks down, the generators can be coupled to haul in the gear and drive

the ship at reduced speed. A 40-kilowatt generator in the engine room can be used for emergency or in-port lighting.

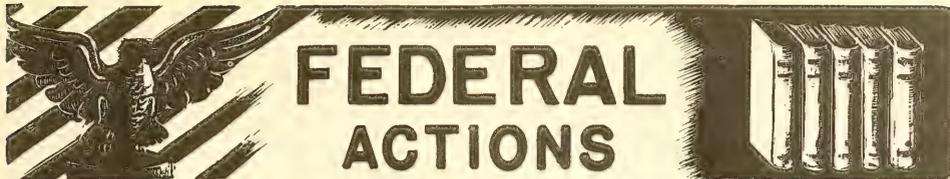
The vessel's trawl net is hauled up a ramp cut into the stern--the fish then slide below decks through a hydraulically-operated hatchway. Below, on the main fish deck (which is under cover), the fish are cleaned, then placed on a conveyor belt which takes them through a washer and into a compartment where they are prepared for freezing. This compartment contains 16 freezing units. Trays of frozen fish are later transferred to an 11,620 cubic-ft. refrigerated hold. An elevator brings the fish to the upper deck level for unloading.

Only part of the catch will be frozen at sea since fish caught near the end of the trip can be stored in an iced fish hold with a capacity of 280,000 pounds. The vessel's instruments will be contained in a console on the bridge--dual controls will enable the skipper to shoot or haul in the trawl net while handling engine room controls.

High quality is the goal of the owners--"fish frozen immediately as it is taken from the water." (The Fishing News, January 20, 1961.)

Note: Values converted at the rate of 1 British pound equals US\$2.805.





Committee for Reciprocity Information

CONSULTATIONS ON FOREIGN IMPORT RESTRICTIONS SCHEDULED FOR 1961:

The Committee for Reciprocity Information (CRI) on March 1, 1961, issued a notice inviting the public to submit views in connection with consultations scheduled during 1961 under the provisions of Articles XII and XVIII:B of the General Agreement on Tariffs and Trade (GATT). (The notice appeared in the March 2, 1961, *Federal Register*.) The consultations will be conducted by a panel of 14 countries, including the United States, at meetings scheduled for April and October and will relate to the use of import restrictions for balance-of-payments reasons by the following countries: **April:** Austria, Burma, Chile, Indonesia, Turkey, Union of South Africa; **October:** Denmark, Finland, Japan, New Zealand, Norway, Israel.

The consultations will afford the opportunity for the panel to review the economic and financial situation of the consulting countries individually, to explore in this context the possibilities for further relaxation of their import restrictions, and to discuss moderation of particular policies and practices that have proved unduly burdensome to exporters in other countries.

United States traders, business firms, labor organizations, and other individuals or associations which have an interest in exporting to one or more of the consulting countries were asked, as a result of their own experience, to submit information which will be useful to the United States Government during the course of the consultations. Especially sought is a discussion of the possibilities for further relaxation of the level of import restrictions by any of the countries listed and the moderation of particular policies and practices which are burdensome to exporters.

Representations to the Committee in response to this invitation, which should con-

tain all available supporting information, might include views along the following lines:

1. Quantitative import restrictions affecting goods available from the United States have resulted in unnecessary damage to the commercial or economic interest of the United States, its citizens, or organizations;
2. Not even minimum commercial quantities of imports of specific commodities from the United States are permitted, to the impairment of regular channels of trade;
3. Trade is being restrained by complex or arbitrary licensing procedures, or lack of adequate information available to traders regarding import regulations;
4. Reasonable access to a traditional foreign market has not been restored for a particular commodity, even though the country concerned has substantially relaxed its restrictions on imports in general;
5. The long-standing application of import restrictions by a country on a particular product has been accompanied by the growth of uneconomic output of that product within the country; or
6. Discrimination exists in the treatment of goods available from the United States as compared with the treatment afforded similar goods from other countries with convertible currencies.

The CRI is an inter-agency group within the United States Government which receives views of interested persons regarding proposed or existing trade agreements and actions related to such agreements. It is prepared to receive at any time statements from the public regarding import restrictions imposed by any contracting party to the GATT.



Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

EFFECTIVE DATE OF REGULATIONS FOR CERTAIN FOOD ADDITIVES EXTENDED:

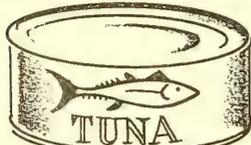
The extension of the effective date of regulations under the Federal Food, Drug, and Cosmetic Act for certain specified food additives was announced by the U. S. Food and Drug Administration in the March 18, 1961, Federal Register in two separate orders.

One of the orders contained a list of indirect additives mostly in packages used for food—about 20 substances. Both orders contained lists of certain food additives used as direct additives in food. A total of about 50 substances are shown in the two lists, among which are included vitamin K₅, sodium alkyl sulfate, stearyl alcohol, mineral oil, benzoic acid, sodium benzoate, sodium nitrite, etc. Limits are shown for some of the substances listed. Both orders became effective March 3, 1961. No specific termination dates have been specified in the two orders.

* * * * *

PROPOSAL TO RETAIN TWO OF THE LABELING REQUIREMENTS PROTESTED IN THE STANDARD OF IDENTITY FOR CANNED TUNA:

It is proposed not to change the definition and standard of identity for canned tuna by rescinding (1) the requirement that



the word "dark" be included on the label for tuna darker than Munsell value 5.3 or (2) the requirement that

words "in water" be included in the name of water-pack or in-brine tuna. The findings of fact were published by the U. S. Food and Drug Administration in the March 31, Federal Register as follows:

[21 CFR Part 37]

(Docket No. FDC-64)

CANNED TUNA FISH

Definition and Standard of Identity; Findings of Fact

In the matter of establishing a definition and standard of identity for canned tuna fish:

(1) The requirement that tuna darker than a prescribed level be labeled "dark," and (2) the requirement that for water-

a notice of a proposal for establishing a definition and standard of identity and a standard of fill of container for canned tuna fish. An order was published in the FEDERAL REGISTER of February 13, 1957 (22 F.R. 892), adopting the proposals, with modifications. Subsequently, objections were filed, and a public hearing was requested on two of the labeling requirements in the identity standard: (1) The requirement that tuna darker than a prescribed level be labeled "dark," and (2) the requirement that for water-

pack tuna the name on the label should include the words "in water." By an order published in the FEDERAL REGISTER of August 29, 1957 (22 F.R. 6961) notice was given that no objections had been filed to the fill of container standard or to the compositional requirements of the identity standard, and the effective date for these provisions, as set out in the order of February 13, 1957 (22 F.R. 892), as confirmed. In recognition of the objections to the labeling requirements of the identity standard, these requirements were stayed pending the outcome of the hearing on the issues raised by the objections.

Pursuant to a notice of hearing published in the FEDERAL REGISTER of December 28, 1957 (22 F.R. 10984), a public hearing was held to receive evidence on the issues raised by the objections. On the basis of the evidence received at the hearing, and pursuant to the authority vested in the Secretary of Health, Education, and Welfare by the provisions of the Federal Food, Drug, and Cosmetic Act (secs. 401, 701(e) (3), 52 Stat. 1046, 1055 as amended 70 Stat. 919; 21 U.S.C. 341, 371(e) (3)) and delegated to the Commissioner of Food and Drug by the Secretary of Health, Education, and Welfare after consideration of written arguments and suggested findings, which are set out in part 1 of the findings of fact, it is apparent from the detailed findings herein made, it is proposed that the following order be issued:

Findings of fact. 1. By an order published in the FEDERAL REGISTER of February 13, 1957 (22 F.R. 892), a definition and standard of identity for canned tuna fish was promulgated. Objections were filed protesting those portions of the order requiring that tuna darker in color than Munsell value 5.3 be declared on the label as "dark tuna" and that the name on the label of canned tuna packed in water (dark tuna) and oil include the words "in water" as a part of the name of the food. Notices of the objections, the stay of labeling requirements, and the announcement of the public hearing on the objections were published in the FEDERAL REGISTER on August 29, 1957 (22 F.R. 6961) and December 28, 1957 (22 F.R. 10964). (EX. 2, 4, 5, 7, 23)

2. The only issue concerning the color of canned tuna to be determined on the basis of the evidence was raised in the objection filed by one packer, the operator of a cannery in Maine, who advocated changing the wording of § 371(d) (3) of the standard from:

(3) *Dark.* This color designation includes all tuna darker than Munsell value 5.3, to

(3) *Tuna.* This designation includes all tuna darker than Munsell value 5.3 canned from the light meat of tuna.

The objection did not make an issue of whether the method specified in the order was appropriate for making the differentiation between dark and light tuna; of whether the value for such differentiation was properly set at 5.3 on the Munsell scale; or of whether the standard should require the label designation for tuna darker than Munsell value 5.3 to be different from the label designation for tuna lighter than Munsell value 5.3. The sole issue was whether the standard should require cans containing tuna darker than Munsell value 5.3 to be labeled "dark tuna" rather than simply "tuna." (R. 9, 11-12, 14, 17, 35, 37, 54-55, EX. 2)

3. The only witness who supported the objection to the label declaration "dark tuna" sometimes eligible the phrase "light meat of tuna" to mean striated muscular tissue, as specified in § 371(c) of the standard, without regard to the color shade of the muscle. At other times, when referring to this same striated muscular tissue (as prepared from large bluefin tuna and from Atlantic light tunny), the witness used

the term "dark meat." Apparently, it was for this dark-colored, striated muscular tissue that he urged the change of the standard to provide for labeling it by the unmodified word "tuna" though he sometimes used the designation "dark meat" or "black meat" to refer to the striated tissue, which is an entirely different part of the fish and which the standard is required to be eliminated before canning. (R. 18, 33-34, 37, 43, 50, 86)

5. Several kinds of tuna have been caught in the Atlantic waters, the only color determinations reported in the record are for the categories little tunny, large blue-fin tuna, exceeding 500 pounds in weight; and blue-fin tuna ranging in weight from 20 pounds to 104 pounds. These color determinations showed that little tunny and the large blue-fin tuna yield canned tuna of color darker than Munsell 5.3. The canned tuna prepared from the smaller blue-fin tuna (those not exceeding 104 pounds in weight) measured lighter than Munsell 5.3. (R. 10, 18, 29-30, 54, 58, 60, 74, 76; EX. 8)

6. The canned art prepared from large blue-fin tuna, where the fish were packed in water, was darker, not only was it of a dark color but it was coarse in texture and had a distinctive taste which was stronger, heavier and more fleshy. The opinion was expressed that this darker colored, stronger flavored article prepared from large blue-fin tuna would appear to be indistinguishable in appearance to the canned tuna. (R. 14, 33-35, 46-47, 58-59)

7. In response to a questionnaire answered by more than 4,000 consumers showed an interest on the part of a substantial number of consumers in having labels show whether the meat in the can is light or dark. A consumer survey in which interviewers visited 252 households in which a total of 1,027-1,040 canned tuna showed that 65 percent of these homemakers regarded a color label on a can of tuna as important, during 5.3 on the Munsell scale as dark tuna. Over two-thirds of the homemakers interviewed were interested in whether the tuna the serve light or dark tuna, and substantially all wanted the label on the cans to show whether the tuna is light or dark. (R. 140-141, 168-169, 279, 280, 281, 282, 283, 284, 212, 273, 278-279, 281-282, EX. 14, 17, 18, 24, 25, 26)

7. In households where canned tuna is used, one of the forms in which it is most frequently served is as a salad. For use as a salad the color of tuna is important to housewives and they wish to avoid dark tuna for salads. (EX. 2, 468-169)

8. The other issue for the hearing arose from objections filed by distributors of water-pack tuna imported from Japan. These distributors objected to the requirement that the name on the label of such canned tuna should include the words "in water" as stated. (a) That showing the words "in water" in the name would lead consumers to believe that the water was a necessary ingredient of the food and that cans so labeled would contain less fish than equal-sized cans of oil-pack tuna; (b) that consumers generally discard the oil from oil-pack canned tuna; and (c) that by inference the provision concerning label declaration of the words "in water" requires that these words must follow the word "tuna" in the same line on labels. They declared that these assertions would be proved by consumer letters and consumer-survey data that would be produced at the hearing. (R. 86-87, 91, 99, 106-107, 109, 111-114, 134-135, EX. 23)

9. Historically, it has been conventional to use water as a packing medium for canned tuna. Tuna canned in the United States, with the exception of tuna prepared for special distribution, has been packed in oil. Around 1951 or 1952 small quantities of imported canned tuna packed in water appeared on the United States market. Since then, the volume of imported water-pack tuna has increased considerably but remains substantially below the total vol-

The citations following each finding of fact refer to the pages of the transcripts and testimony and the exhibits received in evidence at the hearing.

tuna. In the consumer survey described in Finding 12, the interviewers showed homemakers cans of water-pack tuna with labels specially printed to conform with requirements of the standard. The names on the labels were:

LIGHT TUNA FLAKES
IN WATER
and
SOLID PACK
LIGHT TUNA IN WATER

The homemakers were asked whether they thought the cans of water-pack tuna would contain less fish than the same amount of fish, or more fish than cans of the same size where the tuna is packed in oil. Half the homemakers answered that the amount of fish would be the same and the others divided about equally between answering that there would be less fish or more fish in the cans of water-pack tuna. Two witnesses trained in statistically evaluating such data testified that these results do not support the claim that showing the words "in water" in the names on labels would lead consumers to believe the cans contained less fish. (R. 107, 111-112, 135, 204, 213-214, 251, 267-269, 274-275; Ex. 17-22.)

11. Consumers are concerned whether the canned tuna they purchase is or is not packed in water. Some labels on water-pack tuna have shown "oil added" or "without added oil," but, in general, the declaration that the tuna is packed in water has been so subordinated on labels that consumers would be apt to overlook it under customary conditions of purchase. Housewives serve canned tuna in many ways; they make salads, sandwiches, casserole dishes, tuna-with-noodles, and use tuna in other cooked dishes. Generally, recipes for the cooked salads, and frequently those for tuna in salads, call for using the oil from the can along with the tuna fish. The oil adds richness and significantly increases the caloric value of the dishes. When following such recipes, a housewife using water-pack tuna may mistakenly add butter, margarine, or salad oil. It promotes her interests for the label declaration showing that the tuna is packed in water to be so displayed that under ordinary conditions of purchase she will note it.

Some distributors of imported water-pack tuna have sought in their promotions to appeal to those consumers who wish to avoid high-calorie foods. These consumers have emphasized that canned tuna where water has been substituted for oil as the packing medium is lower in caloric value than conventional oil-pack tuna. The interest of these consumers also is promoted by a prominent label declaration to show that the tuna is packed in water. (R. 150, 158, 134, 137, 138, 167-174; Ex. 12.)

12. A consumer survey especially designed to elicit evidence from a fair sample of homemakers on the issues raised in the objections to the canned tuna order was carried out by an organization experienced in conducting such consumer interviews. In this survey homemakers were shown cans of water-pack tuna under conditions designed to simulate those she would experience in marketing for canned foods. For cans with completely representative samples of the labels that have been used on water-pack tuna and showing "Packed in water" on side panels, two-thirds of the homemakers interviewed mistakenly thought that the tuna was packed in oil. (R. 79-83, 176-180, 200-202, 207-210, 219, 219-223, 237, 245, 255, 270-271; Ex. 17-22.)

13. The evidence at the hearing did not support the assertion by the objectors that including the words "in water" in the name on labels of water-pack tuna would lead consumers to believe water to be a major ingredient and to believe that the cans so labeled would contain less fish than similar cans of oil-pack

lished in the March 31, 1961, Federal Register, by the U. S. Food and Drug Administration. The notice points out that the National Fisheries Institute, and the National Shrimp Breeders Association, representing members who are processors of breaded shrimp, have jointly filed a petition setting forth a proposed definition and standard of identity for breaded shrimp.

The Food and Drug Administration proposes to add a new section to Part 36 of its regulations: "36.30 Frozen raw breaded shrimp (pawns); identity; label statement of optional ingredients."

The standard proposed establishes that the finished product contain not less than 50 percent by weight of shrimp material as determined by the method described in the proposed regulations. A description of frozen raw breaded shrimp is included, as well as the raw material to produce it. Among the shrimp material listed for breaded are: fantail or butterfly shrimp (deveined and split); round or round fantail (deveined but not split); butterfly, tail-off (deveined and split, tail fin and shell segments removed); round, tail-off (deveined but not split, tail and shell segments removed); tidbits (parts of tail portions, but free of tail fin and shell segments). The batter and breading are described, and the optional ingredients that may be used in the preparation of the mixtures are listed. The names of the frozen raw breaded shrimp product prepared in accordance with proposed regulations are listed together with several alternatives in each case. Also, the regulations indicate that the label is to bear one of the names specified in the regulations, a statement listing the optional ingredients employed in the batter and breading, plus any spice or coloring used, if any; and if a chemical preservative has been used, the label is to indicate that fact.

Interested persons were invited to present their views in writing regarding the proposed regulations, prior to May 30, 1961.

Dated: March 21, 1961.

(SEAL) GEO. P. LARRICK,
Commissioner of Food and Drugs.



U. S. Tariff Commission

REPORT ON SHRIMP:

The Tariff Commission on March 31 issued a report on its investigation of shrimp, conducted under Section 332 of the Tariff Act of 1930. The investigation was made pursuant to a resolution of the Senate Finance Committee, adopted in August 1960.

Note: See *Commercial Fisheries Review*, April 1961 p. 42.

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STANDARDS OF IDENTITY PROPOSED FOR FROZEN RAW BREADED SHRIMP:

A Proposed definition and standard of identity for frozen raw breaded shrimp was pub-

The Commission's report to the Senate Finance Committee describes the domestic shrimp fishery and the processing of shrimp in the United States; discusses domestic production, exports, imports, and consumption of raw shrimp and shrimp products; gives data on prices, cold-storage holdings, and wage rates in the United States; provides data on the shrimp fisheries of foreign countries; considers the interests of domestic producers, processors, and consumers of shrimp; and discusses the probable results of the imposition of the import restrictions set forth in the resolution.

The resolution of the Senate Committee called for an analysis of the possible results of a 35-percent ad valorem duty as well as an analysis of the results of a tariff quota under which all imports not in excess of the imports in the calendar year 1960 shall enter free of duty and all imports in excess of those in 1960 shall be dutiable at 50-percent ad valorem.

UNITED STATES TARIFF COMMISSION

SHRIMP

Report on Investigation No. 332-40
Under Section 332 of the Tariff Act of 1930
Pursuant to a Resolution of the
Committee on Finance of the United States Senate
Adopted in August 1960



Washington
March 1961

The Commission points out that the analysis "... describes the probable economic effects of the indicated import restrictions on those segments of the U. S. economy directly concerned with the production, handling, processing, importing, and marketing of shrimp. No attempt is made to set forth the possible effects on our foreign relations and other aspects of the national interest or on the economic welfare of the numerous foreign countries involved.

"In attempting to forecast the results of the imposition of a duty on shrimp, the Commission has premised a more or less constant per capita purchasing power during the next several years. Should a duty of 35 percent ad valorem be imposed on imports of shrimp, it is unlikely that the major foreign suppliers of the U. S. market could reduce their

prices sufficiently to absorb most or all of the duty. Nor would the reduction or elimination of export duties and taxes now levied in certain foreign countries have a significant effect on the ability of foreign suppliers to overcome a U. S. duty of 35 percent ad valorem. The application of such a duty, therefore, would result in a substantial reduction of total U. S. imports of shrimp in all forms; the reduction in imports would be accompanied by a sharp increase in prices and a curtailment of consumption in the U. S. market. With a restricted supply and a continuation of high prices in the United States, a limited expansion of the domestic catch of shrimp might be expected within a year or two. This could be accomplished by an extension of the operations of the U. S. shrimp fleet to new areas, where fishing costs would be substantially higher than in the areas now exploited, and by a somewhat larger catch of shrimp in the Gulf of Mexico. If Mexico's exports of shrimp to the United States were sharply reduced by the imposition of a U. S. duty, the Mexican shrimp fleet presumably would be forced to reduce its operations in the Gulf of Mexico, thereby permitting the U. S. fleet operating in the same waters to increase its catch. The extent of the increase would be limited, however, because the U. S. fleet probably would not be permitted to fish in Mexico's territorial waters. At present, nearly three-fourths of Mexico's total shrimp catch is taken from the Gulf of California and other west-coast waters near the Mexican shore. If Mexican fleet operations were curtailed in these waters, it is unlikely that the U. S. shrimp fleet could extend its operations to the west coast of Mexico. It appears from the foregoing that only a small part of the loss of U. S. imports resulting from the imposition of a 35-percent duty on shrimp could be made up by an increase in the U. S. production of shrimp from the Gulf of Mexico and from areas not now being exploited.

"With a net reduction in the total supply of shrimp available in the U. S. market, prices in all channels of distribution would increase sharply and undoubtedly would remain higher than at present. High prices would be especially beneficial to domestic craft owners and fishermen, but not to processors (including freezers) who must purchase raw shrimp in the open market. As previously indicated, high prices would result in a curtailment of total consumption in the United States, particularly in those areas that are now dependent on imports partly because of their distance from domestic landing ports and processing facilities. Many institutional users throughout the country would replace shrimp with other food products, and household consumers would reduce their purchases of shrimp in favor of other seafoods, poultry, and meats.

"From the foregoing, it appears that the imposition of a 35-percent duty on shrimp would result in increased financial returns to the U. S. shrimp fleet as a whole. It would also result in higher average returns per shrimp craft and per fisherman at least in the short run. How long individual craft owners and fishermen would receive the benefit of increased financial returns is conjectural. High ex-vessel prices and enhanced profits to craft owners could be expected to encourage additions to the domestic shrimp fleet. With more vessels and boats fishing for a limited resource, the average annual catch per craft would eventually decline. As a result of the smaller catch per craft, the average annual income per craft and per fisherman also would decline from the high levels attained immediately after the imposition of the duty.

"Certain packinghouses and freezers of shrimp are able to avoid the hazards of price fluctuations by charging a fixed fee per pound of shrimp for the services they perform, irrespective of market prices; the welfare of this group, therefore, is determined largely by the quantity of shrimp handled. Such packinghouses and freezers would benefit from any increase in domestic landings of shrimp; they would not, however, benefit from increased prices unless they were able to raise their fees.

"A duty of 35 percent on all shrimp and shrimp products undoubtedly would arrest the increasing imports of frozen peeled and deveined shrimp and frozen breaded shrimp and reduce the imports of canned shrimp. Domestic fishers,

canners, and producers of frozen peeled and deveined shrimp apparently are concerned about the expansion in recent years of processing facilities abroad and the possibility of a substantial increase in imports of the processed products. Whether imposition of a 35-percent duty would eliminate such imports entirely cannot be determined, but it would certainly discourage the expansion of facilities abroad to process shrimp for exportation to the United States. Elimination of the possibility of more intense competition from imports of processed shrimp would be of little benefit to domestic processors since restrictions of imports of all shrimp would cause more intense competition among the processors in the purchase of raw material and would arrest the expansion of shrimp-processing operations in the United States. Certain processors, particularly breaders, now rely heavily on imports of frozen heads-off, shell-on shrimp for their raw material supplies. If such imports were greatly reduced, some processors outside the South Atlantic and Gulf States might have to curtail their operations substantially or even discontinue production of processed shrimp. For processors in the South Atlantic and Gulf States, some of which rely partly on imported frozen shrimp, increased raw-material costs would tend to reduce the extent and profitability of their operations. A uniform duty on all shrimp, therefore, would be generally detrimental to shrimp processors.

"A U. S. duty of 35 percent on shrimp, and the resultant high prices in the U. S. market, would no doubt cause a substantial reduction of the U. S. exports of shrimp. In terms of heads-off, shell-on shrimp, domestic exports were equivalent to 7½ percent of total U. S. landings of shrimp in 1960.

"Imposition of the tariff quota specified in the resolution of the Senate Finance Committee would have a less drastic effect on the shrimp trade than would a 35-percent duty on all imports of shrimp. Provision for the annual duty-free entry of imports equal to the quantity of shrimp imported in 1960 would not reduce the total supply of shrimp available in the U. S. market and presumably would not immediately cause a marked upturn in prices. However, should the quota be stated in terms of pounds—irrespective of the form in which the shrimp were imported—it might result in a substantial shift in the composition of imports from frozen heads-off, shell-on shrimp to more advanced forms of processed shrimp. On the one hand, such a shift would work to the disadvantage of domestic producers of the more advanced forms of processed shrimp, not only because of increased competition from imports of the processed products, but also because of a reduced supply of imported frozen heads-off, shell-on shrimp, which are used as raw material by many processors. On the other hand, domestic craft owners, fishermen, and freezers of raw shrimp would benefit from the shift in imports; because of the smaller supply of imported frozen heads-off, shell-on shrimp, the demand for domestic raw shrimp by retail and institutional outlets would be increased.

"Should a separate quota be established for each form of shrimp, based on imports in 1960, it would halt the development of facilities abroad to process shrimp for exportation to the United States. Although domestic processors would benefit from restrictions of imports of the processed products, the quota on raw shrimp would preclude a continued expansion of processing operations in the United States because of a restricted supply of raw material. Craft owners and fishermen would be aided by the assurance that they could expect no more competition from imports than that encountered in 1960. Restriction of imports of each form of shrimp to the 1960 level presumably would prevent the price-depressing effects of sudden sharp increases in imports and might provide a measure of stability to the shrimp market, which would be beneficial to all segments of the shrimp trade.

"A global annual quota on imports of shrimp, without allocation by country of origin, would affect the supplying countries in varying degrees. Those countries able to ship to the United States early in the year could fill the quota and prevent other countries from sharing in it. Country quotas based solely on the level of imports in 1960, as implied in the resolution of the Senate Finance Committee, would be most detrimental

to those countries whose shipments to the United States were smaller in 1960 than in earlier years (e.g., Japan, Costa Rica, Peru, Australia, Norway, Korea, Argentina, Sweden, West Germany, Israel, British Honduras, and the United Kingdom). Moreover, if one or several supplying countries could not fill their quotas in a particular year, a shortage might develop in the U. S. market and affect many segments of the shrimp trade.

"It is unlikely that there would be any significant imports of shrimp at the over-quota rate of 50 percent ad valorem. Shipments arriving in the United States after the quota was filled probably would be diverted to other markets or held in bonded warehouses in the United States for entry at the opening of the new quota year.

"It should be recognized that if the supply of shrimp is not restricted and if prices thereof do not increase greatly, the long-run expansion of the total U. S. consumption of shrimp may be expected to continue. Several factors, in addition to the growth in population, point to this conclusion. Potential markets exist in some areas of the United States where shrimp are regarded as a luxury item and where only small quantities are now purchased for home use. The nutritional value, the low-calorie content, and the taste appeal of shrimp are not yet widely known in the mass consumer market. The increasing acceptance of individually frozen peeled and deveined shrimp, which can be served in the home with little preparation, may be expected to continue. The rising consumption of breaded shrimp has not yet shown a tendency to level off. Of the major processed shrimp products, canned shrimp is the only type that has not grown in popularity in U. S. consumer markets in the past decade.

"The imposition of either of the import restrictions on shrimp and shrimp products suggested in the resolution of the Senate Finance Committee would limit the supply of shrimp available in the U. S. market and thereby arrest the long-run expansion of shrimp consumption in the United States. If imports were restricted to the 1960 level or lower, any increase in consumption above the present level would have to be supplied by domestic production. Although the U. S. catch of shrimp may vary from year to year, there appears to be little probability of a sustained increase in the catch, even on the west coast where the large potential supply consists almost entirely of small-size shrimp suitable primarily for the production of canned shrimp, a product which has a relatively stable but limited market in the United States."

Note: Title of report: "Shrimp." Report on Investigation No. 332-40 Under Section 332 of the Tariff Act of 1930 Pursuant to a Resolution of the Committee on Finance of the United States Senate Adopted in August 1960." U. S. Tariff Commission, Washington, D. C., March 1961.



Treasury Department

BUREAU OF CUSTOMS

IMPORT RESTRICTIONS ON SOVIET CANNED CRAB MEAT LIFTED:

The removal by the United States of a prohibition on imports of Soviet canned crab meat, which has been in effect since January 27, 1951, was announced by the Treasury Department on March 20, 1961, and published in the *Federal Register* of March 25, 1961.

The prohibition was placed in force under Section 307 of the U. S. Tariff Act, which

bans imports of goods produced with convict or forced labor.

The decision to remove the prohibition on imports of Soviet canned crab meat is in accordance with United States law, and is based upon the fact that there is no current evidence that prison or forced labor is still being used in connection with Soviet canned crab meat.

A Treasury spokesman said:

"If the removal of this restriction also helps to promote better relations between the Soviet Union and the United States, it should be welcomed by the peoples of both countries.

"This action supports the President's desire for improved relations between the Soviet and American peoples and the often-expressed willingness of the United States Government to offer the Soviet Union every opportunity to trade with us in peaceful goods on normal commercial terms.

"In connection with this action, representatives of the State of Alaska have expressed concern over possible expanded activities of foreign fishing fleets in areas of the high seas near Alaska. We understand that the Department of State has long been aware of the problems which would be posed by the expansion of foreign fishing activities into new areas of primary interest to Alaskan fishermen, and is giving serious consideration to this matter, which involves complex aspects of conservation and fisheries policy."

The Treasury Department in answering questions with regard to their announcement indicated:

1. The information available indicates that no forced labor is involved in the Soviet canning operation. The Secretary of the Treasury, who administers this law, has gone over the available evidence and determined that removing the prohibition is justified.

2. In 1950 the United States imported some 2.3 million pounds of canned Soviet king crab meat with a value of roughly US\$2.3 million.

3. The product involved is the king crab found only in far northern Pacific waters. It could compete directly with some one million pounds canned in Alaska, with a value of

roughly US\$1.4 million. Indirectly, it could compete with some 2 million pounds of other domestic varieties, with a value of roughly US\$2.1 million. It should be pointed out that Soviet crab meat will be subject to the normal import duty of 22½ percent ad valorem.

4. Total United States production of king crabs was about 18 million pounds of which about 4 million was canned, yielding a canned weight of about one million pounds.

The notice as it appeared in the Federal Register follows:

[T.D. 55342]

PART 12—SPECIAL CLASSES OF MERCHANDISE

Canned Crabmeat From Union of Soviet Socialist Republics

I hereby find, pursuant to the provisions of § 12.42, Customs Regulations, promulgated in accordance with the authority contained in section 307, Tariff Act of 1930 (19 U.S.C. 1307), that canned crabmeat manufactured or produced wholly or in part in the Union of Soviet Socialist Republics does not come within the purview of section 307, Tariff Act of 1930.

Accordingly, on and after the date of the publication of this finding in the FEDERAL REGISTER, the finding made in T.D. 52655 (16 F.R. 776) is no longer in effect.

Section 12.42(h), Customs Regulations, is amended by deleting from the list the following:

Canned crabmeat—Union of Soviet Socialist Republics—52655

(Secs. 307, 624, 48 Stat. 689, 759; 19 U.S.C. 1307, 1624)

[SEAL] D. B. STRUBINGER,
Acting Commissioner of Customs.

Approved: March 20, 1961.

DOUGLAS DILLON,
Secretary of the Treasury.

* * * * *

QUOTA FOR 1961 ESTABLISHED ON IMPORTS OF CANNED TUNA:

The quantity of tuna canned in brine which may be imported into the United States during calendar year 1961 at the 12½-percent rate of duty is limited to 57,114,714 pounds. This is 6.9 percent more than the 53,448,330 pounds in 1960, 9.1 percent more than the 52,372,574 pounds in 1959, 27.8 percent more than the 44,693,874 pounds in 1958, and 25.6 percent more than the 45,460,000-pound quota for 1957. Any imports in excess of the 1960 quota will be dutiable at 25 percent ad valorem.

Any tuna classifiable under Tariff Act paragraph 718(b)—fish, prepared or preserved in any manner, when packed in airtight containers. . . (except fish packed in oil or in oil and other substances; . . .) which is entered or withdrawn for consumption is included.

A proclamation (No. 3128), issued by the President on March 16, 1956, gave effect to an exchange of notes with the Government of Iceland to withdraw tuna canned in brine from the 1943 trade agreement and invoked the right to increase the duty reserved by the United States in negotiations with Japan and other countries under the General Agreement on Tariffs and Trade. The quota is based on 20 percent of the previous year's United States pack of canned tuna. The announcement as it appeared in the April 11, 1961, Federal Register follows:

DEPARTMENT OF THE TREASURY

Bureau of Customs

(T.D. 56360)

TUNA FISH

Tariff-Rate Quota

APRIL 5, 1961.

Pursuant to Presidential Proclamation No. 3128 of March 16, 1956 (T.D. 54051), it has been determined that 57,114,714 pounds of tuna may be entered for consumption or withdrawn from warehouse for consumption during the calendar year 1961 at the rate of 12½ per centum ad valorem under paragraph 718(b), Tariff Act of 1930, as modified. Any tuna classifiable under paragraph 718(b) of the tariff act which is entered, or withdrawn, for consumption during the current calendar year in excess of this quota will be dutiable at the full rate of 25 per centum ad valorem.

The above quota is based on the United States pack of canned tuna during the calendar year 1960, as reported by the United States Fish and Wildlife Service.

[SEAL] PHILIP NICHOLS, Jr.,
Commissioner of Customs.



White House

NORTH PACIFIC 1961 HALIBUT FISHING REGULATIONS APPROVED BY PRESIDENT:

On March 29, 1961, the President of the United States approved the 1961 North Pacific halibut fishing regulations as recommended by the International Pacific Halibut Commission.

The regulations as published in the April 8, 1961, Federal Register follow:

Title 50—WILDLIFE AND FISHERIES

Chapter III—International Regulatory Agencies (Fishing and Whaling)

PART 301—PACIFIC HALIBUT FISHERIES

Regulations of the International Pacific Halibut Commission adopted pursuant to the Pacific Fisheries Fishery Convention between the United States of America and Canada, signed March 2, 1953.

- Sec. 301.1 Regulatory area
301.2 Length of halibut fishing seasons
301.3 Closed seasons
301.4 Catch limits in Area 2 and 3A.
301.5 Size limits
301.6 Circumstances of vessel.
301.7 Retention of halibut taken under permit.
301.8 Conditions limiting validity of permits.
301.9 Statistical return by vessels.
301.10 Statistical return by dealers.
301.11 Dory gear prohibited.
301.12 Vessels prohibited.
301.13 Retention of tagged halibut.
301.14 Responsibility.
301.15 Supervision of unloading and weighing.
301.16 Previous regulations superseded.

AUTHORITY: §§ 301.1 to 301.16 issued under Art. III, 50 Stat., Part II, 1953.

§ 301.1 Regulatory areas.

(a) Convention waters which include the territorial waters and the high seas off the western coasts of Canada and the United States of America including the southern as well as the western coasts of Alaska shall be divided into the following areas, all directions given being magnetic unless otherwise stated:

(b) Area 1A (South of Hecla Head) shall include all convention waters southeast of a line running northeast and southwest through Hecla Head Light, as shown on Chart 8605, published in July 1947, by the United States Coast and Geodetic Survey, Washington, D.C., which light is approximately latitude 44°08'18" N., longitude 124°07'36" W.

(c) Area 1B (Hecla Head to Willapa Bay) shall include all convention waters between Area 1A and a line running northeast and southwest through Willapa Bay Light on Cape Shoalwater, as shown on Chart 6185, published in July 1939, by the United States Coast and Geodetic Survey, which light is approximately latitude 46°43'17" N., longitude 124°04'15" W.

(d) Area 2 (Willapa Bay to Cape Spencer) shall include all convention waters off the coasts of the United States of America and of Alaska and of Canada between Area 1B and a line running through the most westerly point of Glacier Bay, Alaska, to Cape Spencer Light as shown on Chart 8804, published in June 1940, by the United States Coast and Geodetic Survey, which light is approximately latitude 58°11'57" N., longitude 136°38'18" W., thence south one-quarter east.

(e) Area 3A (Cape Spencer to Shumagin Islands) shall include all the convention waters off the coast of Alaska that are between Area 2 and a straight line running southeast one-half east from the highest point on Kupreanof Point, which highest point is approximately latitude 55°34'08" N., longitude 159°38'00" W.; the highest point on Kupreanof Point shall be determined from Chart 8859 as published May 1954 (2d Edition) by the United States Coast and Geodetic Survey.

(f) Area 3B South (Shumagin Islands to Cape Sargak, Umanak Island not including Bering Sea) shall include all convention waters off the coast of Alaska that are between Area 3A and a straight line running southeast by west from Cape Sargak, the southwestern extremity of Umanak Island, at a point approximately latitude 52°49'50" N., longitude 169°07'00" W., and that are south of

straight lines running from Cape Kabuch Light at the head of Itatan Bay, which light is approximately latitude 54°48'07" N., longitude 163°21'38" W.; thence to Scotch Cap Light at the western end of Unalaska Island, which light is approximately latitude 54°23'48" N., longitude 164°44'30" W.; thence to Brundage Head on Unalaska Island, which head is approximately latitude 53°56'00" N., longitude 166°12'36" W.; thence to Cape Akak on Unalaska Island, which cape is approximately latitude 53°15'45" N., longitude 167°29'30" W.; thence to Cape Sargak. The positions of Cape Kabuch Light, Scotch Cap Light and Brundage Head were determined from Chart 8860, published 1942 (12th Edition), and the positions of Cape Sargak and Cape Akak were determined from Chart 8861, published in May 1942, revised April 1959, both charts as published by the U.S. Coast and Geodetic Survey.

(g) Area 3B North (Bering Sea and Aleutian Islands west of Cape Sargak) shall include all convention waters which are not included in Areas 1A, 1B, 2, 3A, and 3B South.

§ 301.2 Length of halibut fishing seasons.

(a) In Area 1A, the halibut fishing season shall commence at 6:00 a.m. of the 10th day of May and terminate at 6:00 a.m. of the 1st day of October, or at the time of termination of the halibut fishing season in Area 3A, whichever is later.

(b) In Area 1B, the halibut fishing season shall commence and terminate at the same time as the halibut fishing season in Area 2 shall commence and terminate.

(c) In Area 2, the halibut fishing season shall commence at 6:00 a.m. on the 10th day of May and terminate at 6:00 a.m. on a date to be determined and announced under paragraph (b) of § 301.4.

(d) In Area 3A, the halibut fishing season shall commence at 6:00 a.m. of the 10th day of May and terminate at 6:00 a.m. on a date to be determined and announced under paragraph (b) of § 301.4.

(e) In Area 3B South, the halibut fishing season shall commence at 6:00 a.m. of the 25th day of April and terminate at 6:00 a.m. of the 1st day of October, or at the time of termination of the halibut fishing season in Area 3A, whichever is later.

(f) In Area 3B North, the halibut fishing season shall commence at 6:00 a.m. of the 10th day of April and terminate at 6:00 a.m. of the 1st day of October, or at the time of termination of the halibut fishing season in Area 3A, whichever is later.

(g) All hours of opening and closing of areas in this section and other sections of these regulations shall be Pacific standard time.

§ 301.3 Closed seasons.

(a) Under paragraph 1 of Article I of the Convention, all convention waters shall be closed to halibut fishing except as provided in § 301.2.

(b) All convention waters, if not already closed under other provisions of these regulations, shall be closed to halibut fishing at 6:00 a.m. of the 1st day of December and shall remain closed until reopened as provided in § 301.2, and the retention and landing of any halibut caught during this closed period shall be prohibited.

(c) Nothing contained in these regulations shall prohibit the fishing for species of fish other than halibut during the closed halibut seasons, provided that it shall be unlawful for a vessel to have halibut aboard, or for any person to have halibut in his possession while so engaged except as provided for in § 301.7.

(d) Nothing contained in these regulations prohibit the International Pacific Halibut Commission, hereafter in these regulations referred to as "the Commission", from conducting on authorizing fishing operations for investigation purposes as

provided for in paragraph 3 of Article I of the Convention.

§ 301.4 Catch limits in Areas 2 and 3A.

(a) The quantity of halibut to be taken during the halibut fishing season in Area 2 and during the halibut fishing season in Area 3A in 1961 shall be limited to 28,000,000 pounds and 30,000,000 pounds, respectively of salable halibut, the weights in each limit to be computed as with heads off and entrails removed. The Commission may, at any time in the said year as is practicable determine and announce the date on which it deems each limit of catch as defined in paragraph 3 of this section will be attained, and the limit of each such catch shall then be that which shall be taken prior to said date, and fishing for halibut in the area to which each limit applies shall at that date be prohibited until each area is reopened to halibut fishing as provided in § 301.2, and provided that if it shall at any time become evident to the Commission that the limit will not be reached by such date, it may substitute another date.

(c) Catch limits shall apply only to the halibut fishing season in Area 2A and to the halibut fishing season in Area 3A.

§ 301.5 Size limits.

The catch of halibut to be taken from all areas shall be limited to halibut which weigh as measured from the tip of the lower jaw to the extreme end of the middle of the tail or to halibut which are 18 inches or more in length, or are 5 pounds or more in weight, and the possession of any halibut of less than the above length or weight shall be prohibited, according to whether the head is on or off, by any vessel or by any master or operator of any vessel or by any person in or upon a vessel, as prohibited.

§ 301.6 Licensing of vessels.

(a) All vessels of any tonnage which shall fish for halibut in any manner or hold halibut in possession in any area, or which shall land or have halibut on board, shall be licensed, in the same manner as a common carrier documented by the Government of the United States or of Canada for the carriage of mail, or by the Government of the United States or of Canada for the carriage of mail, provided that vessels of less than five net tons or vessels which do not have a license need not be licensed unless they shall require a permit as provided in § 301.7.

(b) Each vessel licensed by the Commission shall carry on board at all times while at sea the halibut license thus secured whether it is validated for halibut fishing or endorsed with a permit as provided in § 301.8, and this license shall at all times be subject to inspection by authorized officers of the Governments of Canada or the United States or by representatives of the Commission.

(c) The halibut license shall be issued and may be renewed by the Commission or the Governments of Canada or the United States at places where there are neither customs officers nor representatives of the Commission. A new license may be issued by the officer accepting statistical return at any time to vessels which have furnished proof of loss of the license form previously issued, or when there shall be no further space for record therein, providing the receipt of statistical return shall be shown on the new form for any halibut or other species taken during or after the voyage upon which loss of the license occurred.

(d) The halibut license of any vessel shall be validated before departure from port for halibut fishing operation for which statistical return is required. This validation of a license shall be by customs officers or by fishery officers of the Government of Canada or the United States when available at places where there are no customs officers and shall not be made in any other area in which the vessel will fish is entered on the license form and unless the provisions of § 301.9 have been complied with

for all landings and all fishing operations since issued to the licensee, provided that if the master or operator of any vessel shall fail to comply with the provisions of § 301.9, the halibut license of such vessel shall be null and void, and the laws prescribing penalties therefor have been complied with, or that the said master or operator is no longer engaged in the operation of the vessel, the operations of said vessel.

(f) The halibut license of any vessel fishing for halibut in Area 1A as defined in § 301.1 must be validated at a port or place within Area 1A prior to each such fishing operation when Areas 1B and 2 are closed to halibut fishing.

(g) The halibut license of any vessel fishing for halibut in Area 3B South or Area 3B North when Area 3A is closed to halibut fishing must be validated at a port or place within Area 3B South prior to each such fishing, except as provided in paragraph (g) of this section.

(h) Any vessel already fishing in Area 3B South or in Area 3B North prior to the halibut fishing season in Area 3A is permitted to fish in said area until first entry at a port or place with a validating officer or until the halibut fishing season. The vessel must comply with paragraph (h) of this section when it departs from Area 3B North and 3B South.

(i) The halibut license of any vessel departing from Areas 3B South and 3B North with any halibut on board when Area 3A is closed to halibut fishing must be validated at a port or place in Area 3B South subsequent to fishing and prior to such departure.

(j) A halibut license shall not be validated for departure for halibut fishing in Areas 1A or 1B or 2 more than 48 hours prior to the halibut fishing season in said areas.

(k) A halibut license shall not be validated for departure for halibut fishing in Area 3A or 3B South or 3B North from any port or place inside said areas more than 48 hours prior to the commencement of the halibut fishing season in each of said areas, except that a halibut license validated for fishing in Area 3B North prior to the opening of Area 3B South may be used for halibut fishing in Area 3B South when the latter area is opened; nor shall a halibut license be validated for departure for halibut fishing in Area 3A from any port or place outside said areas more than 5 days prior to commencement of the halibut fishing season in said area.

(l) A halibut license shall not be valid for halibut fishing in more than one of Areas 1A, 1B, 2, or 3A, as defined in § 301.1, during any one trip nor shall it be revalidated for halibut fishing in any area in which the vessel has any halibut on board.

(m) A halibut license may be validated for halibut fishing in any area of Areas 3A, 3B South or 3B North except that when Area 3A is closed such validation shall be subject to the conditions contained in paragraphs (f), (g), and (h) of this section and to any other applicable provisions of these regulations.

(n) A halibut license shall not be valid for halibut fishing in any area closed to halibut fishing nor for the possession of halibut if the licensed vessel is fishing or attempting to fish for any species of fish in any area closed to halibut fishing.

(o) Any vessel which is not required to be licensed for halibut fishing under paragraph (a) of this section shall not possess any halibut of any origin in any area closed to halibut fishing except while in actual transit to or within a port.

(p) A halibut license shall not be valid for halibut fishing in any area closed to halibut fishing if the vessel, in effect, nor shall it be validated while halibut taken under such permit is on board.

(q) A halibut license when validated for halibut fishing in Area 3A shall not be valid for the possession of any halibut in Area 2 if said vessel is in possession of a permit as provided in § 301.7 from Cape Spencer Light, Alaska, and a halibut license when validated for halibut fishing in Area 3B South and Area 3B North shall not be valid for the possession of any halibut in Area 3A, when Area 3A is closed to halibut fishing, if the vessel is in possession of baited gear more than 20 miles by navigable water route from the boundary between Areas 3A and 3B South.

(r) No person on any vessel which is required to have a halibut license under paragraph (a) of this section shall fish for halibut or have halibut in his possession, unless said vessel has a valid license issued by the Commission in conformity with the provisions of this section.

§ 301.7 Retention of halibut taken under permit.

(a) There may be retained for sale on any vessel which shall have a permit as provided in § 301.8 such halibut as is caught incidentally to fishing by that vessel, or which has already been closed to halibut fishing under § 301.2 or § 301.4 with set lines of the type commonly used in the Pacific Coast halibut fishery, but shall not exceed at any time one pound of halibut for each seven pounds of salable fish, actually utilized, of any other species not including salmon, tuna, and such halibut may be sold as the catch of said vessel, the weight of all fish to be computed as with heads off and entrails removed, provided that it shall not be a violation of this regulation for any such vessel to have in possession additional to the amount herein allowed to be sold if such additional halibut shall not exceed thirty percent of the amount of halibut actually surrendered at the time of landing as provided in paragraph (d) of this section.

(b) Halibut retained under such permit shall not be filleted, dried, steamed or butchered beyond the removal of the head and entrails while on the catching vessel.

(c) Halibut retained under such permit shall not be sold, but if otherwise removed or received by any person, firm or corporation from the catching vessel until halibut on board shall have been reported to a customs fishery or other authorized enforcement officer of the Governments of Canada or the United States by the captain or operator of said vessel and also by the person, firm or corporation receiving the halibut, and no halibut or other fish shall be landed or removed or be received from the catching vessel, except with the permission of said officer and under such supervision as the said officer may deem advisable.

(d) Halibut retained under such permit shall not be purchased or held in possession by any person other than the master, operator or crew of the catching vessel in excess of the proportion allowed in paragraph (a) of this section until such excess, whatever its origin, shall have been reported and surrendered to the customs fishery or other authorized officers of the Governments of Canada or the United States. In forfeiting such excess, the vessel shall be permitted to surrender any part of its catch of halibut. Provided, That the amount retained shall not exceed the proportion herein allowed.

(e) Permits for the retention and landing of halibut caught on set lines in Areas 1B and 2 shall become invalid at 6:00 a. m. of the 16th day of November of said year or at such earlier date as the Commission shall determine.

§ 301.8 Conditions limiting validity of permits.

(a) Any vessel which shall be used in fishing for other species than halibut in any area after it has been closed to halibut fishing under § 301.2 or 301.4 must have a halibut license and a permit

if it shall retain, land or sell any halibut caught incidentally to such fishing or possess any halibut of any origin during such year as provided in § 301.7.

(b) The permit shall be shown by endorsement of the issuing officer on the face of the halibut license form held by the vessel and shall show the area or areas for which the permit is issued.

(c) The permit shall terminate at the time the vessel departs from the area or areas of any species and a new permit shall be secured before any subsequent fishing operation for which a permit is required.

(d) A permit shall not be issued to any vessel which shall have halibut on board taken while engaged in the catching of fish in an open area unless such halibut shall be considered as taken under the issued permit and shall thereby be subject to forfeiture when landed if in excess of the proportion permitted in paragraph (a) of § 301.7.

(e) A permit shall not be issued, or be valid if held, by any vessel which shall fish with other than set lines of the type commonly used in the Pacific Coast halibut fishery.

(f) The permit of any vessel shall not be valid for halibut fishing if the vessel departs from port for each fishing operation for which statistical returns are required. This granting of a permit shall be by customs officers or fishery officers of the Governments of Canada or the United States when available to the vessel, and shall be in the form and unless the provisions of § 301.9 have been complied with for all landings and all fishing operations since issued of the license or permit provided that if the master or operator of any vessel shall fail to comply with the provisions of § 301.9, the license or permit shall be null and void, and the laws prescribing penalties therefor have been complied with, or that the said master or operator is no longer engaged in the operation of the vessel, the operations of said vessel.

(g) The permit of any vessel shall be issued and may be renewed by the Commission or the Governments of Canada or the United States at places where there are neither customs officers nor representatives of the Commission. A new license may be issued by the officer accepting statistical return at any time to vessels which have furnished proof of loss of the license form previously issued, or when there shall be no further space for record therein, providing the receipt of statistical return shall be shown on the new form for any halibut or other species taken during or after the voyage upon which loss of the license occurred.

(h) No vessel shall retain, land or sell any halibut caught incidentally to fishing for other species in any area closed to halibut fishing under § 301.2 or § 301.4, or shall have halibut of any origin in his possession during such fishing, unless such person is a member of the crew of and is upon a vessel with a halibut license and with a valid permit issued and in force in conformity with the provisions of § 301.7 and 301.8.

§ 301.9 Statistical return by vessels.

(a) Statistical return as to the amount of halibut taken during fishing operations must be made by the master or operator of the vessel in accordance with the regulations and as to the amount of halibut and other species by the master or operator of any vessel operating under permit as provided for in § 301.7 and 301.8, within 96 hours of landing, sale or transfer of halibut or of first entry thereafter into a port, wharf, or other place where an officer authorized to receive such return.

(b) The statistical return must state the port of landing and the amount of each species taken within the area or areas defined in these regulations, for which the vessel's license is validated for halibut fishing, and the port, wharf, or area for which the vessel's license is endorsed as a permit.

(c) The statistical return must include the halibut land or transferred to other vessels and all halibut held in possession on board and must be full and correct in all respects herein required.

(d) The master or operator or any person engaged on shares in the opera-

tion of any vessel licensed or holding a permit under these regulations may be required by the Commission or by any officer of the Governments of Canada or the United States to endorse to receive such return to certify to its correctness to the best of his information and belief and to support the certificate by a sworn statement. Validation of a halibut license or issuance of a permit after such sworn return is made shall be provisional and shall not render the license or permit valid in case the return shall later be shown to be false or fraudulently made.

(e) The master or operator of any vessel holding a license or permit under these regulations shall keep an accurate log of all fishing operations including therein date, locality, amount of gear used, and amount of halibut taken daily in each such locality. The log record shall be retained for a period of two years and shall be open to inspection by representatives of the Commission authorized for this purpose.

(f) The master, operator or any other person engaged on shares in the operation of any vessel licensed under these regulations may be required by the Commission or by any officer of the Governments of Canada or the United States to certify to the correctness of such log record to the best of his information and belief and to support the certificate by a sworn statement.

§ 301.10 Statistical return by dealers.

(a) All persons, firms or corporations that shall buy halibut or receive halibut for any purpose from fishing or transporting vessels of other carrier shall keep and on request furnish to customs officers or to any enforcing officer of the Governments of Canada or the United States or to representatives of the Commission, records of each purchase or receipt of halibut, showing date, locality, name of vessel, person, firm or corporation purchased or received from and the amount in pounds according to trade categories of the halibut and other species landed with the halibut.

(b) All persons, firms or corporations engaged in the business of fishing under permit as provided in § 301.7 shall in 48 hours make to an authorized enforcement officer of the Governments of Canada or the United States a signed statistical return showing the date, locality, name of vessel received from and the amount of halibut and of other species landed with the halibut and certifying that permission to receive such fish was secured in accordance with paragraph (c) of § 301.7. Such persons, firms or corporations may be required by any officer of the Governments of Canada or the United States to support the accuracy of the above signed statistical return with a sworn statement.

(c) All records of all persons, firms or corporations concerning the landing, purchase, receipt and sale of halibut and other species landed therewith shall be retained for a period of two years and shall be open at all times to inspection by any enforcement officer of the Governments of Canada or the United States or by any authorized representative of the Commission. Such persons, firms or corporations may be required to certify to the correctness of such records and to support the certificate by a sworn statement.

(d) The possession by any person, firm or corporation of halibut of such person, firm or corporation knows to have been taken by a vessel without a permit when such license or permit is required, is prohibited.

(e) No person, firm or corporation shall unload any halibut from any vessel that has fished for halibut in Area 3B South or in Area 3B North after the closure of Area 3A until the license of said vessel has been validated at a port or place in Area 3B South as required in paragraph (f) and of § 301.8 or unless permission to unload such halibut has been secured from an enforcement officer of the Governments of Canada or the United States.

§ 301.11 Dory gear prohibited.

The use of any hand dory or other appliance in hauling halibut gear by hand power in any dory or small boat operated from a vessel licensed under the provisions of these regulations is prohibited in all convention waters.

§ 301.12 Nets prohibited.

It is prohibited to retain halibut taken in any convention waters with a net of any kind or to have in possession any halibut in said areas while using any net or nets other than bait nets for the capture of other species of fish, nor shall any license or permit validated for said areas under these regulations be valid during the use or possession on board of any net or nets other than bait nets, provided that the character and the use of said bait nets conform to the laws and regulations of the country where they may be utilized and that said bait nets are utilized for no other purpose than the capture of bait for said vessel.

§ 301.13 Retention of tagged halibut.

Nothing contained in these regulations shall prohibit any vessel at any time from retaining and landing any halibut which bears a Commission tag at the time of capture, provided that such halibut with the tag still attached is reported at the time of landing to representatives of the Commission or to enforcement officers of the Governments of Canada or the United States and is made available to them for examination.

§ 301.14 Responsibility of master.

Wherever in these regulations any duty is laid upon any vessel, it shall be the personal responsibility of the master or operator of said vessel to see that said duty is performed and he shall personally be responsible for the performance of said duty. This provision shall not be construed to relieve any member of the crew of any responsibility with which he would otherwise be chargeable.

§ 301.15 Supervision of unloading and weighing.

The unloading and weighing of the halibut of any vessel licensed under these regulations and the unloading and weighing of halibut and other species of any vessel holding a permit under these regulations shall be under such supervision as the customs or other authorized officer may deem advisable in order to assure the fulfillment of the provisions of these regulations.

§ 301.16 Previous regulations superseded.

These regulations shall supersede all previous regulations adopted pursuant to the Convention between Canada and the United States of America for the preservation of the halibut fishery of the Northern Pacific Ocean and Bering Sea, signed March 2, 1953, except as to changes occurring prior to the approval of these regulations. These regulations shall be effective as of each succeeding year, with the dates herein specified changed accordingly, until superseded by subsequently approved regulations. Any determination made by the Commission pursuant to these regulations shall become effective immediately.

WILLIAM M. SPURLES, Chairman.

ANDREW W. ANDERSON, Vice Chairman.

WILLIAM A. BAYNE, RICHARD S. HELLAND, MATTIAS MENSEN, RICHARD NELSON.

WILLIAM M. SPURLES, Chairman.

H. A. DUNLOP, Secretary.

Approved: March 29, 1961.

JOHN F. KENNEDY.

Eighty-Seventh Congress

(First Session)

Public bills and resolutions which may directly or indirectly affect fisheries and



allied industries are reported. Introduction, referral to committees, pertinent legislative actions, hearings, and other actions by the House and Senate, as well as signature into law or other final disposition are covered.

ATLANTIC STATES MARINE FISHERIES COMMISSION: On April 12, the Senate received a letter from the Secretary-Treasurer, Atlantic States Marine Fisheries Commission, Mount Vernon, N. Y., transmitting, pursuant to law, a report of that Commission, dated March 1961 (with accompanying report); to the Committee on Interstate and Foreign Commerce.

CATCH TRANSFER AT SEA: H.R. 5929 (Wilson of California), introduced in House Mar. 24, to Committee on Merchant Marine and Fisheries. Identical to a number of bills introduced previously on same subject. Would legalize the transfer of catch of one fishing vessel to another on the high seas and transporting it without charge to a port of the United States.

DEPRESSED AREAS: H.R. 5943 (Widnall), introduced in House Mar. 24; to Committee on Banking and Currency.

On Mar. 27, the House Committee on Rules granted an open rule, waiving points of order, with 3 hours debate on S. 1, to establish an effective program to alleviate conditions of substantial and persistent unemployment and underemployment in certain economically-distressed areas (H. Rept. No. 201). Bill was referred to House Calendar. On Mar. 28, the House by a voice vote adopted H. Res. 237. On Mar. 29, by a vote of 250 yeas to 166 nays the House passed S. 1. Prior to passage a recommittal motion designed to replace the text of the bill with the provisions of H.R. 5943 (Widnall), had been rejected by a vote of 125 yeas to 292 nays. Before the committee substitute amendment was adopted, several amendments were added, including one to authorize vocational training for certain seasonal agricultural workers; also one to require

the Secretary of Commerce to study and report to Congress of the impact on the economy where Government installations are deactivated in areas where at least 6-percent unemployment exists.

On Mar. 30 the Senate disagreed to House amendments to S. 1, Area Redevelopment Act of 1961, asked for conference with House and appointed conferees.

On April 12, the House insisted on the House amendments and agreed to the conference asked by the Senate on S. 1.

On April 12, a joint resolution of the Legislature of the State of Wisconsin was received in the Senate, memorializing Congress to pass S. 1, introduced by Sen. Paul H. Douglas of Illinois, or like or similar legislation providing Federal aid for economically-distressed areas of the United States; to Committee on Banking and Currency.

EXEMPT RAILROAD TRANSPORTATION FOR FISH, LIVESTOCK, AND AGRICULTURAL PRODUCTS: H. R. 6247 (Cunningham), introduced in House April 12, a bill to amend the Interstate Commerce Act, as amended, so as to extend to the railroads a conditional exemption from economic regulation comparable to that provided for motor carriers engaged in the transportation of ordinary livestock, fish, or agricultural commodities; to the Committee on Interstate and Foreign Commerce. Identical to H. R. 1823 (Rostenkowski).

FEDERAL BOATING ACT AMENDMENTS: On Mar. 27, the Senate received a letter from the Acting Secretary of the Treasury, transmitting, pursuant to law, copy of amendments to the rules and regulations regarding "Numbering of Undocumented Vessels, Statistics on Numbering and Boating Accident Reports and Accident Statistics," to become effective on June 30, 1961 (with accompanying papers); to Committee on Interstate and Foreign Commerce.

FISH AND WILDLIFE AID THROUGH EQUIPMENT TRANSFER: H. R. 6301 (Gray), introduced in House April 13, a bill to provide that excess personal property of the United States may be donated to the States for the promotion of fish and wildlife management activities, and for other purposes; to the Committee on Government Operations. Identical to H. R. 4724 (Barry).

FISH AND WILDLIFE ASSISTANT SECRETARY: The Senate on Mar. 24, 1961, confirmed the nomination of Frank P. Briggs to be Assistant Secretary for Fish and Wildlife, Department of the Interior.

FOOD ADDITIVES: On Mar. 24, the Senate Committee on Labor and Public Welfare submitted S. Rept. 86 on H. R. 3980, an act to protect the public health by prohibiting the use of food additives which are not adequately tested, without amendment.

S. Rept. No. 86, Food Additives Transitional Provisions Amendment of 1961 (March 24, 1961, 87th Congress, 1st Session, report of the Committee on Labor and Public Welfare to accompany H. R. 3980), 11 pp., printed. Contains letter from Department of Health, Education, and Welfare recommending enactment of H. R. 3980 as it passed the House, additional correspondence explaining the need for the bill, and an explanation of its provisions.

On Mar. 27, the Senate passed H. R. 3980, without amendment, and cleared the bill for signature by the President. On Mar. 28, H. R. 3980 was signed by the President pro tempore of the Senate.

On April 7, the President signed H. R. 3980, to amend the transitional provisions of the Food Additives Amendment Act of 1958 (P. L. 87-19).

This bill would extend, from March 5, 1961, until June 30, 1964, the final effective dates of the Food Additives Amendment of 1958 (P. L. 85-929) and the Nematocide, Plant Regulator, Defoliant, and Desiccant Amendment of 1959 (P. L. 86-139). This extension would authorize the continued use of certain food additives and pesticides chemicals not covered by regulations issued by the Secretary of the Department of Health, Education, and Welfare, if the Secretary finds that such continued use would involve no undue risk to the public health, that such additives and pesticide chemicals were in commercial use prior to January 1, 1958, and that scientific investigations to determine safe levels of use are being pursued with due diligence.

Additional time is required by the Food and Drug Administration and the affected industries to complete and evaluate scientific investigations and studies needed to determine final assurance of safe use for about 30 pesticide chemicals and to determine whether some 3,000 substances are actually additives in or on a food and, if they are, what if any tolerance limitations or other conditions should be imposed on their use.

Under the bill, the Secretary of Health, Education, and Welfare could permit the continued use of the food additives or pesticide chemicals which have not been finally cleared for safety only in those instances where he has received satisfactory evidence, and has either authorized or has pending a request for authorization for the continued usage of these chemicals up to March 5, 1961, the limit of this authority, and he finds that the persons requesting the extensions have taken bona fide action before March 6, 1960, to investigate the chemicals concerned, that such investigations have continued with reasonable diligence, and that more time is necessary to complete them.

The Secretary would, at any time, be able to terminate any extension of time granted under this legislation if he finds that (1) it should not have been granted, (2) the basis for an extension no longer exists owing to a change in circumstances, or (3) there has been a failure to comply with any requirement for the submission of progress reports or with other conditions attached to the extension.

FOOD ADDITIVES STUDY COMMISSION: H. R. 6011 (King of Utah), introduced in House on Mar. 28, a bill to establish a commission to conduct an impartial and scientific study and investigation to determine the effects on the public health of the practice of adding various chemicals to food products and beverages; to the Committee on Interstate and Foreign Commerce.

IMPORT COMPETITION ADJUSTMENT: H. R. 6150 (Van Zandt) introduced in House April 10, and H. R. 6280 (Bailey), introduced on April 13, bills to regulate the foreign commerce of the United States by providing for fair competition between domestic industries operating under the Fair Labor Standards Act and foreign industries that supply articles imported into the United States, and for other purposes; to Committee on Ways and Means. Identical to H. R. 5635 (Thomson of Wisconsin).

INCOME TAX REVISION IN FAVOR OF FISHERMEN: H.R. 6413 (King of California), introduced in House on April 18, a bill to extend to fishermen the same treatment accorded farmers in relation to estimated income tax; to the Committee on Ways and Means.

INTERIOR APPROPRIATIONS: Department of the Interior and Related Agencies Appropriations for 1962 (Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, Eighty-Seventh Congress, First Session, on appropriations for the Department of Interior except Bonneville Power Administration, Bureau of Reclamation, Southeastern Power Administration, and Southwestern Power Administration), 1,482 pp., printed. Includes hearings on operations of the Fish and Wildlife Service and its two Bureaus--total funds registered for the Service for fiscal year 1962--\$48,041,000, or \$8,063,027 more than in fiscal year 1961.

For the U. S. Fish and Wildlife Service, Office of the Commissioner, the estimate of \$364,000 is the same as for 1961.

Bureau of Commercial Fisheries: Estimates for the fiscal year 1962 total \$19,339,000. Of this total, \$9,296,000 is for management and investigations of resources; \$1 million is under the special foreign currency program; \$7,561,000 is for construction; \$482,000 is for general administrative expenses; and \$1 million is for assistance in construction of fishing vessels. An additional \$1,981,000, to be derived from the Pribilof Islands fund, is requested for administration of the Pribilof Islands.

Increases totaling \$455,000 in the estimate for management and investigations provide \$221,000 for program expansion in connection with research on fish migration over dams, \$154,000 for operation and maintenance of a new vessel and new shore facilities under construction in the current year, and \$80,000 to finance increased pay costs under P.L. 86-568 for a full year.

Funds requested under the special foreign currency program are to finance technological and biological studies in foreign countries, to complement work being performed in these fields in the United States under the management and investigations of resources appropriation.

The estimate of \$7,561,000 for construction includes \$2,450,000 for a new research laboratory at La Jolla, Calif; \$1,775,000 for a research vessel for use in the central Pacific Ocean; \$1,250,000 for a vessel to replace the Delaware, an obsolete North Atlantic type trawler constructed in 1938; \$200,000 for a research vessel to be used in the Gulf of Mexico; and \$455,000 for service facilities and laboratory improvements at Oxford, Md., Boothbay Harbor, Maine, and Auke Bay, Alaska. All this construction involves facilities recommended for the national oceanographic program. Also included in the \$7,561,000 estimate is \$1,431,000 for Columbia River fishery facilities, a decrease of \$566,642 compared to the 1961 comparative transfer for this activity from the Corps of Engineers.

Bureau of Sport Fisheries and Wildlife: The overall estimate for management and investigations of resources is \$23,200,000, an increase of \$3,947,000 over fiscal year 1961. For the most part this increase will be used to place new fish hatcheries and wildlife refuges under operation and to provide funds needed to

maintain the work in general at 1961 levels. Construction estimate is \$4,067,000, a reduction of \$718,000 when compared with 1961. The estimate includes funds for a new fish hatchery on the Jordan River, Antrim County, Mich., for the purpose of restoring lake trout in the Great Lakes. Funds are also provided for initial work at the Navajo and Vernal units of the Colorado River storage project. General Administrative expenses total \$1,071,000 or \$55,000 more than in fiscal year 1961. Grand total for Bureau of Sport Fisheries and Wildlife is \$28,338,000 or \$3,284,000 more than in 1961.

On April 13 the House Committee on Appropriations was granted permission to file by midnight April 14 a report on a bill making appropriations for the Department of the Interior and related agencies for fiscal year 1962.

H.R. 6345 (Kirwin) was reported out of committee on April 14 (H. Rept. No. 233).

The appropriations include funds for the Fish and Wildlife Service, Office of the Commissioner. The Committee recommends the budget estimate of \$364,000, the same as the amount available for the current fiscal year.

For the Bureau of Commercial Fisheries, Management and Investigations of Resources, the Committee recommended \$11,700,000 an increase of \$3,774,000 in the 1961 appropriation and a decrease of \$96,000 in the budget estimate. On an available funds basis, the increase over the current year is only \$1,769,669 due to the transfer in the estimates to this item of \$2,004,331 for the operation and maintenance costs of Columbia River fishery facilities heretofore appropriated for under the Corps of Engineers. Increases allowed include \$1,000,000 for additional work in the field of oceanography; \$500,000 for continuation of emergency research program for Alaska salmon; \$131,000 for operation of the new facilities being constructed in 1961; \$221,000 for expansion of the research program on fish migration over dams, and \$23,000 for operation of the new exploratory fishing vessel being constructed in 1961.

The amount allowed reflects a decrease of \$89,331 in the level of the Columbia River fishery facilities program, and Committee reductions of \$96,000 consisting of disallowance of the request of \$80,000 to restore that portion of the pay act cost being absorbed during the current year, and \$16,000 to round off the estimate.

The Committee recommends \$300,000, a reduction of \$700,000 in the budget request, to initiate a new research program to be conducted in foreign countries with foreign currencies.

The Committee has approved the budget request of \$7,561,000 for construction, an increase of \$5,161,000 in the 1961 appropriation. Actual increase provided over 1961 is \$3,730,000 due to the transfer in the estimates to this item of \$1,431,000 for the construction of the Columbia River fisheries facilities heretofore appropriated to the Corps of Engineers. The amount provided includes: \$1,775,000 for the construction of an oceanic research vessel for the Central Pacific Ocean; \$1,240,000 for construction of an experimental fishing vessel for use in the North Atlantic as a replacement for the Delaware; \$200,000 for the construction of a research vessel for use of the Galveston laboratory in the Gulf of Mexico; \$2,450,000 for construction of a biological research laboratory at La Jolla, California; \$170,000 for additional construction at the Oxford,

Maryland, laboratory; \$85,000 for improvements at Boothbay Harbor, Maine, laboratory; and \$200,000 for additional facilities at the Auke Bay, Alaska, laboratory.

For subsidies for the construction of fishing vessels, the Committee has allowed an appropriation of \$750,000, the same as the appropriation for the current year, and a decrease of \$250,000 in the budget estimate.

For general administrative expenses the Committee has allowed the budget request of \$482,000, an increase of \$97,000 in the 1961 appropriation.

For administration of Pribilof Islands, the Committee recommends the budget request of \$1,981,000, a decrease of \$89,000 in the amount provided for the current fiscal year.

For the Bureau of Sport Fisheries and Wildlife, Management and Investigations of Resources, the Committee recommends an appropriation of \$23,000,000, an increase of \$3,692,000 in the 1961 appropriation, and a decrease of \$200,000 in the budget request. Increases included \$554,100 for operation of new hatchery facilities and for more adequate equipment replacement; \$253,400 for additional fishery research.

For construction the Committee recommends an appropriation of \$3,770,000, a decrease of \$1,365,000 in the 1961 appropriation, and a decrease of \$297,000 in the budget estimate.

For general administrative expenses the Committee recommends an appropriation of \$1,016,000, the same as the amount available for the current fiscal year, and a reduction of \$55,000 in the budget request.

On April 18 the House, by a voice vote, passed H.R. 6345. Appropriations for commercial and sport fisheries and wildlife amount to \$48.9 million, an increase of \$8.2 million for additional research in oceanography, salmon, and wildlife, construction of research vessels and laboratories, and cooperation and maintenance of hatcheries and wildlife refuges. Included are funds to initiate a new research program to be conducted in foreign countries with foreign currencies--\$300,000, a reduction from \$1 million requested. These funds are to be used for: (1) a study to determine the nature and causes of the denaturation of protein in frozen fish--study to be made in Israel; (2) a study to measure nutritional contributions of fishery products to the well-being of humans and animals--the study to be made in India; (3) a study of "at-sea processing or freezing of ocean perch" aboard factory trawlers in the North Atlantic--the study made by a Polish university. Further, a sum of \$650,000 was requested for radioisotope studies--in India--also a biometrics research program in India, a Pakistan study of shrimp physiology, an Egyptian study of "food chain studies in fresh-water lakes," and an Israeli study of fish behavior and physiology--sardine.

MINIMUM-WAGE LEGISLATION: Amendments to the Fair Labor Standards Act (Hearings before the Subcommittee on Labor of the Committee on Labor and Public Welfare, United States Senate, Eighty-Seventh Congress, First Session on S. 256, S. 879, S. 895, bills amending the Fair Labor Standards Act of 1938, as amended, Feb. 28, Mar. 1, 2, 3, and 6, 1961), 759 pp., printed. Contains statements of various Government officials, union officials, and business officials. Of interest to the fisheries are statements of the Chair-

man, Legislative Committee, National Fisheries Institute, Inc.; National Cannery Association; and the Oyster Institute of North America.

On Mar. 27, the Senate read twice by its title the bill passed by the House on Mar. 24, H.R. 3925, to amend the Fair Labor Standards Act of 1938, as amended, to provide coverage for employees of large enterprises engaged in retail trade or service and of other employers engaged in commerce or in the production of goods for commerce, to increase the minimum wage, and for other purposes; referred to Committee on Labor and Public Welfare.

S. 1457 (McNamara), introduced in Senate Mar. 28; to the Committee on Labor and Public Welfare. Bill contains basic provisions of the administration measure introduced earlier.

On April 11, the Senate Committee on Labor and Public Welfare in executive session, ordered favorably reported with an amendment in the nature of a substitute, H.R. 3935. As approved by the committee, the bill would (1) extend minimum wage coverage to approximately 4.1 million workers, the majority of whom are in the retail trades and services, (2) adopt the \$1.25 minimum wage, which amount would be reached in 28 months for presently-covered workers, the latter of whom would be given overtime protection, reaching the 40-hour maximum workweek in 52 months (until these points are reached \$1.15 minimum wage would be in effect), and (3) adopt the so-called "inflow" test, which means that retail and service enterprises would be covered by the bill, only if they met the following test: (a) the employer must be engaged in commerce or the production of goods for commerce, (b) the employer must receive \$250,000 worth of goods for resale, which have moved across state lines (so-called "inflow" test), and (c) the employer must have an annual gross volume of sale of not less than \$1 million, exclusive of excise taxes at the retail level.

Would not affect the existing year-round overtime exemption for fish canners. It would, however, place onshore fish processing (other than canning) under the minimum wage. Thus, fish canning and fish processing would be placed on the same basis--both subject to minimum wage provisions; both exempt from overtime pay requirements. The exemption for offshore fishery activities would still be retained: "(5) any employee employed in the catching, taking, propagating, harvesting, cultivating, or farming of any kind of fish, shellfish, crustacea, sponges, seaweeds, or other aquatic forms of animal and vegetable life, or in the first processing, canning or packing such marine products at sea as an incident to, or in conjunction with, such fishing operations, including the going to and returning from work and loading and unloading when performed by any such employee."

On April 12, bill was reported by Committee (S. Rept. No. 145) to the Senate.

The Committee report which accompanied the Senate bill contained the following language, which is identical to that in last year's Senate report:

"The present exemptions in sections 13(a)(15) and 13(b)(4) have been judicially interpreted to apply to all employees employed in the seafood industry including any employee who participates in activities which are necessary to the conduct of the operations specifically

described in the exemptions (McComb v. Consolidated Fisheries Company, 174 F. 2nd 74, C.A. 3, 1949). These interpretations are consistent with the congressional purpose of treating all employees of one establishment in the same manner under the act and of avoiding segmentation as between different employees of the same employer engaged in the named operations.

"For the same reasons, there was included in section 13(a)(5) as amended by the bill an exemption for the 'first processing, canning, or packing' of marine products 'at sea as an incident to or in conjunction with such fishing operations.' The purpose of this additional provision is to make certain that the act will be uniformly applicable to all employees on the fishing vessel including those employees on the vessel who may be engaged in these activities at sea as an incident to the fishing operations conducted by the vessel."

S. Rept. No. 145, Fair Labor Standards Amendments of 1961 (87th Congress, 1st Session, United States Senate, Report of Committee on Labor and Public Welfare to accompany H.R. 3935), 111 pp., printed. Contains history of legislation, committee objections of House-passed bill, summary of major provisions of committee bill including changes in exemptions--which concern seafood processing in that the bill covers for minimum wage, but not for overtime, employees engaged in on-shore seafood processing. Also contains minority views.

On April 13 the Senate took up and considered H.R. 3935. Pending at adjournment was Dirksen amendment, identical with House-passed bill of \$1.15 minimum wage, except for \$1.05 minimum wage for newly covered employees instead of \$1 in House-passed bill.

On April 14 the Senate continued consideration of H.R. 3935, reaching unanimous-consent agreement that effective April 18 debate on any amendment, motion, or appeal (except motion to table) shall be limited to one hour, equally divided; no nongermane amendment may be received; and on question of final passage, debate shall be limited to 4 hours, equally divided.

In addition to limiting further debate on the bill, Senate adopted Cooper amendment to eliminate language in committee amendment that would reduce to 10 weeks the overtime payments exemption in industries engaged in certain food and agricultural processing. The Committee bill would remove from exemption the onshore activities (fish processing, other than canning) and leave exemption applicable to offshore activities connected with procurement of the aquatic products. Pending at adjournment was Dirksen amendment (in nature of a substitute for committee substitute), similar to bill as it passed House. Dirksen amendment would retain the exemptions for onshore fish processing (other than fish canning) as in the House-passed bill.

On April 18 the Senate continued consideration of H.R. 3935, taking several actions on amendments to committee amendment (in nature of a substitute), none of which pertained directly to fisheries.

NATIONAL AQUARIUM IN DISTRICT OF COLUMBIA: H.R. 5990 (Olsen), introduced in House on Mar. 28, a bill to authorize the Secretary of the Interior to construct a national aquarium in the District of Columbia; to the Committee on the District of Columbia.

NATIONAL SCIENCE ACADEMY: On Mar. 28, Subcommittee No. 3 of the House Committee on Science

and Astronautics began hearings on H.R. 1, to establish a National Science Academy. Witnesses from the National Science Foundation, and various other public witnesses were heard. On March 29, hearings were concluded.

H.R. 6138 (Monagan), introduced in House April 10, a bill to provide for the establishment, under the National Science Foundation, of a National Science Academy; to the Committee on Science and Astronautics.

NATIONAL OCEANOGRAPHIC PROGRAM: On Mar. 29, a communication from the President of the United States, relating to a proposed national oceanographic program (with accompanying papers), was received in the Senate; to Committee on Interstate and Foreign Commerce. Also, the same message (No. 734) was received in the House; referred to the Committee on Merchant Marine and Fisheries.

NATURAL RESOURCES CONSERVATION: On April 13 the Senate Committee on Interior and Insular Affairs held and concluded hearings on S. 239 and S. 1415, proposed Resources and Conservation Act of 1961, after receiving testimony of various Senators, and other Government witnesses. Bills would declare a national policy on conservation, development, and utilization of natural resources.

NEW BEDFORD-MADE FISH FLOUR: On April 18, the Senate received a resolution of the city council of New Bedford, Mass., seeking approval for the marketing of New Bedford-made fish flour from the Food and Drug Administration; referred to Committee on Agriculture and Forestry.

OCEANOGRAPHIC RESEARCH: H. Res. 242 (Keith), H. Res. 245 (Morse), H. Res. 246 (Tupper), H. Res. 247 (Philbin), introduced in House Mar. 28; resolution expressing the sense of the House of Representatives with respect to the expansion of oceanographic research; to the Committee on Merchant Marine and Fisheries.

OUTDOOR RECREATION RESOURCES REVIEW COMMISSION: On Mar. 29 the President signed S. 449 extending until Jan. 31, 1962, the time within which the Outdoor Recreation Resources Review Commission shall submit its final report (P. L. 87-13). Provides that Commission by date specified shall present a report of its review, a compilation of its data, and its recommendations on a State by State, region by region, and national basis to the President and Congress. Commission will cease to exist after September 1, 1962.

SALTONSTALL-KENNEDY ACT FUNDS REAPPORTIONMENT: H.R. 6130 (Johnson of Calif.), introduced in House April 10; H.R. 6252 (Garmatz) and H.R. 6259 (Multer), introduced in House April 12; bills to amend the act of August 11, 1939, relating to domestically-produced fishery products to establish a fund for the advancement of commercial fisheries; to the Committee on Merchant Marine and Fisheries. Identical to H.R. 5301 (Rivers). Would allocate funds to State agencies having immediate responsibility for management of commercial fishery resources, for fisheries research and development.

SHRIMP IMPORT DUTIES: H.R. 6168 (Boggs) and H.R. 6212 (Willis), introduced in House April 11; H.R. 6294 (Fascell), introduced in House April 13; H.R. 6424 (Rivers of Alaska), introduced in House April 18; bills to amend the Tariff Act of 1930 to impose a duty on shrimp and to provide for duty free entry of unproc-

essed shrimp annually in an amount equal to imports of shrimp in 1960; to the Committee on Ways and Means. Also, S. 1571 (Long, Smathers, Talmadge, Bartlett), introduced in Senate April 13; to the Committee on Finance; similar to H.R. 6168. Would allow the duty-free entry of raw headless shrimp up to an amount equal to 1960 imports, and would impose a duty of 35 percent, or 35 cents per pound whichever is higher, on all imports of processed shrimp as well as on imports of raw headless in excess of the 1960 imports.

SMALL BUSINESS: S. Rept. No. 89, Small Business Exports and the World Market (87th Congress, 1st Session, United States Senate, Report of the Select Committee on Small Business on Encouragement and Expansion of Exports by Small Business, March 27, 1951), 45 pp., printed. Contains the facts today on U.S. exports, what Government agencies are doing, areas for new progress (recommendations), miscellaneous signs of progress, summary of recommendations, 3 exhibits, and 5 appendices.

SPORT FISH STUDY: S. 1524 (McGee and Hickey), introduced in Senate on April 12, a bill to authorize and direct the Secretary of the Interior to conduct studies of the genetics of sport fishes and to carry out selective breeding of such fishes to develop strains with inherent attributes valuable in programs of research, fish hatchery production, and management of recreational fishery resources; to the Committee on Interstate and Foreign Commerce.

SUBMERGED LANDS ACT AMENDMENTS: S. 1400 (Long of La., and Ellender), introduced in Senate March 21; to Committee on Interior and Insular Affairs. Also H.R. 5792 (Boggs), H.R. 5793 (Colmer), H.R. 5794 (McSween), H.R. 5795 (Hebert), H.R. 5796 (Morrison), H.R. 5797 (Passman), H.R. 5798 (Thompson of La.), H.R. 5799 (Willis), introduced in House March 21, to the Committee on the Judiciary. Bills to amend the Submerged Lands Act to establish the seaward boundaries of the States of Alabama, Mississippi, and Louisiana as extending 3 marine leagues into the Gulf of Mexico and providing for the ownership and use of the submerged lands, improvements, minerals, and natural resources within said boundaries.

Congressman Willis in the March 21 Congressional Record reviewed the whole controversy on submerged lands jurisdiction from the time of decision of the Supreme Court in the California case in 1947 to the time of the Court's decision of May 1960.

SUPPLEMENTAL APPROPRIATIONS: Third Supplemental Appropriation Bill for 1961 (Hearings before the Committee on Appropriations, United States Senate, Eighty-Seventh Congress, First Session, on H.R. 5188, an act making supplemental appropriations for the fiscal year ending June 30, 1961, and for other purposes), 762 pp., printed. Contains, among others, for the Bureau of Sport Fisheries and Wildlife estimates of supplemental appropriations to cover hurricane damage and pay raises. No statement presented on Bureau of Commercial Fisheries supplemental appropriations.

On Mar. 24, the Senate Committee on Appropriations submitted S. Rept. 85 on H.R. 5188, an act making supplemental appropriations for fiscal year ending June 30, 1961. H.R. 5188 passed Senate, amended, on March 27 and on the same date Senate asked for a conference.

On Mar. 28, the Senate received a message from the House announcing that the House had disagreed to the amendments of the Senate on H.R. 5188. House agreed to the conference asked by the Senate on the disagreeing votes of the two Houses, and appointed conferees.

On Mar. 29, the Committee on Conference agreed to file a report on the differences between the House- and Senate-passed versions of H.R. 5188, and submitted its report (H. Rept. No. 211) to the House. On Mar. 29 by a voice vote the House adopted the conference report on H.R. 5188, and sent the legislation to the Senate. The Senate began consideration of conference report. Two of the amendments considered in Conference were: Amendment No. 45--Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife: Appropriates \$350,000 for construction as proposed by Senate instead of \$200,000 as proposed by House; and Amendment No. 46--Fish and Wildlife Service, Bureau of Commercial Fisheries: Appropriates an additional \$1,000,000 as proposed by the Senate for North Pacific salmon fisheries research.

On Mar. 30 the Senate adopted conference report and cleared for President H.R. 5188, third supplemental appropriations for fiscal year 1961. Includes additional funds for Bureau of Commercial Fisheries: \$1 million for North Pacific salmon fisheries research (S. Doc. 18) and funds for pay-raise costs. Also additional funds for Bureau of Sport Fisheries and Wildlife for construction, other expenses under management and investigation of resources, and pay-raise costs. For State Department, an additional \$21,000 is included for international fisheries commissions to cover increased pay costs.

On Mar. 30, the Senate's President pro tempore signed H.R. 5188, which had previously been signed by the Speaker of the House of Representatives.

On Mar. 31 H.R. 5188, an act making supplemental appropriations for the fiscal year ending June 30, 1961, and for other purposes was signed by the President (P.L. 87-14).

Both the Senate and House gave \$663,000 to the Bureau of Sport Fisheries and Wildlife for management and investigation of resources--\$55,000 for costs of fire suppression and storm damage on wildlife refuges, and \$608,000 for increased pay costs. The Bureau also gained \$350,000 from the Senate for construction, \$150,000 more than the House allowed, and the difference is intended for a trout hatchery at Wytheville, Va. The Bureau of Commercial Fisheries was granted \$1,000,000 by the Senate for an emergency research program for Alaska salmon, an amount not in the bill as passed by the House. The Senate also added \$350,000 to the U.S. Army Corps of Engineers for construction of the Libby Dam in Montana as part of the recently-approved Columbia River Treaty, a new item not in the House-passed version of H.R. 5188. In addition, for increased pay costs: \$22,000 Office of the Commissioner of Fish and Wildlife; \$66,000 Bureau of Sport Fisheries and Wildlife; and \$288,000 Bureau of Commercial Fisheries.

TARIFF NEGOTIATIONS: H. Con. Res. 213 (Baker), submitted on April 10, a concurrent resolution declaring the sense of the Congress that no further reductions in tariffs be made during the life of the present Reciprocal Trade Agreements Act; to the Committee on Ways and Means.

WATER POLLUTION CONTROL: H.R. 5927 (Perkins), introduced in House Mar. 24, a bill to amend Federal Water Pollution Control Act; to Committee on Public Works.

On Mar. 29, the House Committee on Public Works concluded hearings on H.R. 4036, and related bills, to amend the Federal Water Pollution Control Act. The Secretary of Health, Education, and Welfare, testified on the measure.

On April 11 and 12, the House Committee on Public Works met in executive session to consider H.R. 4036, Water Pollution Control Act Amendments of 1961. No announcements were made; the committee continued on this subject, in executive session, April 13.

On April 13 the House Committee on Public Works continued executive consideration of H.R. 4036. The Committee continued on this subject, in executive session, April 18. On that date Committee ordered a revised version of H.R. 4036 reported to House.

H.R. 6441 (Blatnik), and H.R. 6446 (Halpern) introduced in House April 18, bills to amend the Federal Water Pollution Control Act to provide for a more effective program of water pollution control; to the Committee on Public Works. Similar to 27 other bills introduced in both Houses. H.R. 6441, a revised version of H.R. 4036, makes strengthening changes in the Federal Water Pollution Control Act of 1956 (P.L. 660). Would provide financial assistance to communities, Federal law enforcement, research, State program

grants, and a change in the status of the program.

WATER POLLUTION CONTROL RESEARCH LABORATORY: On April 10, a joint resolution of the 51st Legislature of the State of Oregon was received in Senate urging the President and Congress to pass legislation authorizing the establishment of a Pacific Northwest Pollution Control Laboratory, which would conduct research for the treatment of water, waste waters, atmospheric contaminants, and control of water pollution; to Committee on Public Works. On April 11, the same memorial was received in the House; to Committee on Interstate and Foreign Commerce.

WATER RESOURCES PLANNING ACT OF 1961: S. 1629 (Anderson, et al), introduced in the Senate April 14, 1961, a bill to provide financial assistance to the states for comprehensive water resources planning; to the Committee on Interior and Insular Affairs.

WORLD TRADE: Committee Print, The United States and World Trade, Challenges and Opportunities (87th Congress, 1st Session, Final report to the Committee on Interstate and Foreign Commerce, United States Senate, by special staff on the Study of U. S. Foreign Commerce, March 14, 1961), 335 pp., printed. This report presents results of a special staff study of the foreign commerce of the United States, the domestic and international forces affecting it, and the policies under which it is carried on. Contains 2 parts: Part I--World Trade: the challenge to U. S. policy, and Part II--Essentials of a modern trade policy; two appendices, 45 tables, and 6 charts.



ARTIFICIAL REEFS PROVE SUCCESSFUL

Two reports show encouraging results on artificial ocean reefs.

In California, within a month, several thousand fish were observed schooling around three artificial reefs installed in Santa Monica Bay.

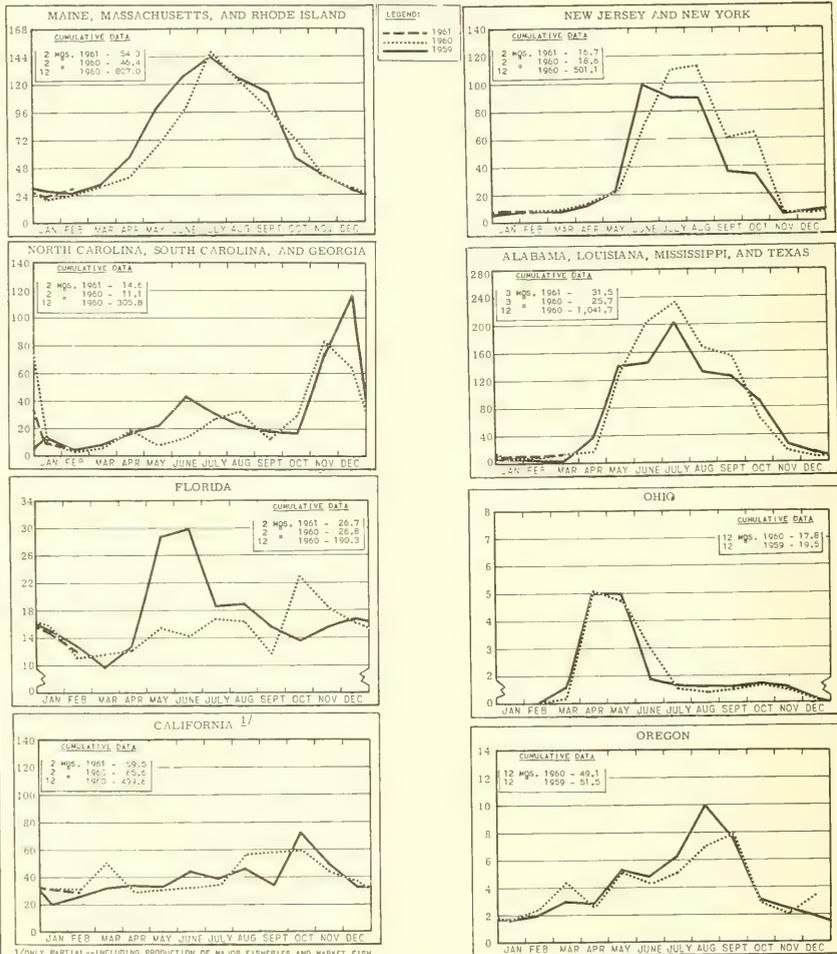
In Hawaii several species of fish were observed moving in on a reef made of 43 car bodies placed in Maunaloa Bay.

Also in Hawaii, a creel census on Oahu indicated $\frac{1}{2}$ million anglers fished a total of 14 million hours in 1959.

FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

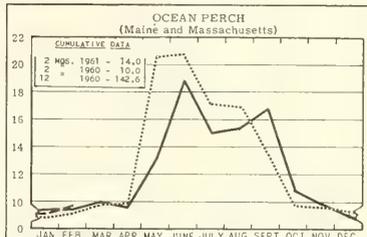
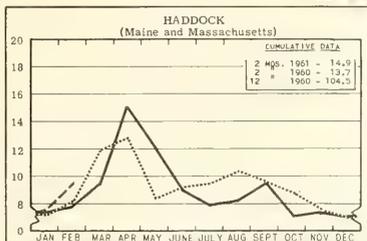
In Millions of Pounds



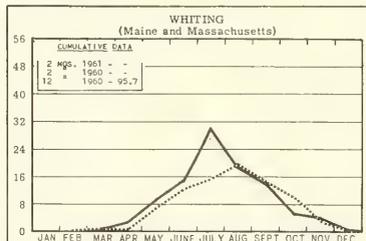
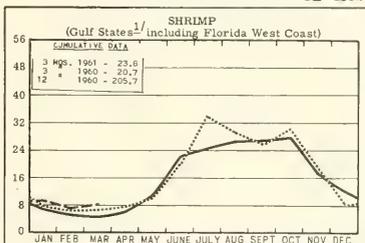
^{1/2}ONLY PARTIAL—INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

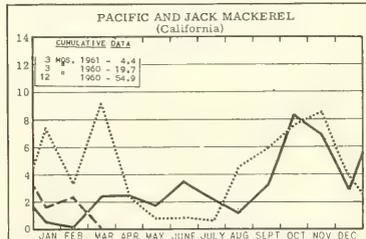
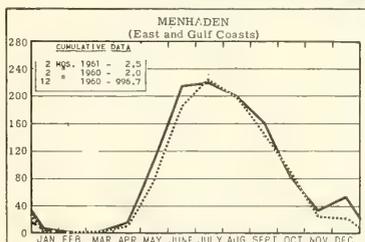


In Millions of Pounds



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

In Thousands of Tons



In Thousands of Tons

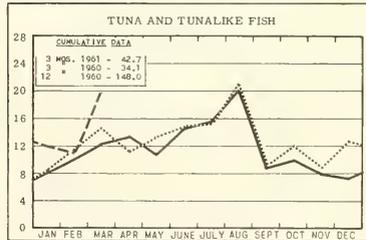
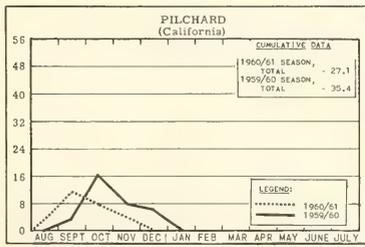
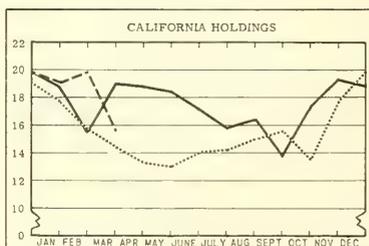
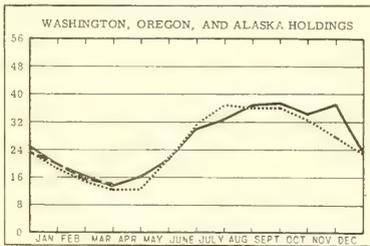
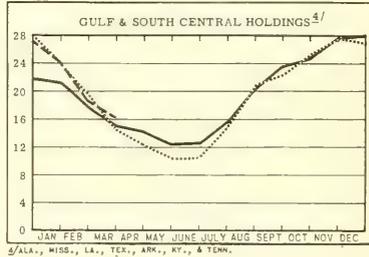
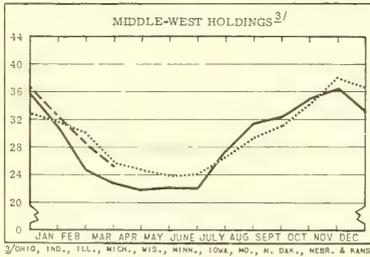
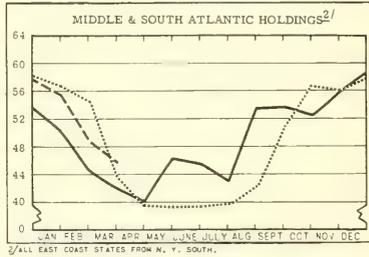
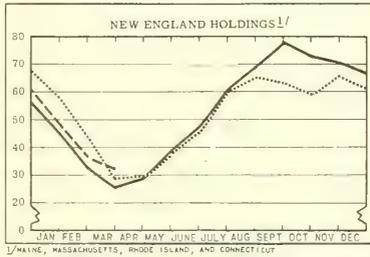
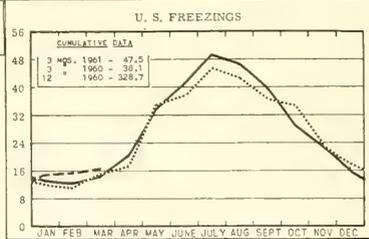
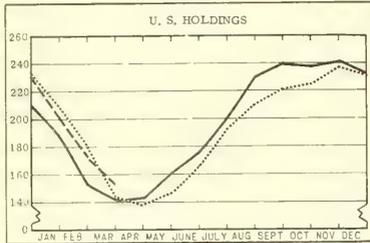


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

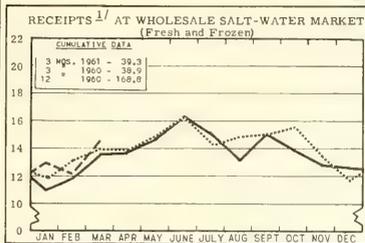
In Millions of Pounds



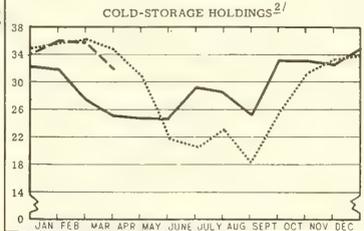
* Excludes salted, cured, and smoked products.

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

In Millions of Pounds

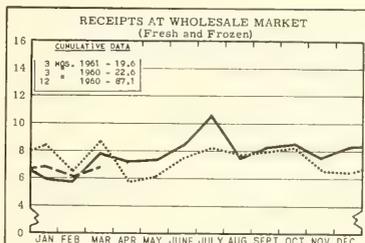


NEW YORK CITY

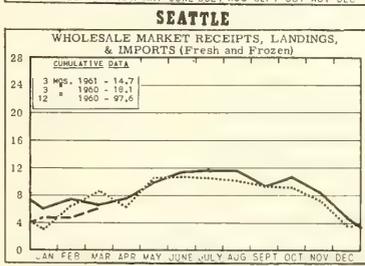
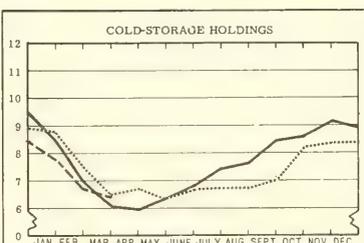


^{1/}INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

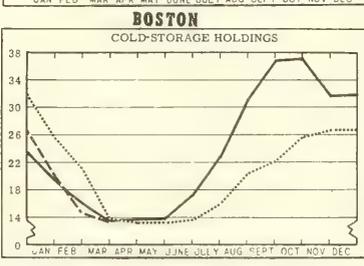
^{2/}AS REPORTED BY PLANTS IN METROPOLITAN AREA.



CHICAGO



SEATTLE



BOSTON

LEGEND:
 - - - 1961
 1960
 ——— 1959

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

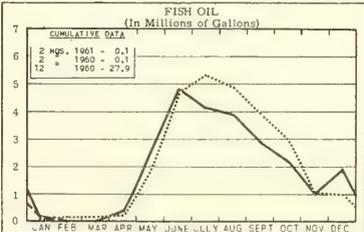
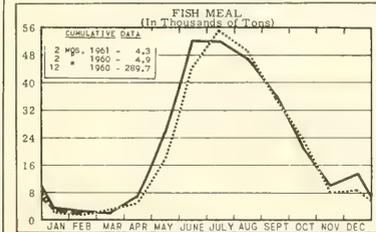
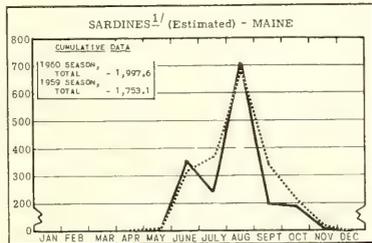
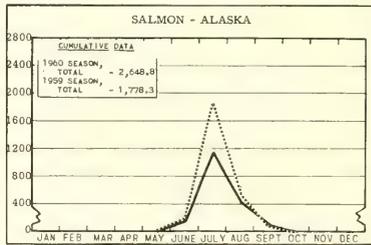
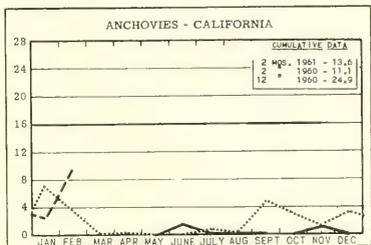
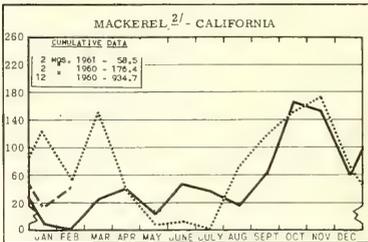
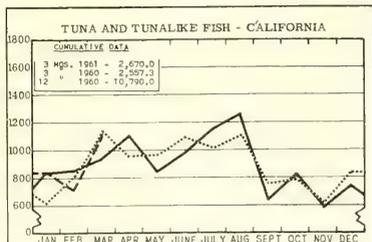


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	$\frac{1}{4}$ drawn	$3\frac{1}{2}$ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	$\frac{1}{2}$ -lb.	8 oz.

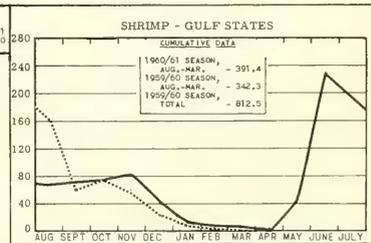
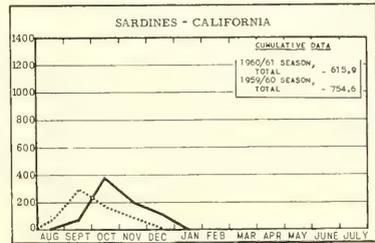
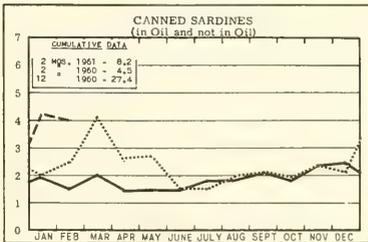
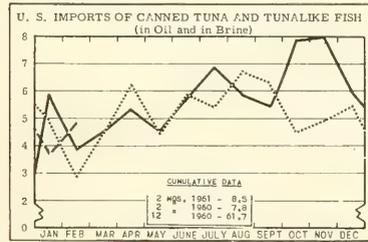
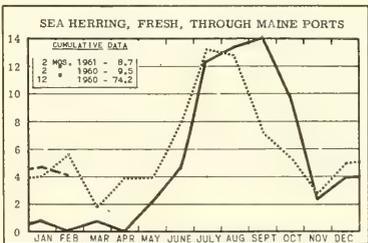
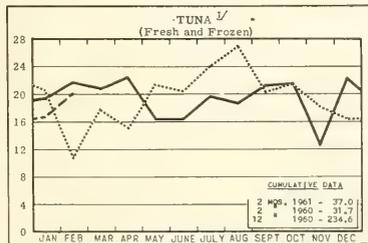
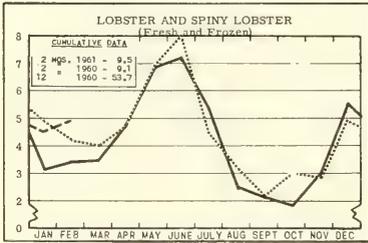
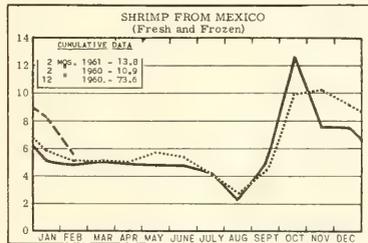
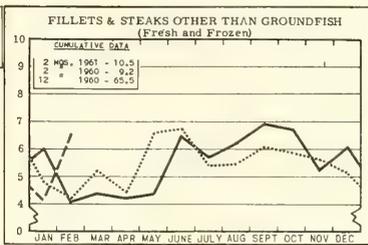
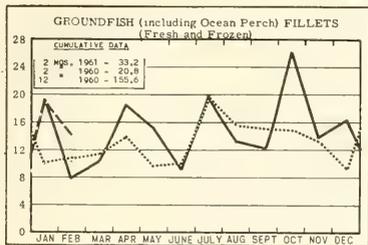


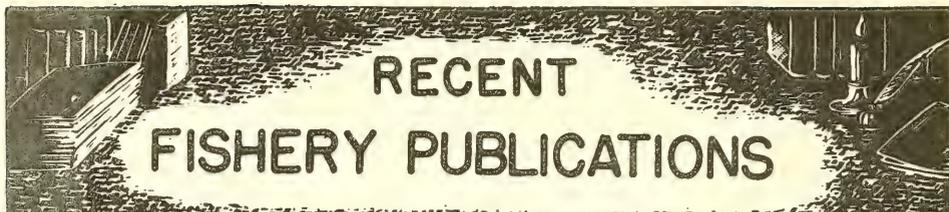
CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds

LEGEND:
 - - - 1961
 - - - 1960
 ····· 1959



¹/₂ EXCLUDES LOINS AND DISCS.



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.
FL - FISHERY LEAFLETS.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SSR - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
TL - TECHNICAL REPORT ON A SPECIFIC SUBJECT.

- | Number | Title |
|----------|--|
| CFS-2464 | - Rhode Island Landings, October 1960, 3 pp. |
| CFS-2467 | - New Jersey Landings, November 1960, 3 pp. |
| CFS-2471 | - Fish Meal and Oil, November 1960, 2 pp. |
| CFS-2482 | - Fish Sticks and Portions, 1960 Annual Summary, 3 pp. |
| CFS-2485 | - Massachusetts Landings, October 1960, 6 pp. |
| CFS-2497 | - Frozen Fish Report, January 1961, 8 pp. |
| CFS-2506 | - Maine Landings, December 1960, 3 pp. |
| CFS-2507 | - Louisiana Landings, August 1960, 2 pp. |
| CFS-2508 | - Louisiana Landings, September 1960, 2 pp. |
| CFS-2511 | - Louisiana Landings, October 1960, 2 pp. |
| CFS-2512 | - Texas Landings, November 1960, 3 pp. |
| CFS-2515 | - Massachusetts Landings, November 1960, 6 pp. |
| CFS-2516 | - North Carolina Landings, 1960 Annual Summary, 6 pp. |
| CFS-2518 | - South Carolina Landings, 1960 Annual Summary, 4 pp. |
| CFS-2519 | - Georgia Landings, 1960 Annual Summary, 4 pp. |
| CFS-2521 | - North Carolina Landings, January 1961, 3 pp. |
| CFS-2522 | - Fish Meal and Oil, January 1961, 2 pp. |
| CFS-2523 | - Mississippi Landings, December 1960, 2 pp. |
| CFS-2524 | - Georgia Landings, January 1961, 2 pp. |
| CFS-2525 | - Maryland Landings, January 1961, 3 pp. |
| CFS-2526 | - South Carolina Landings, January 1961, 2 pp. |
| CFS-2529 | - Florida Landings, January 1961, 8 pp. |
| CFS-2537 | - Rhode Island Landings, January 1961, 3 pp. |

FL-507 - World Production and Trade in Fish Meal and Oil, by J. Adger Smyth, 94 pp., illus., March 1961. In 1959, the world market for fish meal suffered a decline in prices because of tremendously increased production in a number of countries. In many countries, stocks of fish meal, which could be sold only at a loss, have accumulated. Some reduction plants, even the entire reduction industry, have been forced to close as production costs have been too high for the fish meal to compete in world markets at the

prevailing low prices. This report shows increases and decreases in production of fish meal and oil, especially during 1953-1959, the principal markets for the products, and the changes in supply sources in principal markets. The reduction industry, fish meal prices and costs, and foreign trade are discussed for each of 30 countries.

- SSR-Fish. No. 363 - A Review of Literature on Menhaden with Special Reference to the Gulf of Mexico Menhaden, by Gordon Gunter and J. Y. Christmas, 35 pp., October 1960.
- SSR-Fish. No. 365 - Study of Food Preference and Rate of Feeding of Japanese Oyster Drill, *Ocenebra japonica* (Dunker), by Kenneth K. Chew, 29 pp., illus., November 1960.
- SSR-Fish. No. 367 - Scallop Resource of the United States Passamaquoddy Area, by Robert L. Dow and Frederick T. Baird, Jr., 13 pp., illus., December 1960. A survey of the scallop fishery in the Passamaquoddy Bay area of Maine was made as part of a larger investigation into the past, present, and future status of fish and shellfish species that might be affected by the construction of a proposed tidal power plant in that region. The past record of commercial production, and the present abundance level and environmental conditions are described, together with deductions as to the effects on the scallop fishery of predicted oceanographic changes.
- SSR-Fish. No. 368 - A Morphometric Study of Silver Hake, by John T. Conover, Raymond L. Fritz, and Manuel Vieira, 15 pp., illus., processed, January 1961. Evidence is presented that the whiting or silver hake population along the Atlantic coast is comprised of two separate groups. One group inhabits the waters off the New England coast and the other is found off the southern New England, New York, and New Jersey coasts. Two characteristics, head length and pelvic fin length, gave consistent differences for separating these groups during two seasons of the year.

Sep. No. 616 - Experiments Utilizing Electrical Trawl Cables--A Progress Report.

Sep. No. 617 - Inhibition of Mold on Smoked Mullet.

Fisheries Loan Fund, Fiscal Year 1957, Fish and Wildlife Circular 103, 21 pp., processed. Reviews the credit facilities available to fishing vessel owners in the United States and gives data on the history,

administration, and status of the Fisheries Loan Fund. Also includes a reprint of the Fish and Wildlife Act of 1956, which also provided for the fisheries loan program; news releases issued when the fund was established; a copy of the order by the Secretary of the Interior establishing the loan procedure; and a copy of the application for loan.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-45	- Mexican Fishery Statistics, 1959.
MNL-46	- Wholesale Prices for Fishery Products Imported into Liberia.
MNL-47	- Salmon Exporters: Denmark and Greenland, 1961.

THE FOLLOWING TECHNICAL LEAFLETS ARE AVAILABLE FROM THE BRANCH OF TECHNOLOGY, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Menhaden Industry, by F. Bruce Sanford and Charles F. Lee, TL 31, 31 pp., illus., processed, January 1961. The purpose of this leaflet is to show the wide scope of the industry and the numerous complex operations involved in the manufacture of menhaden meal, oil, and condensed solubles. Photography is used as the most effective medium for presenting the industry. Also includes statistical tables giving data on availability of amino acids in menhaden meal; proximate composition and chemical content of menhaden meal; menhaden oil and certain constituents of the oil; and unsaturated fatty acids in menhaden oil.

The Relationships of Processing Variables and Chemical Composition to the Nutritive Value of Fish Meals as Determined by Broiler Feeding Tests, by T. D. Runnels and others, TL 21, 37 pp., processed, January 1961. Over 150 samples of fish meals with authentic processing histories were collected and tested to determine possible variations in nutritive value. The authors concluded that "As determined by practical broiler feeding tests in batteries, the nutritive value of commercially-produced samples of fish meal could not be related to species or parts of fish utilized for production, to proximate composition of the resultant meals, or to any variables of commercial processing. That the broiler-feeding test permitted differences to be determined in the nutritive quality of fish meals was demonstrated by the results obtained by feeding an obviously burned fish meal. When incorporated into diets, all meals tested, with the exception of the burned meal, permitted normal growth of broilers at economical rates of feed utilization. Since so few significant differences were obtained in such an extensive study, we can conclude that all fish meals of normal commercial production are a more reliable, more constant source of supplemental animal protein than has been thought previously."

U. S. Fish-Reduction Industry, by F. Bruce Sanford and Charles F. Lee, TL 14, 77 pp., processed, revised December 1960. This report is intended to give a broad view of the fish-reduction industry in the United States. It deals with four topics. The first three are concerned with harvesting the fish, manufacturing them into products, and then distributing

the products to the consumer. The last is concerned with some of the problems encountered in starting a plant for the reduction of fish as a business venture. Included is a supplementary list of references.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED:

- California Fishery Market News Monthly Summary, Part II--Fishing Information, February 1961, 13 pp., illus. (Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Includes monthly sea-surface temperature charts for the eastern Pacific, and fishing and research information of interest to the West Coast tuna fishing industry and marine scientists. The temperature charts cover that area of the Pacific from the Aleutians in the north to Peru and Chile in the south and offshore to 180° W. longitude. They show for each month the average sea-surface temperature and the deviations from the 30-year average and from the previous year. Research and fishing information indicates that the distribution of tunas and many other commercial species is directly affected by sea-surface temperatures.
- (Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, February 1961, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.
- Gulf Monthly Landings, Production, and Shipments of Fishery Products, February 1961, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Tex., from Mexico; and sponge sales; for the month indicated.
- Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, February 1961, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.
- New England Fisheries--Monthly Summary, February 1961, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the principal New England fishery ports, and presents food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New-England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connect-

icut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for January 1961, 17 pp. (Market News Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, imports entered at New York City, primary wholesaler prices for frozen products, and marketing trends; for the month indicated.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, February 1961, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Oreg.) wholesale dealers; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

THE FOLLOWING ENGLISH TRANSLATION OF FOREIGN LANGUAGE ARTICLE IS AVAILABLE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, P. O. BOX 3830, HONOLULU, HAWAII.

Underwater Scientific Expeditions on the SEVERYANKA, by V. P. Zaitsev and V. G. Azhazha, 8 pp., processed. (Translated from Rybnoe Khoziaistvo, vol. 35, no. 7, July 1959, pp. 7-16.)

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE NOT FOR GENERAL DISTRIBUTION BUT ARE AVAILABLE FOR REFERENCE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, P. O. BOX 3830, HONOLULU, HAWAII.

Larvae of the Black Marlin (EUMAKAIRA NIGRA Nakamura), by Shoji Ueyanagi and Hiroshi Yabe, 20 pp., processed. (Translated from Report of Nankai Regional Fisheries Research Laboratory, no. 10, 1959, pp. 151-169.)

On the Larvae of Saitfish, ISTIOPHORUS ORIENTALIS, Collected in the Southwestern Sea of Japan (in Waters Southwest of Japan), by Hiroshi Yabe, 13 pp., processed. (Translated from Contributions of the Nankai Regional Fisheries Research Laboratory, vol. 1, 1953.)

Larvae of the Striped Marlin, MAKAIRA MITSUKURII (Jordan et Snyder), by Shoji Ueyanagi, 20 pp., processed. (Translated from Report of Nankai Regional Fisheries Research Laboratory, No. 11, December 1959, pp. 130-146.)

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

Development of Eggs and Larvae of Pacific Mackerel and Distribution and Abundance of Larvae 1952-56, by David Kramer, Fishery Bulletin 174 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 60), 50 pp., illus., printed, 1960, 35 cents.

"Immersion Staining as a Method of Marking Small Salmon," by Loyal G. Bouchard and Chester R.

Mattson, article, The Progressive Fish-Culturist, vol. 23, no. 1, January 1961, pp. 34-40, illus., processed.

"A Staining Method for Marking Large Numbers of Small Fish," by James E. Deacon, article, The Progressive Fish-Culturist, vol. 23, no. 1, January 1961, pp. 41-42, illus., processed.

"The Use of Saponin to Control Predaceous Fishes in Shrimp Ponds," by Yun-An Tang, article, The Progressive Fish-Culturist, vol. 23, no. 1, January 1961, pp. 43-45, processed.

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 ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ADDITIVES:

"Additives and Frozen Seafoods," by H. Magnusson, article, Quick Frozen Foods, vol. 22, April 1960, p. 132, printed, Quick Frozen Foods, E. W. Williams Publishing, Inc., 82 Wall St., New York 5, N. Y.

AIRPLANE SPOTTING:

"Aviatsionnaia Navodka Sudov na Kosiaki sel'di" (Directing Fishing Vessels to Herring Schools with Aircraft), by V. Maslov, article, Rybnoe Khoziaistvo, vol. 34, no. 4, 1958, pp. 35-37, printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Glosplanie SSSR, Moscow, U.S.S.R.)

ANTIBIOTICS:

"Antibiotics in Fish Preservation," by H. L. A. Tarr, 24 pp., illus., printed, 50 cents. Fisheries Research Board of Canada, Ottawa, Canada, 1961.

"Chlorine Affects Antibiotics," by C. H. Castell, article, Canadian Fisherman, vol. 47, no. 2, 1960, pp. 37-39, illus., printed. Canadian Fisherman, National Business Publications Ltd., Gardenvale, Quebec, Canada.

"Effect of Storage in Chlorotetracycline (CTC)-Containing Refrigerated Sea Water on Keeping Quality of Mackerel and Determination of CTC Residue in the Fish," by T. Tomiyama and Y. Yone, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 25, no. 4, 1959, pp. 290-293, illus., printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Minato-ku, Tokyo, Japan.

"Influencia de los Antibioticos Adicionados al Hielo en la Digestibilidad del Pescado" (Effect of Antibiotic Ice on the Digestibility of Fish), by A. Pujol and G. Varela, article, Anales de Bromatologia, vol. 11, no. 2, 1959, pp. 245-260, printed in Spanish with English summary. Sociedad Espanola de Bromatologia, Ciudad Universitaria, Madrid, Spain.

"Primenenie Hlortetraciklina Dlja Uvelichenija Prodolitel'nosti Itranenija Ohlazhdennogo Rybnogo File"

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

(The Application of Chlorotetracycline in Extending the Storage Life of Chilled Fish), by F. Babin and T. Saharova, *Kholodil'naia Tekhnika*, vol. 4, 1960, pp. 35-37, illus., printed in Russian with English summary. *Kholodil'naia Tekhnika*, c/o Four Continent Book Corp., 822 Broadway, New York 3, N. Y.

BARENTS SEA:

"Rapport om Tokt med 'G. O. Sars' til Barentshavet i September 1960" (Report on a Survey of the G. O. Sars in the Barents Sea in September 1960), by Steinar Olsen, article, *Fiskets Gang*, vol. 46, no. 49, December 8, 1960, pp. 690-692, illus., printed in Norwegian. *Fiskets Gang*, Postgiro nr. 691 81, Bergen, Norway.

BIOCHEMISTRY:

"Muscle Biochemistry and Fish Flavours," by N. R. Jones, article, *The New Scientist*, vol. 7, no. 176, 1960, pp. 783-785, printed. *The New Scientist*, Cromwell House, Fulwood Place, High Holborn, London WC1, England.

BIVALVES:

The Intertidal Bivalves of British Columbia, by D. B. Quayle, *Handbook No. 17*, printed, 50 Canadian cents. British Columbia Provincial Museum, Department of Education, Victoria, Canada, 1961.

CANADA:

British Columbia Catch Statistics, 1960 (By Area and Type of Gear), 165 pp., illus., processed. Department of Fisheries of Canada, 1110 W. Georgia St., Vancouver 5, Canada, February 2, 1961. The tenth annual report of fish-catch statistics for British Columbia based on Departmental copies of sales slips that are completed by all commercial fish buyers operating within the Province. The report is divided into three sections: (1) summary of landings by district and total landed value of all fish; (2) highlights of catch statistics—a general review of significant events of salmon fishing in each area and general review for other types of fish; and (3) detailed district and area monthly statistics by type of gear. Certain economic, weather, and conservation factors that have a bearing on the catch are also reviewed.

Journal of the Fisheries Research Board of Canada, vol. 18, no. 1, January 1961, 145 pp., illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada. Includes, among others, these articles: "Contribution to the Biology of Herring (*Clupea harengus* L.) in Newfoundland Waters," by Steinar Olsen; "A Method for Preparing Glycerin-Stored Otoliths for Age Determination," by G. H. Lawler and G. P. McRae; "The Quality of Fish Flour, Liver Meal, and Visceral Meal as Sources of Dietary Protein," by B. A. Larsen and W. W. Hawkins; "The Liquefaction of British Columbia Herring by Ensilage, Proteolytic Enzymes and Acid Hydrolysis," by J. R. McBride, D. R. Idler and R. A. MacLeod; "The Protein Nutritive Value of 'Liquid Herring' Preparations," by B. E. March and others; "Scale to Length Ratio, Age and Growth of Atlantic Salmon in Miramichi Fisheries," by Robert B. Kerr; "Slicing of Fillets as an Aid in Detection and Removal of Cod Worms from Atlantic Cod Fillets," by H. E. Power; "Northward Range Extension of the Flat-

head Chub and Trout-Perch to Aklavik, N. W. T.," by D. E. McAllister; and "Lipid Hydrolysis in Frozen Cod Muscle," by E. G. Bligh.

CLAMS:

The Maryland Soft Shell Clam Industry: Its Potentials and Problems, by J. H. Manning and H. T. Pfitzenmeyer, Contribution No. 145, 5 pp., illus., processed. (Reprinted from Proceedings of the National Shellfisheries Association, vol. 48, 1958, pp. 110-114.) Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md.

COD:

"Torskeundersøkelsene i Lofoten og i Barentshavet, 1960" (Cod Research in Lofoten and the Barents Sea, 1960), by Arvid Høyen, Lars Middtun, and Gunnar Saetersdal, article, *Fiskets Gang*, vol. 47, no. 5, February 2, 1961, pp. 101-114, illus., printed in Norwegian with English summary. *Fiskets Gang*, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Volatile Substances of Salted Codfish. Bacteriology of Salt Cod," article, Annual Report of the Fisheries Research Board of Canada, 1958-1959, pp. 139-140, printed. Fisheries Research Board of Canada, Ottawa, Canada.

COLD STORAGE:

"Bau und Einrichtung der Neuen Fischkühlhäuser in Polen" (Construction and Arrangement of the Latest Cold Stores for Fish in Poland), by T. Skwarczynski, article, *Kältetechnik*, vol. 11, no. 7, July 1959, pp. 203-210, illus., printed in German. *Kältetechnik*, Verlag C. F. Müller, Karlsruhe, Germany.

COLUMBIA RIVER:

An Economic and Social Glimpse of the Commercial Fisherman, 6 pp., illus., printed. Columbia River Fishermen's Protective Union, 322 10th St., Astoria, Oreg.

CRAYFISH:

Maryland Crayfishes, by W. G. Meredith and F. J. Schwartz, *Educational Series No. 46*, 32 pp., illus., printed. Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md., February 1960.

CRUSTACEANS:

"Salinity Reactions of Some Fresh- and Brackish-Water Crustaceans," by Kari Lagerspetz and Majja Mattila, article, *The Biological Bulletin*, vol. 120, no. 1, February 1961, pp. 44-53, printed. Marine Biological Laboratory, Woods Hole, Mass.

DANISH SEINE:

"Forsøksfiske med Snurrevad på Helgelandskysten" (Experimental Fishery with a Danish Seine on the Helgeland Coast), by Richard Sandnes, article, *Fiskets Gang*, vol. 47, no. 3, January 19, 1961, pp. 53-55, illus., printed in Norwegian. *Fiskets Gang*, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

DENMARK:

"La Peche au Danemark en 1959" (Fishing in Denmark in 1959), by Arne Schreiber, article, *France Peche*, vol. 5, no. 46, December 1960, pp. 19-22,

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illus., printed in French with English summary. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France.

DOG FISH:

"Pigghaundersokelsene" (Dogfish Investigations), by Olav Aasen, article, Fiskets Gang, vol. 47, no. 2, January 12, 1961, pp. 36-44, illus., printed in Norwegian with English summary. Fiskets Gang, Postgato nr. 691 81, Bergen, Norway.

DRYING:

"Ultrasonics Seen as Valuable Aid in Drying Heat-Sensitive Foods," article, Chemical Engineering, vol. 66, no. 19, 1959, pp. 151-154, printed. Chemical Engineering, McGraw-Hill Publishing Inc., 330 W. 42nd St., New York 36, N. Y.

FACTORYSHIP:

"A New Type of Mothership on the Fishing Grounds; The Potentialities and Limitations of Aircraft Carriers," by A. C. Hardy, article, Lloyd's List and Shipping Gazette, March 9, 1960, pp. 4-5, printed. The Corporation of Lloyd's, London EC3, England.

FISH MANAGEMENT:

Reservoir Fish Management--Progress and Challenge, by Robert M. Jenkins, 20 pp., illus., printed. Sport Fishing Institute, Bond Bldg., Washington 5, D. C.

FISH MEAL:

Erzeugung und Absatz von Fischmehl in der Welt (World Fish Meal Production and Demand), by G. Meseck, 35 pp., illus., printed in German. (Reprinted from Berichte uber Landwirtschaft, Bd. 38, H. 4, 1960, pp. 666-700.) Berichte uber Landwirtschaft, Verlag Paul Parey, Hamburg 1, Germany.

"Preterito, Presente, y Futuro de las Fabricas Nacionales de Harina de Pescado" (Past, Present, and Future of the National Fish Meal Plants), by Manimo, article, Industria Conservera, vol. 26, no. 258, December 1960, pp. 328-329, printed in Spanish. Industria Conservera, Calle Marques de Valladares, 41, Vigo, Spain.

FISH OIL:

"The Effect of Dietary Marine Fish Oils on the Serum Cholesterol Levels in Hypercholesterolemic Chickens," by J. D. Wood and J. Biely, article, Canadian Journal of Biochemistry and Physiology, vol. 38, no. 1, 1960, pp. 19-24, printed. Canadian Journal of Biochemistry and Physiology, Division of Administration, The National Research Council, Sussex St., Ottawa, Canada.

FISHERY RESEARCH:

Comments on the Need for Critical Fishery Research Planning and Electronic Data Processing, by Romeo Mansueti, Contribution No. 127, 7 pp., printed. (Reprinted from the Southeastern Association of Game and Fish Commissioners Thirteenth Annual Conference, 1959, pp. 107-113.) Maryland Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md.

FISHERY STOCKS:

"Om Beskyttelse av Fiskebestander" (Concerning Protection of Fishery Stocks), by Arvid Hylen, article, Fiskets Gang, vol. 47, no. 6, February 9, 1961,

pp. 127-135, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

FOOD AND AGRICULTURE ORGANIZATION:

"Activities of the FAO," article, Information Bulletin, no. 19, December 1960, pp. 15-16, processed. General Fisheries Council for the Mediterranean, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. The Food and Agriculture Organization Council held its 34th Session in Rome from October 17-28, 1960, and considered in particular (1) the world food and agriculture situation; (2) activities of the Organization; (3) constitutional and legal matters; and (4) administrative and financial matters.

"Activities of the General Fisheries Council for the Mediterranean, I--Sixth Session of the GFCM," article, Information Bulletin, no. 19, December 1960, pp. 1-11, processed. General Fisheries Council for the Mediterranean, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. Discusses the activities of the General Fisheries Council for the Mediterranean and its Sixth Session which was held in Rome, September 22-28, 1960. Altogether some 70 participants from 12 countries and 9 international organizations took part in the work of the Sixth Session. Two categories of documents were presented and discussed: technical papers dealing with original contributions to the program of work, and working documents containing information collected as a result of recommendations of the Council or the Executive Committee. A list of the technical papers and working documents is presented.

Catalogue of Publications, 1945-1960, 91 pp., printed. Distribution and Sales Section, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1960. A listing (published every two years in English, French and Spanish) of all priced publications of FAO since 1945. The publications listed are primarily tools for the attainment of the Organization's aim to increase world agricultural production and raise the standard of living. They cover agriculture, economics, fisheries, forestry, and nutrition. Also listed are the official records of the functioning and work of FAO. Includes indexes of authors and of titles.

FOOD MANAGEMENT:

Receiving Food in Food Service Establishments, Food Management Program Leaflet 3, 20 pp., illus., printed. Cooperative Extension Service, University of Massachusetts, 408 Atlantic Ave., Rm. 303, Boston 10, Mass. The purpose of this leaflet is to suggest procedures that will be helpful to food service operators in supervising and controlling receiving practices. In any food service operation, continuous effort should be made to improve receiving practices. Although all the suggestions in this leaflet may not be applicable to all food service establishments, they can, however, serve as a guide for improving the receiving of food by service establishments. They should help the food service operator analyze his own operation and identify his problems.

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FOREIGN TRADE:

"Some Aspects of U. S. Foreign Trade Policy," by Theodore J. Hadraba, article, The Department of State Bulletin, vol. 44, no. 1130, February 20, 1961, pp. 263-271, printed. Office of Public Services, Bureau of Public Affairs, Department of State, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Discusses the objectives of the U. S. economic policy, the role of GATT, and U. S. participation in the tariff negotiating process. Also discusses the European Economic Community, European Free Trade Association, the international economic situation today, removal of obstacles to U. S. exports, and the export expansion program.

FRANCE:

"Le Commerce Extérieur en 1960" (Foreign Trade in 1960--Fishery Products), article, La Pêche Maritime, vol. 40, no. 995, February 1961, pp. 94-98, printed in French. La Pêche Maritime, 190, Boulevard Haussmann, Paris, France.

FREEZE-DRYING:

"Freeze Drying," by H. P. Milleville, article, Food Processing, no. 11, November 1960, p. 28, printed. Food Processing, Putnam Publishing Co., 111 E. Delaware Pl., Chicago 11, Ill.

"Freeze Drying Equipment Roundup," by F. L. Bonem, article, Food Processing, vol. 21, no. 11, November 1960, p. 73, printed. Food Processing, Putnam Publishing Co., 111 E. Delaware Pl., Chicago 11, Ill.

"Freeze-Drying: The Present Outlook," article, Frosted Food Field, vol. 32, no. 2, February 1961, pp. 37, 39-41, 44-46, illus., printed. Frosted Food Field, Inc., 321 Broadway, New York 7, N. Y.

FREEZING:

"First Liquid Nitrogen Freezer Adapted to Production Line," article, Quick Frozen Foods, vol. 22, no. 11, June 1960, pp. 31, 157-158, illus., printed. Quick Frozen Foods, E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y.

Postępy w Dziedzinnie Chłodnictwa i Zamrażalnictwa Ryb i Produktów Rybnych (Advances in the Cooling and Freezing of Fish and Fish-Products), by J. Kukucz, Paper read at the Session of Industrial Refrigeration in the Food Industry, Warsaw, Poland, May 1960, 25 pp., printed in Polish. Commission for Refrigeration, Warsaw, Poland.

FROZEN FISH:

"Storage Changes in Frozen Fish: A Comparison of Objective and Subjective Tests," by Kerstin Anderson and Carl Erik Danielson, article, Food Technology, vol. 15, no. 2, February 1961, pp. 55-56, illus., printed. Food Technology, The Garrard Press, 510 No. Hickory St., Champaign, Ill. Herring filets, treated by dipping 0.5 percent ascorbic acid and untreated as reference, were frozen and analyzed at monthly intervals using the TBA method accompanied by organoleptic estimations. The chemical changes ascertained by the TBA method exhibit good agreement with the changes in taste. The untreated samples became rancid after 2 months' storage, whereas the treated samples remained palatable for 11 months.

GEAR:

Commercial and Biological Uses of the Maryland Soft Clam Dredge, by J. H. Manning, Contribution No. 131, 7 pp., illus., printed. (Reprinted from Proceedings of the Gulf and Caribbean Fisheries Institute, Twelfth Annual Session, November 1959, pp. 61-67.) Maryland Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md.

GENERAL:

Federal Aid in Fish and Wildlife Restoration, 1960 (Annual Report on Dingell-Johnson and Pittman-Robertson Programs for the Fiscal Year Ending June 30, 1960), 103 pp., illus., printed, 1961. Wildlife Management Institute, Wire Bldg., Washington 5, D. C.

The Sea Around Us, by Rachel L. Carson, Revised Edition, 237 pp., illus., printed, \$5. Oxford University Press, 114 Fifth Ave., New York 11, N. Y., 1961.

HERRING:

The Propagation of Herring (CLUPEA PALLASII) in the Coastal Waters of British Columbia, with a Summary of Spawning Success in 1960, by D. N. Outram, Circular No. 60, 22 pp., illus., processed. Fisheries Research Board of Canada, Biological Station, Nanaimo, Canada, January 1961. The fifth report of a series dealing with the annual success of herring spawning in British Columbia. An evaluation of the amount of spawn deposited in 1960 is preceded by a general review of spawning behavior and other related aspects. Includes statistical tables showing the date, location, and extent of the 1960 herring spawn; herring spawning indices for 1960, and summary of herring spawning success.

"Smasilid- og Feitsildtokt med f/f G. O. Sars i Tiden 28 September til 29 Oktober 1960 (Small Herring and Fat Herring Cruise of the Research Vessel G. O. Sars during the Period September 29-October 29, 1960)," by Olav Dragesund, article, Fiskets Gang, vol. 47, no. 3, January 19, 1961, pp. 59-63, illus., printed. Fiskets Gang, Fiskeridirektoratet, Radstapllass 10, Bergen, Norway.

"Smasilidundersøkelsene og Smasildfisket 1959/60" (Small Herring Investigations and the Small Herring Fishery in 1959/60)," by Olav Dragesund and Per Hognestad, article, Fiskets Gang, vol. 46, no. 50, December 15, 1960, pp. 703-714, illus., printed in Norwegian with English summary. Fiskets Gang, Postgiro nr. 691 81, Bergen, Norway.

ICHTHYOLOGY:

How Fast Can a Fish Swim?, by J. H. S. Blaxter and W. Dickson, Scottish Fisheries Bulletin No. 12, pp. 14-18, illus., printed. Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, 1959.

IVORY COAST:

"Aspects et Tendances de l'Industrie de la Pêche Maritime dans la République de Côte d'Ivoire" (Points of View and Tendancies of the Marine Fishing Industry in the Republic of Ivory Coast), by J. M. Besseteaux, article, La Pêche Maritime, vol. 40, no. 995, February 1961, pp. 83-85, illus.,

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printed in French. *La Peche Maritime*, 190, Boulevard Haussmann, Paris, France.

JAPAN:

Journal of the Tokyo University of Fisheries, vol. 46, nos. 1-2, March 1960, 155 pp., illus., printed. The Tokyo University of Fisheries, Shiba kaigandori 6, Minato-ku, Tokyo, Japan. Includes, among others, these articles: "Haematological Studies of the Culture Fishes in Japan. 2--Seasonal Variation of the Blood Constituents of Rainbow Trout; 3--Changes in Blood Constituents with Growth of Rainbow Trout; and 4--Method for Repeated Drawing of Blood from Cuvierian Duct," by T. Sano; "Studies on Fat Metabolism of Fish Muscles. 4--Effects of the Components in Foods on the Culture of Rainbow Trout," by T. Ono, F. Nagayama, and T. Masuda; "Applicability of Antioxidants to Marine Products," by K. Toyama, K. Saruya, and K. Ando; and "Study on the Disposition of Fish Towards Light. No. 5--The Strength of Illumination Comfortable to *Engraulis japonicus*, and No. 6--Compare with the Disposition of *Engraulis japonicus*, *Decapterus muroadsi*, *Tracurus japonicus*, and *Scomber japonicus*," by Y. Imamura and S. Takeuchi.

Journal of the Tokyo University of Fisheries, vol. 47, no. 1, September 1960, 121 pp., illus., printed. The Tokyo University of Fisheries, Shiba kaigandori 6, Minato-ku, Tokyo, Japan. Includes, among others, the following articles: "The Tension Test of the Netting Cord by Impact Force," by Y. Kondo; "Studies on the Sterilization of *Clostridium botulinum* by Gamma-ray Irradiation," by Y. Sekine, T. Kozima, and S. Motegi; "Determination of the Time Required for Freezing of Whalemeat," by K. Tanaka and Y. Nishimoto; and "On the Net and Rope after Bottom Trawl Fishings," by K. Honda.

LIGHT ATTRACTION:

"Nekotorye Dannye o Reaktsii Sel'di na Elektrivsvet" (Certain Data on Reactions of Herring to Electric Illumination), by A. F. Blinov, article, *Rybnoe Khoziaistvo*, vol. 34, no. 2, 1958, pp. 33-34, printed in Russian. *Rybnoe Khoziaistvo*, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

"Study on the Disposition of Fish Towards the Light. II--The Strength of Illumination Preferred by Fish," by Y. Imamura, article, *Journal of the Tokyo University of Fisheries*, vol. 44, nos. 1 and 2, pp. 75-89, illus., printed. Tokyo University of Fisheries, Shiba-kaigandori, 6, Minato-ku, Tokyo, Japan.

LUNGFISH:

"The Lungfish of Africa," by J. Bouillon, article, *Natural History*, vol. 70, no. 3, March 1961, pp. 62-70, illus., printed. The American Museum of Natural History, Central Park W. at 79th St., New York 24, N. Y.

MARINE ALGAE:

"The Marine Algae," by E. Laurence Palmer, article, education insert 110, *Natural History*, vol. 70, no. 3, March 1961, pp. 33-43, illus., printed. The American Museum of Natural History, Central Park W. at 79th St., New York 24, N. Y.

MARKETING:

"Mechanically Processing Wholesale Frozen Food Orders," by Theodore H. Allegrì and Robert K.

Bogardus, AMS-317, 18 pp., illus., processed. U.S. Department of Agriculture, Marketing Research Division, Agricultural Marketing Service, Washington 25, D. C., June 1959. This study is part of a larger research project covering the development of improved methods and equipment to make wholesale frozen food distribution operations more efficient. It does not deal directly with fish, but is of interest to frozen fish wholesalers and processors. Studies covered both wholesale distributors who used automatic accounting equipment and those who used conventional accounting methods.

MEDITERRANEAN SEA:

Aspects de la Recherche et des Travaux Oceanographiques dans le Secteur Nord-Ouest de la Mediterranee Occidentale (Report on the Research and Oceanographic Work in the Northwest Sector of the Western Mediterranean) by F. Doumenge, 17 pp., illus., printed in French. (Reprinted from *Bulletin Trimestriel du Centre Regional de la Productivite et des Etudes Economiques de Montpellier*, Premier Trimestre 1959.) Castors du Rail 3^o Lot, Pavillon 12, Montpellier (Herault), France.

MIDWATER TRAWLS:

"Eksperimentalnyi Lov Sel'di v Severnoi Atlantike Raznoglubinnym Tralom s Sudov Tipa SRT (Experimental Fishing for Herring with Midwater Trawls in the North Atlantic, by Vessels of the SRT Type), by B. S. Solov'ev and A. A. Degtiarev, article, *Rybnoe Khoziaistvo*, vol. 34, no. 5, 1958, pp. 21-25, illus., printed in Russian. *Rybnoe Khoziaistvo*, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

MISCELLANEOUS:

Fisheries as a Profession (A Career Guide for the Field of Fishery Science), 7 pp., illus., printed. American Fisheries Society, P. O. Box 429, McLean, Va.

NAVIGATION:

United States Coast Pilot 2--Atlantic Coast Cape Cod to Sandy Hook, Sixth Edition, 228 pp., printed, \$2.50. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., 1960.

United States Coast Pilot 5--Third Supplement, Gulf Coast, Puerto Rico, and Virgin Islands, Fourth Edition, 17 pp., printed. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1961.

United States Coast Pilot 7--Second Supplement.

Pacific Coast, California, Oregon, Washington, and Hawaii, Eighth Edition, 15 pp., printed. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1961.

United States Coast Pilot 8--Ninth Supplement, South-east Alaska--Dixon Entrance to Yakutat Bay.

Tenth Edition, 41 pp., printed. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1961.

United States Coast Pilot 9--Sixth Supplement, Alaska--Cape Spencer to Arctic Ocean.

Sixth Edition, 33 pp., printed. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1961.

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

NORTHERN RHODESIA AND NYASALAND:

(Joint Fisheries Research Organisation) Annual Report No. 9, 1959, 71 pp., illus., printed, 7s.6d. (about US\$1.05). Joint Fisheries Organization, P. O. Box 48, Samiya, Northern Rhodesia, 1960. Covers activities of the Organization in Northern Rhodesia such as development of Lake Bangweulu and its swamp fisheries, investigations of Lake Kariba, and investigation of the fishery potential of southern Lake Tanganyika. Also describes activities of the Organization in Nyasaland such as investigation of *Engraulicypris sardella*, plankton studies, hydrology research, and gill-net experiment on *Labeo mesops* (Günther). Includes two papers on fisheries of the region and a list of publications by members of the Organization.

NORWAY:

"Fiskefartoyers Lonnsomhet i 1958" (Fishing Vessel Profits in 1958--Annual Results), by A. Holm, articles, *Fiskets Gang*, vol. 46, no. 51, December 22, 1960, pp. 727-736; no. 52, December 1960, pp. 748-755; vol. 47, no. 1, January 5, 1961, pp. 7-12, illus., printed in Norwegian. *Fiskets Gang*, Postgiro nr. 691 81, Bergen, Norway.

"Lofotfiskets Lonnsomhet 1960" (Returns from the Lofot Fishery 1960), by Georg Oppedal, article, *Fiskets Gang*, vol. 47, no. 4, January 26, 1961, pp. 79-89, illus., printed in Norwegian. *Fiskets Gang*, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Norges Fiskerier, 1960" (Norway's Fisheries, 1960), article, *Fiskets Gang*, vol. 46, no. 52, December 29, 1960, pp. 744-747, printed in Norwegian. *Fiskets Gang*, Postgiro 691 81, Bergen, Norway.

"Oversikt og Toktprogram 1961 Fiskeridirektoratets Havforskningsinstitutt" (Survey and Cruise Programs--Directorate of Fisheries, Ocean Research Institute), article, *Fiskets Gang*, vol. 47, no. 4, January 26, 1961, pp. 76-78, printed in Norwegian. *Fiskets Gang*, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Smatralernes Fiske i 1959" (The Small Trawler Fishery in 1959), by Sverre Mollstad, article, *Fiskets Gang*, vol. 47, no. 2, January 12, 1961, pp. 29-35, illus., printed in Norwegian. *Fiskets Gang*, Postgiro nr. 691 81, Bergen, Norway.

OCEANOGRAPHY:

An International Directory of Oceanographers (3rd Edition), compiled by K. O. Emery and Mary Sears, printed. National Academy of Sciences-National Research Council, 2101 Constitution Ave. NW, Washington, D. C., 1960.

O.E.C.D.:

The Organization for Economic Cooperation and Development," by Dean Rusk, article, *The Department of State Bulletin*, vol. 44, no. 1132, March 6, 1961, pp. 323-326; "Administration Urges Ratification of OECD Convention," by George W. Ball, *ibid*, pp. 326-332, printed, single copy 25 cents. Office of Public Services, Bureau of Public Affairs, Department of State, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Covers the

day-to-day aspects of foreign policy; goals and functions of the OECD; history of the OEEC: economic interdependence between the United States and Europe; how the Convention will operate; the substitution of OECD for OEEC; a new era of partnership; coordinating international economic policies; and economic growth in less developed countries.

OKLAHOMA:

"Why Commercial Fishing?" by Leonard B. Jones, article, *Oklahoma Wildlife*, vol. 17, no. 1, January 1961, pp. 14-15, illus., printed. Oklahoma Department of Wildlife Conservation, Rm. 118, State Capitol, Oklahoma City, Okla. Commercial fishing in Oklahoma's one-half million acres of lakes and streams not only offers a means of controlling fish populations undesirable for sports fishing but also serves to harvest a renewable resource.

OYSTERS:

Studies on Stored Oysters (Crassostrea virginica), by J. C. Medcof, FRB No. 579, 16 pp., illus., printed. (Reprinted from Proceedings of the National Shellfisheries Association, 1958, no. 49, pp. 13-28.) Queen's Printer and Controller of Stationery, Ottawa, Canada, 1959.

PACIFIC OCEAN:

Relationships of Some Marine Organisms of the Northeast Pacific to Water Temperatures, Particularly During 1957 Through 1959, by John Radovich, *Fish Bulletin* 112, 62 pp., illus., printed. California State Fisheries Laboratory, Terminal Island, Calif., 1961. According to the author, "After 9 consecutive years of subnormal temperatures, the ocean off the Pacific Coast of North America warmed up in 1957, heralding the beginning of a warm period which continued at least through 1959. Concurrently, many southern marine species wandered north of their usual range and some warm-water forms spawned successfully off southern California. An analysis of past records showed similar intrusions of southern species during previous warm-water years. In addition to fish moving northward during 1957, 1958, and 1959, some rare species were caught which showed no latitudinal movement, and some were collected south of their usual ranges. However, even some of these may have resulted from oceanic changes taking place during this period. Other vertebrates, including whales and birds, many invertebrates, and some marine plants were affected in one way or another by the change. The northward distribution of some invertebrates seemed more closely related to the development of the countercurrent than to the increase in temperature."

PAKISTAN:

Pakistan's Fisheries, by M. Rahimullah Qureshi, 73 pp., illus., printed. Central Fisheries Department, Karachi, Pakistan, 1961. Discusses Pakistan's fishery resources, geology and hydrology of the surrounding seas, fauna, fishing craft, gear and tackle, and fishermen and fishermen's cooperatives. Also covers the principal fisheries of Pakistan, production and utilization, fishery statistics, and fishery research.

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

Castellon Sardine Fishery, 1958 Data), by F. G. Larraneta, J. Lopez, and P. Suau.

IV Reunion Sobre Productividad y Pesquerias (Fourth Meeting on Production and Fisheries), 144 pp., processed in Spanish. Instituto de Investigaciones Pesqueras, Patronato "Juan de la Cierva" de Investigacion Tecnica, Barcelona, Spain.

"Panorama de la Produccion Pesquera Espanola en 1960" (Summary of Spanish Fishery Production in 1960), article, *Industrias Pesqueras*, vol. 35, no. 809, January 1, 1961, pp. 8-9, printed in Spanish. Industrias Pesqueras, Policarpo Sanz, 21-2, Vigo, Spain.

ST. PIERRE AND MIQUELON:

"L'Importance des Iles Saint-Pierre et Miquelon pour les Pecheries Europeennes" (The Importance of the Islands of St. Pierre and Miquelon to the European Fisheries), by Georges Landry, article, *La Peche Maritime*, vol. 40, no. 995, February 1961, pp. 70-71, illus., printed in French. *La Peche Maritime*, 190, Boulevard Haussmann, Paris, France.

STURGEON:

"The Sturgeon in Pennsylvania," by C. Robert Glover, article, *Pennsylvania Angler*; part 1, vol. 30, no. 1, January 1961, pp. 1-3, part 2, vol. 30, no. 2, February 1961, pp. 3-5; illus., printed. Pennsylvania Fish Commission, South Office Bldg., Harrisburg, Pa.

TARIFF AND TRADE:

Forty-Fourth Annual Report of the United States Tariff Commission (Fiscal Year Ended June 30, 1960), House Document No. 26, 73 pp., printed. United States Tariff Commission, Washington, D.C.; 1961. For the purposes of this report, the current work of the Tariff Commission--described in parts I, II, III, and IV--has been classified under the following headings: Public investigations; special reports and activities; furnishing technical information and assistance; and other activities. Part V of the report deals with the membership and staff of the Commission, and its finances and appropriations. As required by law, summaries of all reports made by the Commission during 1960 appear under the appropriate headings in parts I and II of this report. Among others, discusses the investigation by the Commission to determine whether shrimp was being imported into the United States in such increased quantities as to cause or threaten serious injury to the domestic shrimp industry.

TRANSPORTATION:

"Temperature in Frozen Fish Shipped by Road in Refrigerated Trailers," by C. P. Lentz and E. A. Rooke, article, *Canadian Fisherman*, vol. 47, no. 2, 1960, pp. 27-30, illus., printed. Canadian Fisherman, National Business Publications Ltd., Garden-vaie, Canada.

"Transportation of Frozen Fish Lagging," by O. Young, article, *Western Fisheries*, vol. 60, May 1960, p. 66, printed. Western Fisheries, Roy Wrigley Publications Ltd., 1104 Hornby St., Vancouver 1, Canada.

TRAWLERS:

"Holland's First Stern Trawler," article, *World Fishing*, vol. 10, no. 3, March 1961, p. 31, illus.

printed. World Fishing, John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London, NW1, England.

"Navire de Type Nouveau: 'l'Ocean'" (New Type of Ship: "The Ocean"), by Michel Jollant, article, *France Peche*, vol. 5, no. 46, December 1960, pp. 28-29, printed in French with English abstract. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France. Built according to the latest principles of stern trawling.

"Virginia Trawlers Roam the Atlantic," by James Wharton, article, *The Commonwealth*, vol. 28, no. 1, January 1961, pp. 9-11, illus., printed. Virginia State Chamber of Commerce, 611 E. Franklin St., Richmond 19, Va. Discusses the rich Virginia trawler fisheries, providing about 90 percent of the food fish landed at Hampton Roads. New beds of scallops have recently begun to be exploited. Trawlers now land about 20 million pounds of fish and shellfish a year.

TRAWLING:

"Le Chalutage 'aux Boeufs' en Espagne" (Pair Trawling in Spain), article, *France Peche*, vol. 6, no. 47, January 1961, pp. 19-20, illus., printed in French. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France.

TROPICAL FISH:

Examples of Mimicry and Protective Resemblance in Tropical Marine Fishes, by John E. Randall and Helen A. Randall, Contribution No. 289, 37 pp., illus., printed. (Reprinted from *Bulletin of Marine Science of the Gulf and Caribbean*, vol. 10, no. 4, December 1960, pp. 444-480.) The Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

TROUT:

Insect Emergence from a Small Trout Loch and Its Bearing on the Food Supply of Fish, by N. C. Morgan and A. B. Waddell, *Freshwater and Salmon Fisheries Research* 25, 39 pp., illus., printed, 12s.6d. (about US\$1.75). Department of Agriculture and Fisheries for Scotland, Edinburgh, Scotland, 1961. (For sale by her Majesty's Stationery Office, 13A Castle St., Edinburgh 2, Scotland.)

TUNA:

"Determination of Time Required for Freezing Skipjack, *Katsuwonus pelamis*," by K. Tanaka and J. Nishimoto, article, *Journal of the Tokyo University of Fisheries*, vol. 45, no. 2, 1959, pp. 205-225, illus., printed in Japanese. Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

"Las Grandes Posibilidades de la Pesca de Tunidos" (The Great Possibilities in the Tuna Fishery), by Pierre de Latil, article, *Industrias Pesqueras*, vol. 35, no. 810, January 15, 1961, pp. 20-22, printed in Spanish. Industrias Pesqueras, Policarpo Sanz, 21-2, Vigo, Spain.

TURTLES:

"To Save the Green Turtle," by J. David Bowen, article, *Americas*, December 1960, pp. 14-17, illus., printed. Pan American Union, 19th St. and Constitution Ave., NW., Washington, D. C.

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

PERCH:

The Perches, by Frank J. Schwartz, Education Series No. 44, 4 pp., illus., printed. Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md.

PERU:

"L'Ascension Vertigineuse d'une Nation Pecheuse: Le Perou" (The Dizzy Rise of a Fishing Nation: Peru), by Robert Lenier, article, France Peche, vol. 6, no. 47, January 1961, pp. 13-15, 17-18, 44, illus., printed in French. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France.

PICKEREL:

The Pickerels, by Frank J. Schwartz, Education Series No. 47, 4 pp., illus., printed. Maryland Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md.

RADIATION:

A Selected List of References on Marine and Aquatic Radiobiology, compiled by A. W. Klement, Jr., and I. E. Wallen, TID-3903, 42 pp., processed, \$1. Office of Technical Information, U. S. Atomic Energy Commission, Washington 25, D. C., May 20, 1960. (Office of Technical Services, Department of Commerce, Washington 25, D. C.)

"Microbiological Investigations--Radiation Preservation," article, Food Investigation 1958, pp. 13-16, printed. Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, 1959.

RADIOACTIVE WASTES:

Sedimentation of Radioactive Wastes in the Sea, by Michael Waldichuk, Circular No. 59, 43 pp., illus., processed. Fisheries Research Board of Canada, Biological Station, Nanaimo, Canada, January 1961.

RESEARCH VESSEL:

"Un Grand 'Petit' Bateau" (A Great 'Little' Boat), article, France Peche, vol. 6, no. 47, January 1961, pp. 21-23, illus., printed in French. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France. Discusses the work of the U. S. Bureau of Commercial Fisheries' exploratory fishing vessel John N. Cobb since its maiden voyage in 1950.

SALMON:

"Salmon and Steelhead Management," by Monte Richards, article, Idaho Wildlife Review, vol. 13, no. 4, January-February 1961, pp. 3-5, illus., printed. Idaho Fish and Game Department, 518 Front St., Boise, Idaho. Salmon and steelhead management has developed in importance in Idaho in the past decade, when fishing pressures on these species have increased greatly. Basically, management is dependent on the gathering and analysis of data pertaining to several phases of the runs entering the State.

SARDINES:

Essais Francais de Pre-Conservation de la Sardine sur les Bateaux de Peche, par Refrigeration en Eau de Mer a -1°C." (French Tests on the Pre-Storage of Sardine on Board Fishing Boats, by Cooling in Sea-Water at -1°C.), article, Revue de la Conserve, vol. 15, no. 3, May-June 1960, pp. 130-131, printed in French. Revue de la Conserve, 1 Rue de la Reale, Paris 1, France.

SCALLOPS:

"Florida Find Puts Scallop Fleet Back in Business," article, Business Week, no. 1643, February 25, 1961, pp. 142-144, 146, illus., printed. Business Week, McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N. Y. Discusses the discovery of an immense bed of calico scallops off Cape Canaveral, Fla., by the U. S. Bureau of Commercial Fisheries' experimental trawler Silver Bay, and the possibilities of its commercial development. This bed has a potential production of 500,000 gallons of scallops a year and is located close to shore. With shucking machines, this fishery could become a very productive one within a few years.

SEAWEEDES:

A Existencia de Algas Agarofitas em Angola (The Existence of Agar-Bearing Seaweeds in Angola), by F. Palminha, Notas Mimeografadas do Centro de Biologia Piscatoria No. 16, 16 pp., illus., processed. Junta de Investigacoes do Ultramar, Lisbon, Portugal, 1961.

SHRIMP:

Industriell Udnyttelse af den Rode Dybhavsreje (Commercial Utilization of the Deep-Sea Red Shrimp, *Pandalus borealis*), by Poul Hansen, 18 pp., illus., printed in Danish with English summaries. Fiskeriministeriets Forsogslaboratorium, Copenhagen, Denmark, December 1960.

Notes on Postlarvae of Commercial Shrimp (PENAEUS) in South Carolina, by Charles M. Bearden, Contribution No. 33, 6 pp., illus., printed. Bears Bluff Laboratories, Wadmalaw Island, S. C., February 1961.

SMOKED FISH:

"Scientists' Advice on Care of Smoked Fish," article, Fish Selling, no. 66, 1959, p. 4, printed. Fish Selling, A. J. Highway Publications Ltd., 110 Fleet St., London EC4, England.

SOUTH CAROLINA:

Annual Report, 1959-1960, Contribution No. 32, 11 pp., illus., printed. (Reprinted from Report of South Carolina Wildlife Resources Department, Fiscal Year July 1, 1959-June 30, 1960.) Bears Bluff Laboratories, Wadmalaw Island, S. C., January 1961. A detailed description of the activities of Bears Bluff Laboratories for the period under review, covering the study of oysters, shrimp, blue crabs, finfish, and pond cultivation.

SPAIN:

Investigacion Pesquera, no. 16, July 1960, 160 pp., illus., printed in Spanish. Instituto de Investigaciones Pesqueras, Universidad de Barcelona, Barcelona, Spain. Includes, among others, the following articles: "Consideraciones Acerca del Crecimiento de la Caballa (*Scomber scombrus* L.) en el Mediterraneo Espanol" (Information on the Growth of the Horse Mackerel (*Scomber scombrus* L.) in the Spanish Waters of the Mediterranean), by C. Bas; "Nota Sobre Algunas Especies de Algas de la Costa Occidental Africana--Sur de Cabo Blanco" (Note on Some Species of Algae on the West African Coast--South of Cabo Blanco), by J. Seoane-Camba; and "Dinamica de la Pesqueria de Sardina de Castellon. Datos de 1958" (Dynamics of the

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

UNDERWATER OBSERVATIONS:

Seven Miles Down: The Story of the Bathyscaph "Trieste," by Jacques Piccard and Robert S. Dietz, 249 pp., illus., printed, \$5. G. P. Putnam's Sons, 210 Madison Ave., New York 22, N. Y., 1961. Story of the development of the bathyscaph and its 65 underwater explorations, told by the man who piloted it and the oceanographer associated with its history since 1955.

U.S.S.R.:

"Food in Russia: Russian Fish Research," by C. L. Cutting, article, Food Manufacture, vol. 35, no. 1, 1960, pp. 18, 22, illus., printed, Food Manufacture, Leonard Hill Ltd., 9 Eden St., London NW1, England.

WHALING:

"Australia's 1960 Whaling Season," by D. J. Gates, article, Fisheries Newsletter, vol. 20, no. 2, February 1961, pp. 13, 15, illus., printed. Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia. A summary of the volume and value of the baleen and sperm whale catch; number of catcher vessels operating from shore stations; oil and byproducts yield; length, sex, and maturity of whales caught; and the Antarctic catch. Includes statistical tables and graphs showing landings of humpback and sperm whales, 1951-1960; production of oil and byproducts per whale; and Australian humpback whales, 1956-1960.

International Whaling Statistics, XLII, 53 pp., printed, kr. 2.00 (about 28 U. S. cents). The Committee for Whaling Statistics, Oslo, Norway, 1959. Presents the results of the Antarctic whaling during the sea-

son 1957/58. Six countries--Norway, United Kingdom, Japan, Netherlands, U.S.S.R., and Argentina--participated with 20 floating factories, 2 shore stations, and 257 catchers. These countries under the International Whaling Convention agreed to maintain the maximum quota of 14,500 blue-whale units for the season 1957/58.

YELLOWTAIL:

A Study of the Yellowtail SERIOLA DORSALIS (Gill), by John L. Baxter, Fish Bulletin No. 110, 96 pp., illus., printed. California State Fisheries Laboratory, Terminal Island, Calif., 1960. The present economic range of yellowtail is from Los Angeles County, Calif., to Cape San Lucas, Baja, California. The principal objectives of the present study were to determine the geographic origin of the yellowtail appearing each year in the areas fished by California-based anglers; the effects of fishing on the population; and life history information on which to base wise management practices. The material for life history studies was obtained throughout the year from three principal sources--fish sampled at the canneries, specimens saved in conjunction with tagging operations, and catches made by anglers on party fishing vessels.

YUGOSLAVIA:

Stocarstvo i Ribarstvo, 1959 (Stock Breeding and Fisheries, 1959), Statistical Bulletin 182, 36 pp., illus., printed in Serbo-Croatian with 22-page English supplement. Section on fisheries covers salt- and fresh-water fisheries, total catch of fish, landings of salt-water fish by fishing enterprises and cooperatives, landings of salt- and fresh-water fish by species and by months, and other data.



FISHERY MARKET NEWS SERVICE OFFICES

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AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES TRANSLATION PROGRAM

The American Institute of Biological Sciences (AIBS) is currently translating and publishing seven Russian research journals in biology. These journals are translated with support from the National Science Foundation, which is eager that such information be more widely distributed to biologists throughout the world. It is hoped that this material will aid biologists in research, prevent duplication of work, give some idea of the work being done by Soviet scientists in the field of biology, and also bring about a better international understanding among scientists.

Because of the support of the National Science Foundation, the AIBS can offer these translations at a fraction of their publication cost, with even further price reduction to AIBS members and to academic and non-profit libraries. This reduction, the AIBS feels, places the translation within the reach of all biologists.

The journals currently being translated are: Doklady: Biological Sciences Section; Doklady: Botanical Sciences Section; Doklady: Biochemistry Section; Plant Physiology; Microbiology; Soviet Soil Science; and Entomological Review.

In addition to its program of Russian Biological Journal translations, the AIBS has instituted a separate program of translation and publication of selected Russian monographs in biology.

It was felt that the program of Journal translations was not sufficient to cover all of the significant work being done in all fields of biology by Russian Scientists. With the aid of competent authorities, the AIBS has translated and published six Russian monographs and one monograph is in the process of being published. In addition, several prominent monographs in various biological areas are being considered by the AIBS and the National Science Foundation for translation and publication. The monographs that have been published are: "Origins of Angiospermous Plants," by A. L. Takhtajan; "Problems in the Classification of Antagonists of Actinomycetes," by G. F. Gauze; "Marine Biology," Trudi Institute of Oceanology, Vol. XX, edited by B. N. Nikitin; "Arachnoidea," by A. A. Zakhvatkin, and "Arachnida" by B. I. Pomerantzev. The manuscript for "Plants and X-rays," by L. P. Breaslavets is in the final stages of preparation and should be published early in 1960.

Additional information pertaining to this program may be obtained by writing to the American Institute of Biological Sciences, 2000 P Street, NW., Washington 6, D. C.

FREEZE-DRYING OF FOODS

Chicken and mushrooms are now being freeze-dried--first frozen, then dehydrated--and put into soup mixes. Some freeze-dried foods, after reconstitution with water, are said to be more tender and less shrunken than foods prepared by conventional drying techniques. Freeze-drying is not a new process, and it is a relatively expensive technique. It is of considerable interest to the food industry, however, because it offers the possibility of dehydrating products which can then be stored at or near room temperature, so that costs of refrigerated storage and transportation could be substantially reduced.

As the first step in freeze-drying, foods are either fast frozen or slow frozen. Slow freezing induces the growth of large ice crystals which rupture fibers or cell walls, and in some cases the reconstituted product will tend to be tough. In other cases very fast freezing is chosen deliberately as a method of tenderizing. Still other foods may be either fast frozen or slow frozen with no perceptible difference in final product characteristics. As the second step, the frozen food is put into a vacuum chamber and heated. Under the circumstances, the ice sublimes--i.e., vaporizes without passing through the melting stage. The final product is a sponge-like but rigid mass; when water is added, it will reconstitute to near the original texture, flavor, and color. Reconstitution takes 5 to 15 minutes or longer. For most economical operation, food products must be heated as rapidly as the food will stand, but emitted vapors must be removed as fast as they are driven out; otherwise, localized melting will occur, and the final product may include tough or otherwise damaged spots. Thus, the vacuum system must be matched with the heating system. But the heating process is gradual; the most important limitation on present-day freeze-drying techniques is that they take too long.

One current method is to lay out frozen foods on shelves that are continuously heated by circulating liquids during the drying stage, or electrical heating coils or infrared lamps can be used. Another system involves placing the foodstuffs to be dried on aluminum plates that are placed between, but not touching, blackened radiant heating shelves. In either case, the rate of drying is determined by the nature and thickness of the food itself, and the rate of heat transfer into it. The rate of heat transfer into the dried food, however, is reduced as its outer surface loses its ice content through sublimation. It may take 10 to 12 hours for thorough freeze-drying of a half-inch-thick food sample.

Considerable developmental effort has therefore been devoted to ways of speeding up the drying process while still retaining control of both heating and product quality. Heating trays can be provided with spikes, for example, to achieve more rapid heat distribution through the food. Heating with microwaves has also been tried. Still, drying times are long, and freeze-drying remains uneconomical for relatively low-cost foods. Most of the research work conducted so far has been stimulated by the Quartermaster Food and Container Institute, for military rations. A number of completely precooked, dehydrated meals have already been made available; 10 to 15 minutes after addition of hot water, they are ready to eat. These complete meals, are combinations of freeze-dried and conventionally-dried components; their cost is justified in terms of the logistics of using them.

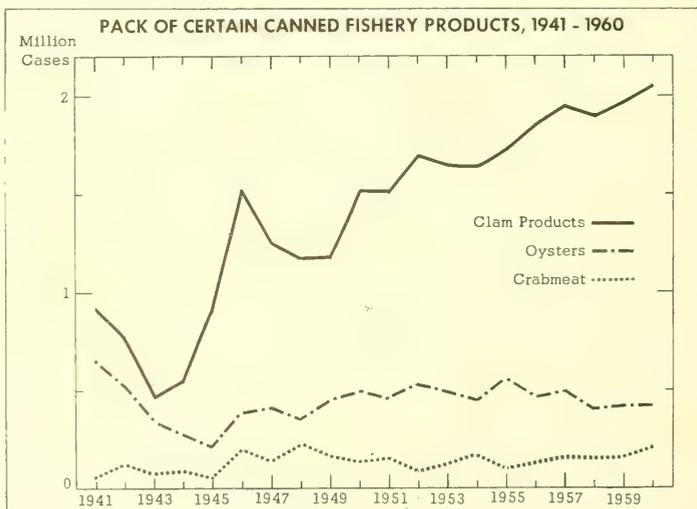
A number of pharmaceuticals have been freeze-dried for some years, but in this case, processing expenses are a small part of the total cost. The same criterion holds for freeze-drying foods; if processing costs are small in relation to the total cost, the process could be justified. Yet, process economics have to be worked out for each new product; the first ones to appear on the market may be "instant" or "convenience" foods, or delicatessen products. Probably more important in the near future will be the development of new concepts of convenience foods; for this and other reasons, freeze-drying continues to hold the interest of the food industry. (Industrial Bulletin, Arthur D. Little, Inc., January 1961.)

CANNED FISH AND BYPRODUCTS, 1960

C.F.S. No. 2541, Canned Fish and Byproducts - 1960. The total pack of canned fishery products by 364 plants in the United States including American Samoa and Puerto Rico during 1960 amounted to 35 million cases (1,092 million pounds), valued at 383 million dollars. Compared with the previous year, this was an increase of over 3 million cases (117 million pounds) and \$35 million. There was an increase in both the pack for human consumption and for animal food. Significant gains in the pack of animal food, tuna, salmon, and mackerel were primarily responsible for the over-all increase in 1960. The value of three items--canned tuna, salmon, and animal food--accounted for 79 percent of the total revenue received by canners of fishery products.

The 1960 pack of tuna amounted to 15.3 million cases, a new record. The pack was up 7 percent in volume and 8 percent in value compared with the previous year.

The 1960 pack of salmon amounted to 2.9 million cases valued at \$84.7 million. This represents an increase of 18 percent in both volume and value. The increase in the Bristol Bay run of red salmon contributed chiefly to the increase. Failure of the runs elsewhere continued to plague the industry.



The 1960 production of fish meal and scrap amounted to 290,000 tons valued at \$25 million to the producers. Compared with the record 307,000 tons valued at \$36 million produced during 1959, this was a decline of 17,000 tons and \$11 million. Production of fish solubles and homogenized-condensed fish (99,000 tons) was down 66,000 tons (40 percent) from the 1959 production of 165,000 tons. Some plants added solubles to their meal in order to dispose of them.

Copies of C.F.S. No. 2541, are available free from the Division of Information, U.S. Fish and Wildlife Service, Washington 25, D. C.

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ROBERT H GIBBS JR

COMMERCIAL FISHERIES REVIEW



V. 23, NO. 6

JUNE 1961

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 BUREAU OF COMMERCIAL FISHERIES.

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Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, May 10, 1960.

5/31/63

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For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.
Price 60 cents (single copy). Subscription Price: \$5.50 a year; \$2 additional for foreign mailing.

COMMERCIAL FISHERIES REVIEW

June 1961

Washington 25, D.C.

Vol. 23, No. 6

BOTTOM TRAWLING EXPLORATIONS OFF THE WASHINGTON AND BRITISH COLUMBIA COASTS, MAY-AUGUST 1960

By C. R. Hitz,* H. C. Johnson,* and A. T. Pruter**

ABSTRACT

Exploration of several areas of the continental shelf off Washington and British Columbia, where the bottom had previously been considered too rough for commercial fishing, was carried out by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb in 1960. The explorations, made possible by the development in recent years of high-resolution echo-sounding equipment and navigational aids that permit precision pin-pointing of bottom areas, were conducted by (a) running an initial series of closely-spaced echo-sounder transects over the rough bottom areas, (b) dragging a heavy chain attached between two trawl doors over areas showing promise on the echo-sounder recordings, and (c) evaluating the fish populations of those areas where the chain was dragged successfully by exploratory fishing with commercial otter-trawl gear. The explorations resulted in the delineation of several trawlable areas off Cape Flattery and one relatively large area northwest of Scott Island--all within depths presently fished by the commercial fleet. In most of these areas exploratory trawling resulted in good catches of commercially-valuable groundfish.

INTRODUCTION

In the past, groundfish explorations by the U. S. Bureau of Commercial Fisheries in the northeastern Pacific Ocean have been conducted in waters off Alaska where no North American commercial trawl fisheries for groundfish yet exist (Ellson, Knake, and Dassow, 1949; Ellson, Powell, and Hildebrand, 1950; Schaefers, Smith, and Greenwood, 1955; and Johnson, 1959) and in deep water adjacent to exploited grounds off Oregon, Washington, and British Columbia (Alverson 1951 and 1953).

There remain, however, large segments of the continental shelf within the present operating depth range of Pacific Northwest trawlers that are not fished because the bottom is considered too rough. Many of these "foul bottom" areas are adjacent to grounds fished by trawlers operating out of Washington and Oregon ports. Systematic surveys of these "unfishable" regions are now possible, owing to the development in recent years of high-resolution echo sounders and precise navigational aids. Echo sounders are available that not only show the depth of water under a vessel, but also provide information on the degree of hardness and give detailed data on configuration of the bottom. Navigational aids such as loran and radar can be used to pinpoint the location of trawlable areas.

In 1960 the Bureau, using a new survey technique, conducted explorations off Cape Flattery, Wash., in a region known locally as the "spit" and off the north end of Vancouver Island, British Columbia--both regions in which bedrock, coral, and large boulders had prevented fishing by commercial trawlers. Objectives of the explorations were (1) to locate areas suitable for trawling and (2) to evaluate the commercial potential of groundfish inhabiting those areas.

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METHODS AND GEAR

The exploratory fishing vessel John N. Cobb (Ellson 1950) was used for the surveys. The procedure followed in exploring a given area was (1) to run a series of sounding transects to determine the character of the bottom, (2) to drag a heavy chain over areas suggested as being trawlable by the sounding, and (3) to drag a commercial otter-trawl net over those grounds on which the chain was successfully dragged. The latter permitted evaluating the commercial potential of the groundfish present.

At the conclusion of each net drag a bathythermograph cast was made to determine surface-to-bottom water temperatures, and a Dietz-LaFond sampler was used to obtain samples of bottom deposits.

The position of the vessel was determined frequently during sounding transects, chain drags, and trawl-net drags. If the area was located so that two loran signals could be received, the vessel position was established by the use of loran only. When only one loran channel could be received, radar bearings were used to complete fixes. When land was outside radar range, radar buoys (Johnson 1959) were anchored at known positions and were used as reference points.

Sounding transects were generally made on grids approximately $\frac{3}{4}$ of a mile to $1\frac{1}{2}$ miles apart. When a transect course was run, the echo sounder provided a recording of the bottom



Fig. 1 - Sample tracings of echo-sounder paper showing soft and hard bottom of fairly uniform depth (A and B) and irregular bottom (C).

on paper. At the start and end of each transect, as well as at frequent intervals between, marks were made on the paper, which could be related to plotted positions on the chart. This provided a permanent record of the bottom in the regions surveyed. After a series of sounding tracks was completed, the echo papers were studied to evaluate the general substrate and bottom configuration (fig. 1).

Indicated snags and bottom types (soft, intermediate, and hard) were noted on the navigation chart. Thus, after a series of sounding transects was completed, the characteristics of the bottom of the region surveyed could be evaluated from inspection of the chart. A wet- or dry-paper white-line echo sounder (38 kc., 220 volt; 50 cycle/sec. AC) having a maximum depth range of 1,750 fathoms was used for sounding.

From the composite pictures obtained from the sounding transects, drags were made on promising-looking grounds (generally those showing soft bottom) with a $\frac{3}{4}$ -inch chain, 42 feet long (fig. 2). The chain was attached between the otter doors in place of the net and was dragged to locate possible snags and other obstructions on the bottom that were not shown by the echo sounder. This procedure of dragging the chain before a drag was made with the net prevented damage to, or loss of, nets that otherwise would have occurred. Chain drags were also made in areas where hard bottom was indicated, since trawling is often feasible over such grounds if the topographic changes are not abrupt and large boulders are not present.

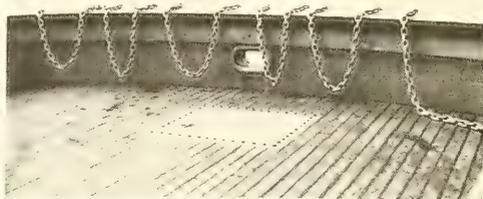


Fig. 2 - Chain ($\frac{3}{4}$ -inch diameter, 42 feet long) used in explorations to locate obstructions on bottom.

After the chain was successfully dragged through an area, a 400-mesh eastern otter-trawl net (Greenwood 1958) rigged according to commercial practice, was used to sample the populations of fish present. Drags with the net were usually of 1-hour duration, although some were as long as 2 hours.

The total weight of each species of fish and shellfish caught was estimated for each drag and representative length-frequency samples of the commercially-valuable species of fish were taken in each of the major areas explored.

AREAS EXPLORED

The region explored is shown in figure 3. The area west of Cape Flattery was surveyed during the period May 2 to June 24, 1960, and those adjacent to the Scott Islands and east of Cape St. James, the southernmost point of the Queen Charlotte Islands, were explored from July 18, to September 9, 1960.

The Cape Flattery "spit" area lies between La Perouse Bank and the 100-fathom isobath. The continental shelf in this region slopes off gradually from around 50 to 85 fathoms and then drops off abruptly.

Off the northwest tip of Vancouver Island the Scott Islands form a westerly chain delimiting the southern boundary of Queen Charlotte Sound. The continental shelf to the south of the islands is narrow, and the slope beyond 100 fathoms is steep. In contrast, the continental shelf is relatively flat in the area explored northwest of the islands, extending nearly 20 miles to seaward before reaching a depth of 100 fathoms.

RESULTS

During the exploratory cruises a total of 126 sounding tracks, 118 snag-chain drags, and 56 drags with the trawl net were made. Several trawlable grounds were delineated off Cape

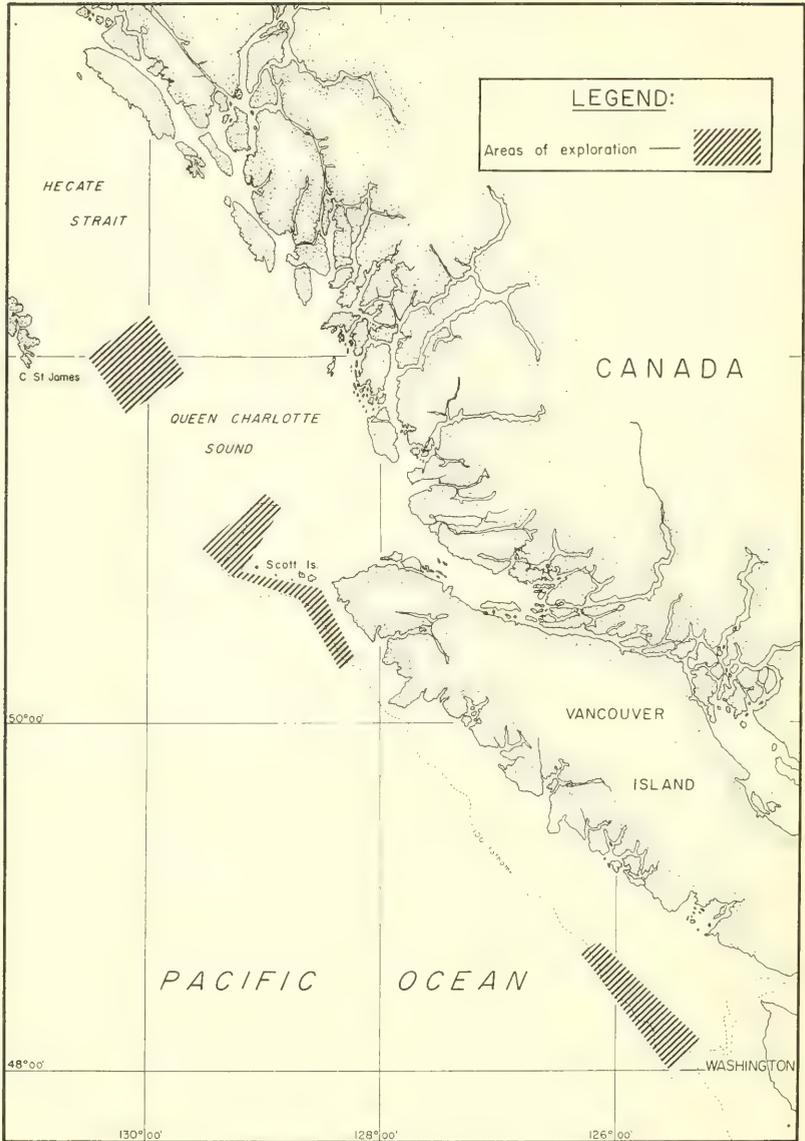


Fig. 3 - Region explored.

Flattery, and one relatively large trawlable area was found northwest of the Scott Islands. Exploratory fishing in most of these areas resulted in good catches of commercially valuable groundfishes.

CAPE FLATTERY "SPIT" AREA: A total of 75 chain drags and 38 trawl-net drags was made in the "spit" area west of Cape Flattery. During these drags the chain hung up 55 times; however, the net was snagged in only three instances. Sounding transects showing the general interpreted substrate features of this area are shown in figure 4, and the position of each net drag and the snags encountered are shown in figure 5.

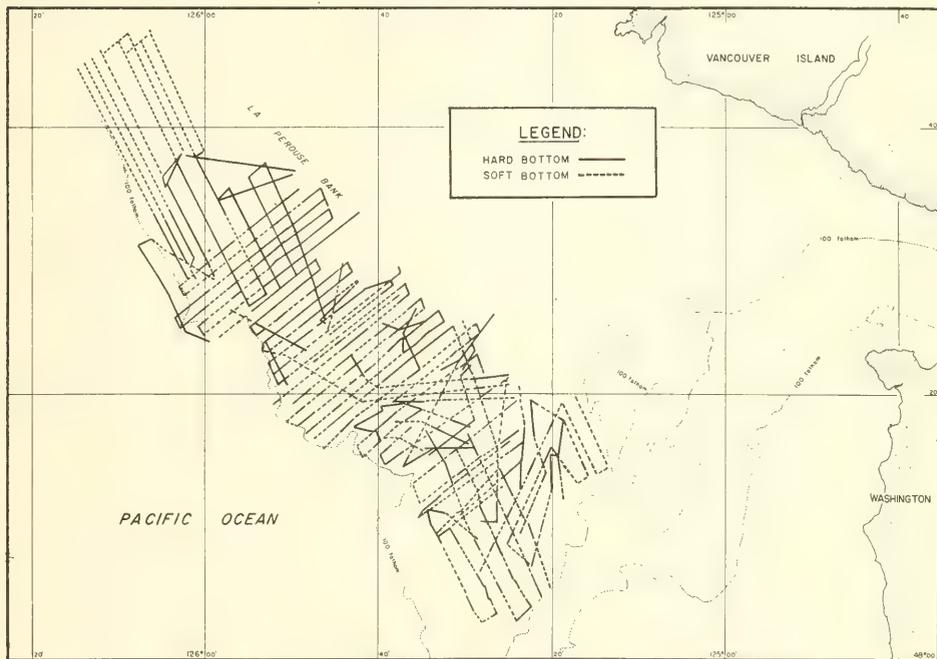


Fig. 4 - Sounding transects in Cape Flattery "spit" area.

In the "spit" area, five grounds in which commercial trawling could be conducted were delineated. These grounds may be oriented on figure 5 from the following drag numbers:

<u>Ground</u>	<u>Drag No.</u>
1	1 - 22
2	3 - 11
3	12 - 15
4	16 - 23
5	24 - 37

Dogfish shark (*Squalus acanthias*) dominated the catches from the two drags made on ground 1 at depths from 58 to 97 fathoms.

Approximately 15 square miles of trawlable bottom at depths ranging from 66 to 84 fathoms were located on ground 2. Catches of Petrale sole (*Eopsetta jordani*) averaging

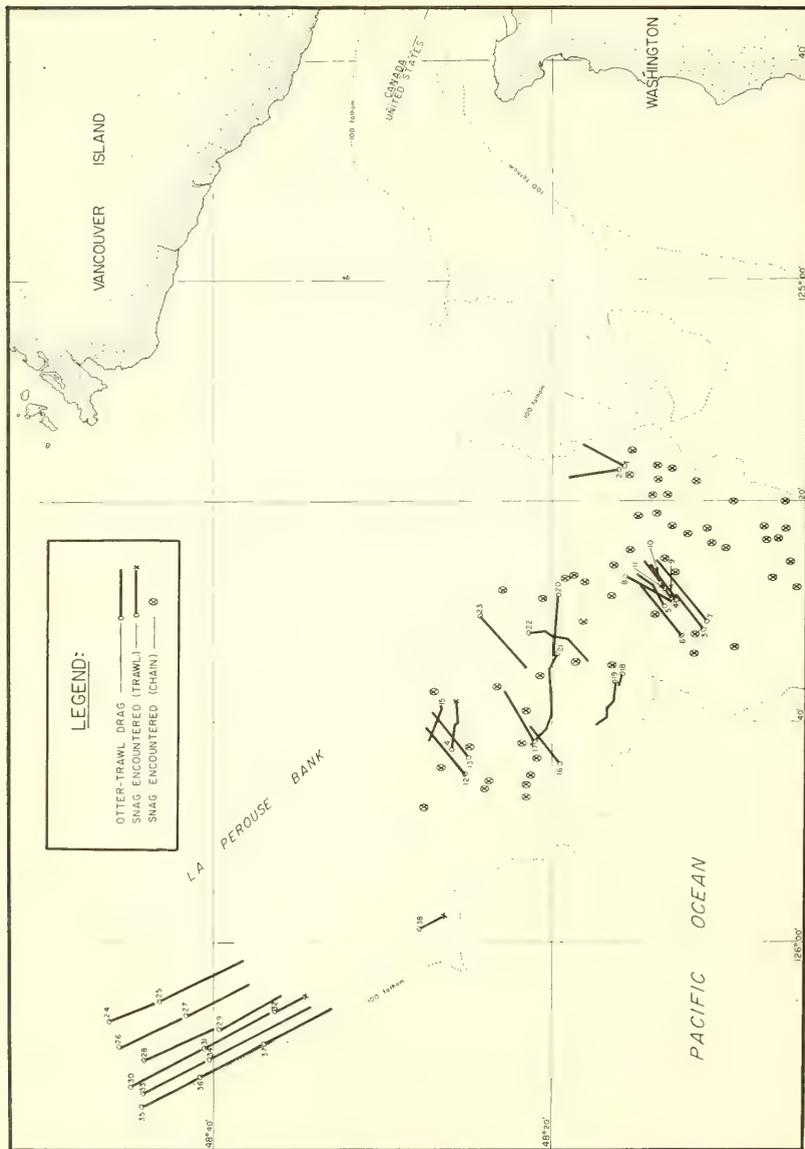


Fig. 5 - Location of net drags and snags encountered in Cape Flattery "spit" area.

1,150 pounds per hour were made in drags 4 and 5. Most of the Petrale sole caught on this ground were of commercial size. Length frequency samples of this species taken in drags 10 and 11 are shown in table 1. Fair catches of black rockfish, primarily the silvergray rockfish (*Sebastes brevispinus*), were made in most of the drags on this ground.

Table 1 - Representative Length Frequencies of Several Important Species of Fish Caught off Cape Flattery, Wash., and Near Cape Scott, British Columbia

Total Length Cm.	Rockfish									Flounders		
	Pacific Ocean Perch			Silver Gray	Canary	Convict	Petrals Sole	Dover Sole	Rock Sole			
	Drag	#26, 35	#40, 42	#50, 52	#48	#48, 50, 52	#48, 50, 52	#10, 11	#40	#46		
	(Number of Fish)											
23												1
24												-
25												-
26			2									-
27			1									2
28			1								2	1
29			5								2	4
30			6								4	7
31		4	5								3	3
32		4	15	2					2		5	5
33		3	27	-					-		3	9
34		4	27	-					-		7	5
35		6	38	-					3		13	17
36		6	21	4					4		9	7
37		10	22	-					5		12	7
38		10	20	4					5		12	4
39		20	35	-	1				8		12	3
40		23	23	14	-				4		9	9
41		26	30	10	4				13		13	7
42		21	21	6	1				22		15	6
43		19	15	8	5				4		15	5
44		12	9	10	3				1		24	10
45		11	13	4	3				4		14	5
46		3	2	8	6		10		1		13	2
47		5	1	2	3		5		4		10	11
48		-	2	2	2		2		8		8	9
49		-	-	-	4		2		8		1	6
50		-	-	-	1		1		8		3	1
51		-	-	-	1		1		4		1	4
52		-	-	-	2		1		1		-	3
53		-	-	-	3		3		1		-	-
54		-	-	-	1		1		1		-	-
55		-	-	-	2		2		1		-	-
56		-	-	-	1		-		-		-	-
57		-	-	-	-		-		-		-	-
58		-	-	-	-		-		-		-	-
59		-	-	-	-		-		-		-	-
60		-	-	-	-		-		-		-	-
61		-	-	-	1		-		-		-	-
Total of Sample		187	341	74	44	53	44	170	207	120		
Avg. Length cm.		40.5	37.5	41.9	47.1	45.5	48.1	43.0	40.9	37.2		
Avg. Length in.		15.9	14.8	16.5	18.5	17.9	18.9	16.9	16.1	14.6		

A trawlable area of about 10 square miles was found on ground 3 at depths ranging from 57 to 72 fathoms. Drags 12 to 14 made in this area produced an average of 2,200 pounds of Dover sole (*Microstomus pacificus*) per hour of fishing. Almost all of the Dover sole were of commercial size.

A trawlable area of about 28 square miles was found on ground 4. Test drags yielded mainly canary rockfish (*Sebastes pinniger*) and silvergray rockfish. Rockfish catches ranged up to 4,500 pounds per hour of fishing. Drag 23 on this ground produced 1,000 pounds of Dover sole per hour of fishing.

On the northwest corner of the area surveyed off Cape Flattery (ground 5), approximately 60 square miles of trawlable ground were found at depths ranging from 61 to 92 fathoms. Exploratory fishing in this portion of the area produced catches of Pacific ocean perch (*Sebastes alutus*) up to 3,750 pounds per hour, with an average catch for 12 drags (26 to 37) of about 1,250 pounds per hour. Measurements of this species caught in drags 26 and 35 (table 1) show an average length of 40.5 cm. (15.9 inches), with a range from 31 cm. (12.2 inches)

to 47 cm. (18.5 inches). In the two shallowest transects drags (24 and 25) turbot (Atheresthes stomias) dominated the catches.

CAPE SCOTT AND QUEEN CHARLOTTE SOUND AREA: A total of 43 chain drags and 18 net drags was made in the Cape Scott-Queen Charlotte Sound area. The sounding transects are shown in figure 6, and the location of each net drag and the snags encountered are shown in figure 7.

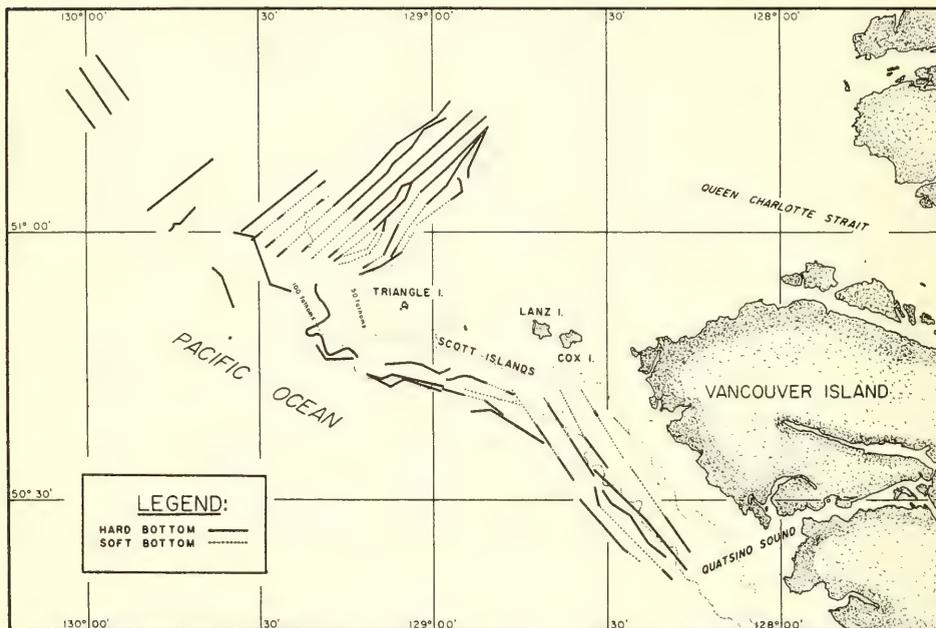


Fig. 6 - Sounding transects in Cape Scott area.

Grounds south of the Scott Islands generally were very uneven and hard. The snag chain hung up 28 times in a total of 33 drags made with this gear, and only 7 drags with the net could be made. A small trawlable area approximately 1 mile wide and 6 miles long was located south of Triangle Island at depths between 104 and 116 fathoms. Drag numbers 40, 41, and 42 made on that ground resulted in good catches of Pacific ocean perch. Drag number 40 also provided 1,200 pounds of Dover sole. The Dover sole from this drag were of good size, averaging 41 cm. (16.1 inches) in length (table 1). Samples of Pacific ocean perch (table 1) from drags 40 and 42 ranged from 26 cm. (10.2 inches) to 48 cm. (18.9 inches) in length, with an average length of 37.5 cm. (14.8 inches).

Northwest of Triangle Island a large trawlable area of approximately 60 square miles was found. Soundings made during the survey suggest that the continental shelf in this area extends seaward a considerable distance farther than indicated on the sailing or navigational charts. Eleven drags were made in this area at depths ranging from 50 to 119 fathoms. The shallowest drags (numbers 46 and 47) made in 50 to 53 fathoms produced mainly rock sole (Lepidopsetta bilineata), which averaged about 750 pounds per hour of fishing. The rock sole taken in drag 46 averaged 37.2 cm. (14.6 inches) and ranged from 23 cm. (9.1 inches) to 49 cm. (19.3 inches) in length (table 1). A few petrale sole also were mixed in these catches. In deeper drags at depths between 73 and 119 fathoms, rockfish dominated the catches.

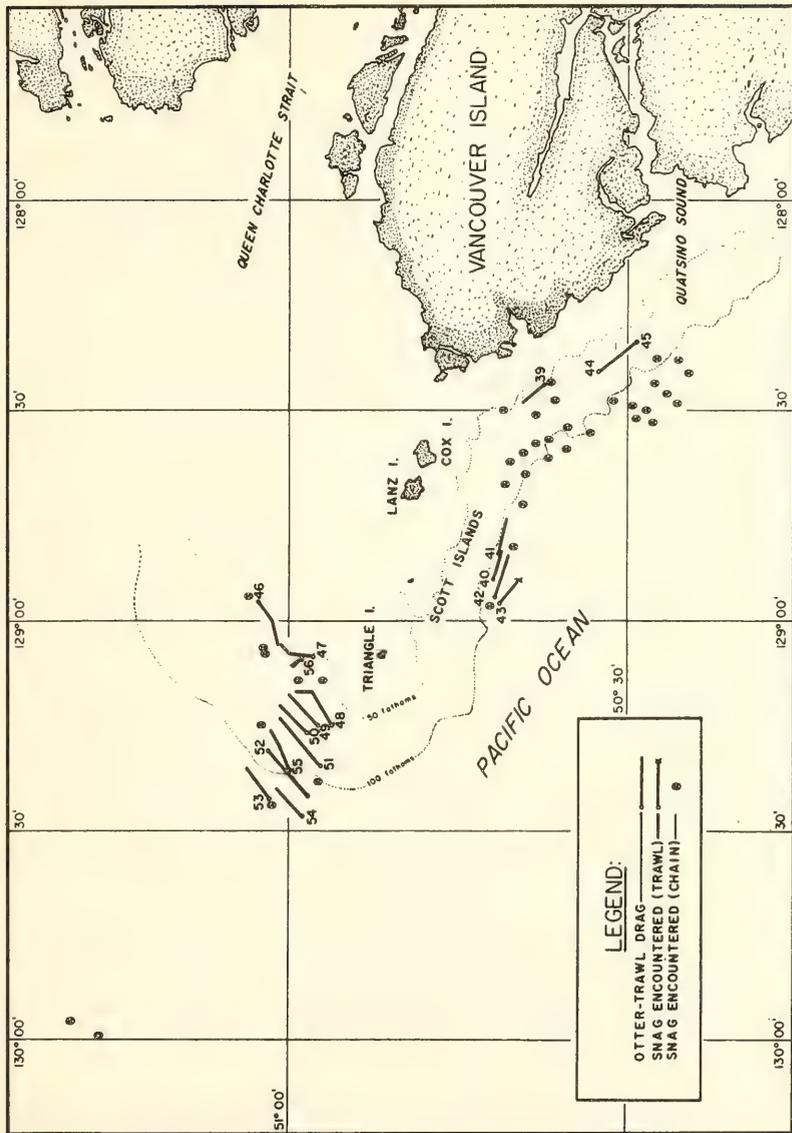


Fig. 7 - Location of net drags and snags encountered in Cape Scott area.

The dominant species encountered were the Pacific ocean perch, silvergray, canary, and convict (*Sebastes rubrivinctus*) rockfish. In depths less than 100 fathoms silvergray rockfish dominated the catches, whereas in depths greater than 100 fathoms mostly red rockfish were taken. Length frequency samples of the four species of rockfish caught on these grounds are shown in table 1.

Sounding transects made east of Cape St. James showed mostly hard bottom, and only at the northern and southern peripheral edges of the area surveyed were there any indications of soft bottom. Because of the limited time available for surveying this area, only one chain drag was made.

Common Name	Species	Scientific Name	Area	
			Cape Flattery	Cape Scott
Flatfish:				
Dover sole		<i>Microstomus pacificus</i>	X	X
English sole		<i>Parophrys vetulus</i>	X	X
Petrale sole		<i>Eopsetta jordani</i>	X	X
Rex sole		<i>Glyptocephalus zachirus</i>	X	X
Rock sole		<i>Lepidopsetta bilineata</i>	X	X
Halibut		<i>Hippoglossus stenolepis</i>	X	X
Turbot (Arrow-toothed halibut) ^{1/}		<i>Atheresthes stomias</i>	X	X
Mottled sand dabl ^{1/}		<i>Citharichthys sordidus</i>		X
Roundfish:				
Lingcod		<i>Ophiodon elongatus</i>	X	X
Sablefish (black cod)		<i>Anoplopoma fimbria</i>	X	X
True cod (gray cod)		<i>Gadus macrocephalus</i>	X	X
Hake ^{1/}		<i>Merluccius productus</i>	X	X
Whiting (pollack) ^{1/}		<i>Theragra chalcogramma</i>		X
Shad ^{1/}		<i>Alosa sapidissima</i>	X	
Black rockfish:				
Yellow-tailed		<i>Sebastes flavidus</i>	X	X
Silvergray		<i>Sebastes brevispinus</i>	X	X
Black		<i>Sebastes melanops</i>	X	
Red rockfish:				
Pacific ocean perch		<i>Sebastes alutus</i>	X	X
Canary		<i>Sebastes pinniger</i>	X	X
Red snapper		<i>Sebastes ruberrimus</i>		X
Convict		<i>Sebastes rubrivinctus</i>	X	X
Olivebacked		<i>Sebastes saxicola</i>		X
Stripetail		<i>Sebastes zacentrus</i>		X
Greenstriped ^{1/}		<i>Sebastes elongatus</i>	X	X
Widow ^{1/}		<i>Sebastes entomelas</i>		X
Rock salmon (Bocaccio) ^{1/}		<i>Sebastes paucispinis</i>		X
Redstriped		<i>Sebastes proriger</i>	X	X
Other fish:				
Dogfish ^{1/}		<i>Squalus acanthias</i>	X	X
Ratfish ^{1/}		<i>Hydrolagus colliei</i>	X	X
Skates ^{1/}		Primarily <i>Raja</i> <i>hina</i> and <i>binoculata</i>	X	X

^{1/}Limited commercial value at present time.

A list of the common and scientific names of all species taken during the surveys is given in table 2.

SUMMARY AND CONCLUSIONS

In 1960 the Exploratory Fishing Section based at Seattle explored areas off the Washington and British Columbia coasts referred to as "unfishable" by the trawl fleet.

The surveys were conducted aboard the Bureau's exploratory vessel *John N. Cobb*, which was equipped with a high-resolution, low-frequency echo-sounder; a specially adapted chain that was attached between the otter doors and was dragged in place of a net; and a standard commercial otter trawl.

The order of procedure in surveying an area was: (1) to run a series of sounding transects to determine the character of the bottom, (2) to drag a heavy chain over areas suggested by the soundings as being trawlable, and (3) to drag a commercial otter trawl net over those grounds on which the chain was successfully towed.

Trawlable grounds and concentrations of commercially valuable groundfish were found in the "spit" area west of Cape Flattery and in the regions bordering the Scott Islands. The area explored off Cape St. James, however, appeared to have little if any trawling bottom. Off Cape Flattery the discovered trawlable grounds were found to be inhabited by commercial quantities of Petrale sole, Dover sole, Pacific ocean perch, and other species of rockfish. On the grounds found off the Scott Islands rock sole as well as the species found off Cape Flattery were taken in quantity.

Time of year when exploratory drags are made largely determines the size of the catches obtained and the species found. Fishing at other times of the year would produce larger or smaller catches, depending upon seasonal changes in abundance of the different species inhabiting the grounds. Thus, the value of the explorations should be judged not only by the size of catches obtained but also by the extent of trawlable grounds delineated. The potential yield from the grounds can only be determined through extensive fishing by the trawl fleet at all seasons of the year.

APPENDIX

A detailed fishing log showing the fishing positions, time on bottom, catch particulars, and other pertinent data for each drag is available as an appendix to the reprint of this article. Write for Separate No. 620, which contains "Table 3 - Otter Trawl Fishing Log - M/V John N. Cobb - Cruises 46 and 47 - Off Cape Flattery, Washington and Cape Scott, British Columbia."

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SOVIET SCIENTISTS DISCOVER UNKNOWN SPECIES

Soviet scientists in 1960 were reported to have brought up a hitherto unknown species of fish from a depth of over 4.5 miles in the Pacific.

The fish having a colorless body was free of scales completely. The structure of its eyes was influenced by the absence of light at that depth, some 24,786 feet below the surface. The fish were jellylike and no bigger than a pin head. (Japanese newspaper, November 18, 1960.)

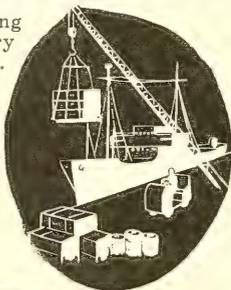
INDEXES OF THE COST OF TRANSPORTATION FOR FISHERY PRODUCTS

By Don FitzGibbon*

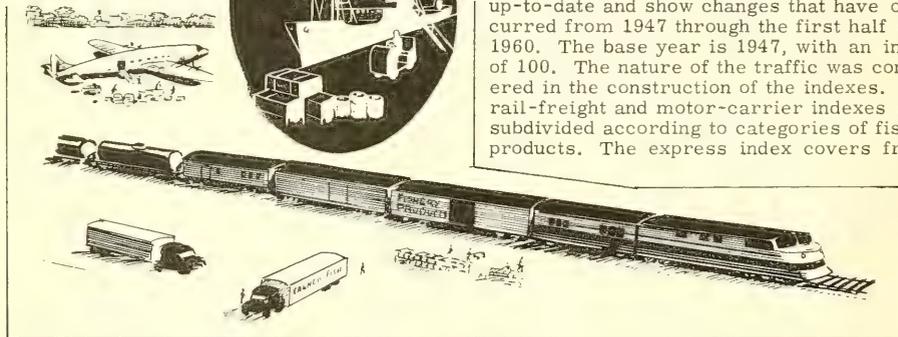
The cost of transporting fishery products from the port of landing to the consumer is of concern to many segments of the fishing industry. Transportation costs are a sizable item in the over-all cost of marketing fishery products, and as with most such products can mean the difference between a profit or a loss for many firms.

Of the three types of carriers transporting fishery products, the railroads carry the largest quantity. The tonnage carried by rail is made up principally of frozen fish, canned fishery products, and byproducts (such as fish meal, oil, and solubles). All of these are products that usually are shipped long distances. Motor carriers have been accounting for an increased tonnage each year. This is particularly true on the West Coast, where motor carriers appear to be transporting larger amounts of canned fish. The amount of fishery products carried by REA Express, although extremely vital to many shippers, has been on the decline. Shippers are looking for a substitute method of transportation for small shipments, and have found some local service available on bus lines.

All of the foregoing transportation costs for fishery cost trends, the U. S. rate indexes which showed that trans-immediate postwar



shifts have had a definite effect on transportation costs. To analyze these transportation Bureau of Commercial Fisheries computed were first published in 1953. These indexes portation rates increased considerably in the years. The indexes have now been brought up-to-date and show changes that have occurred from 1947 through the first half of 1960. The base year is 1947, with an index of 100. The nature of the traffic was considered in the construction of the indexes. The rail-freight and motor-carrier indexes are subdivided according to categories of fishery products. The express index covers fresh



and frozen traffic only, and a regional breakdown is used for that index.

There has been a general upward trend since 1947 in the weighted average index of all three types of carriers combined--in 1959 the index rose to 184.8 percent of 1947. The individual indexes by types of carriers are rail freight 171.9, express 198.0, and motor carriers 206.3. Both the motor-carrier index and the express index have increased more than the rail-freight index. (See table 1.)

The average rail-freight rate index for all fishery products has shown a steady increase since 1947, reaching an all-time high of 171.9 in 1959. The combined rail-freight rate index of all individual fishery products analyzed, except fish meal, shows a similar trend since 1947. The rate index for canned, fresh, and frozen fishery products reached a

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Year	Average all Traffic ^{1/}	Rail Freight	Rail Express	Motor Carriers
1960 1/	188.2	171.9	208.7	214.0
1959	184.8	171.9	198.0	206.3
1958	182.8	171.7	192.7	201.8
1957	179.0	174.2	191.3	184.6
1956	168.8	163.6	178.0	176.2
1955	160.7	155.1	169.6	168.8
1954	158.7	153.8	169.2	164.9
1953	153.2	152.6	154.4	153.9
1952	148.3	150.4	146.4	144.6
1951	136.1	139.6	133.5	130.0
1950	131.2	136.7	129.8	120.8
1949	127.5	133.9	120.8	116.8
1948	117.4	122.5	110.3	109.6
1947	100.0	100.0	100.0	100.0

1/Weighted average; relative weights: rail freight 60 percent, rail express 10 percent, motor carriers 30 percent.
2/Only data for first six months included.

Year	All Fishery Products	Canned Fish	Fish Meal	Fish Oil (not edible or medicinal)	Fish, Fresh or Frozen
1960 1/	171.9	197.3	139.8	194.7	197.3
1959	171.9	197.3	139.8	194.7	197.3
1958	171.7	196.8	2/139.7	194.4	196.8
1957	174.2	151.7	179.2	181.9	183.8
1956	163.6	144.0	168.8	170.0	171.6
1955	155.1	139.4	156.7	162.2	161.9
1954	153.8	142.5	149.1	162.2	161.2
1953	152.6	144.0	149.4	162.2	154.8
1952	150.4	142.1	150.5	158.6	150.5
1951	139.6	134.8	141.1	146.2	136.3
1950	136.7	133.8	136.4	141.1	131.4
1949	133.9	134.8	133.1	135.9	131.7
1948	122.5	124.7	121.8	121.3	122.0
1947	100.0	100.0	100.0	100.0	100.0

1/Only data for first six months included.
2/Carload weight changed.

high of 197.3 in 1959. Fish-oil rates reached a slightly lower level by 1959 with an index of 194.7. The fish-meal rate index declined in 1958, dropping from 179.2 in 1957 to 139.7 in 1958. The principal reason for the latter drop appears to be an increase in minimum carload weights with accompanying lower rates that became effective in 1958. The heavier loadings allowed for reduced rates per hundred pounds but still gave the carriers about the same return in per-car earnings. (See table 2.)

The express-rate index has shown a steady upward trend. Its all-time high for all the regions combined was 198.0 in 1959. The regional indexes ranged, in 1959, from 261.0 in the New England area to 171.3 in the South Atlantic and Gulf areas. The average index in 1959 for the Pacific coast was 195.6; the Great Lakes, 181.9; and the Middle Atlantic area, 180.2. All of the foregoing regional indexes show a steady upward trend from 1947. (See table 3.)

The same selective routes as given in the previous U. S. Bureau of Commercial Fisheries publication^{1/} were used. These routes may be considered as the most important shipping routes between the leading production and consumption areas of the United States. However, the various routes were not weighted to reflect their importance. For this reason, these indexes should be treated only as indicators of trends.

Origins and destinations of shipments have been changing rapidly in recent years, as have the modes of transportation. Air transportation is playing a vital role in the movement of some fishery products, and piggyback carriage is on the increase. It may be expected that the next publication of rate indexes will reflect these changes and perhaps others not yet anticipated.

Year	All Regions Combined	New England	Middle Atlantic	South Atlantic and Gulf	Great Lakes	Pacific Coast
1960 1/	208.7	275.2	188.7	178.8	194.4	206.6
1959	198.0	261.0	180.2	171.3	181.9	195.6
1958	192.7	253.9	175.9	170.9	175.6	190.1
1957	191.3	245.0	175.9	170.9	174.8	190.1
1956	178.0	226.5	164.1	159.8	162.0	177.7
1955	169.6	216.4	157.6	153.6	155.6	164.6
1954	169.2	216.4	157.6	153.8	155.7	162.6
1953	154.4	195.0	143.7	142.4	140.7	150.3
1952	146.4	178.6	137.2	139.3	132.9	144.1
1951	133.5	152.7	127.0	138.4	118.2	131.1
1950	129.8	141.4	125.9	134.7	116.9	129.9
1949	120.8	127.3	116.0	123.9	115.6	121.1
1948	110.3	117.1	109.8	110.0	107.6	107.0
1947	100.0	100.0	100.0	100.0	100.0	100.0

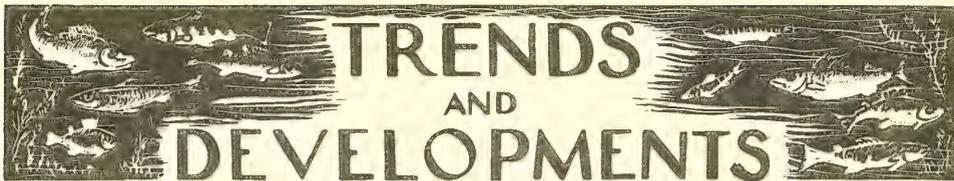
1/Only data for first six months included.

APPENDIX

Detailed tabulations, showing the monthly change in the rate indexes for fish and shellfish products, are available as an appendix to the reprint of this article. They show the changes in the indexes for REA Express, motor carriers, and railroad freight which have occurred from 1947 through the first half of 1960. (Tables 4-7.)

1/Circular 23 - Indexes of Transportation Rates for Fishery Products, 1953, U. S. Bureau of Commercial Fisheries.





TRENDS AND DEVELOPMENTS

Alaska

NEW BIOLOGICAL LABORATORY AT AUKE BAY:

The Auke Bay Biological Laboratory, near Juneau, Alaska, is the newest research station of the U. S. Bureau of Commercial Fisheries. Although not fully equipped, it is already fulfilling an important role in providing basic information of Alaska's fishes--

only long-established facilities at Little Port Walter and Karluk and Brooks Lakes but also more recent stations at Kasitsna Bay, Olsen Bay, Traitors Cove, and Rampart. Basic research is conducted on herring, king crab, and the five species of Pacific salmon and on the food and predatory species associated with them. Physical environmental studies of lakes, streams, and the ocean itself are also part of the program.



The site of the Auke Bay Biological Laboratory near Juneau, Alaska. In the foreground is the salt-water bay and in the center of the photo is Auke Lake, a fresh water body of water.

information that is vitally needed to solve the problems of resource management created by Alaska's large harvest of fishes, which are distributed to the nation and the world.

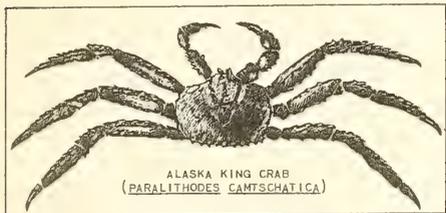
Studies organized at the laboratory involve farflung stations where necessary field data are obtained. They include not

The Auke Bay facility will be equipped to test field situations under controlled conditions. For this purpose salt water will be taken from the bay and fresh water from Auke Lake, which is located just across the highway from the laboratory and provides a convenient natural environment for observing salmon runs.

* * * * *

KING CRAB TAGGED BY JAPANESE OFF KODIAK TAKEN IN ALITAK BAY;

A tagged king crab caught by crab pot in Alitak Bay, Kodiak Island by United States fishermen in early March 1961 was evidence that Japanese fishing operations had finally extended to the vicinity of Kodiak. On a red plastic disc attached to the leg of the crab was a number and the legend, "Hokuyo."



The tagged crab was taken to Port Wakefield and flown to the Alaska Department of Fish and Game Headquarters at Kodiak for further examination by a king crab specialist.

The specialist promptly wrote the Tokai Regional Fisheries Research Laboratories at Tokyo inquiring as to when and where the crab was tagged and released. A quick reply from a Japanese fisheries company revealed that limited king crab tagging had been done in the Shumagin and Kodiak Island areas during September 1960, when 235 king crabs were released by three vessels of the Shinyo Maru fishing fleet belonging to the company while engaged in an exploratory research program.

The crab caught at Alitak was one of these. It had been released off Kodiak and had migrated 27 miles to Alitak Bay after six months of freedom.

The Alaskan specialist surmised that the released tagged crabs were taken incidentally during Japanese exploratory bottom fish ventures during the past summer and that they were released in the same area of capture.

The crabs, as indicated by the one captured, were all tagged in an unusual manner. The tag was threaded through a leg near the body on the underside, instead of having their mark in a more typical location on top of the shell or through the isthmus for permanent retention. Powell believes this location was

chosen by the Japanese so as not to conflict with the crab-tagging programs of the United States.

During the period between August 31 and September 10, 35 male and 1 female king crab were tagged by the Shinyo vessels and released at four locations in the Shumagin Island area. All of these releases were within 12 miles of shore.

Between September 18 and 20, the Japanese released 76 male and 123 female king crab at nine locations off Alitak Bay. The locations extended from 9 to 47 miles outside the three-mile limit. Japanese records received by the specialist gave the tag number, latitude, longitude, depth, date, sex, width of shell, and weight relative to each of the crabs released.

Due to the excellent cooperation of the Japanese in supplying tag data, the specialist believes the offshore king crab studies proposed by the Alaska Department of Fish and Game in 1961 will benefit by these Japanese tagging operations.

The Japanese fishing company has requested the Alaska Department of Fish and Game that if any of their marked crabs are found in the future, that knowledge of their number, location, and date of capture be forwarded to them at Tokyo to facilitate the company's survey and research program.



Antarctica

NAVY CARGO SHIP TO BE REFITTED FOR RESEARCH:

The United States Navy ship Eltanin, an ice-strengthened cargo ship, will become a marine scientific laboratory of the U. S. Antarctic Research Program under the terms of an agreement announced on April 16, 1961, by the Director of the National Science Foundation (NSF) and the Commander, Military Sea Transportation Service (MSTS).

Research projects aboard the Eltanin will encompass any scientific work that may be carried out on shipboard. The Foundation is now accepting proposals for research in the oceans adjacent to the Antarctic, and it is expected that the first research cruise will begin in the late fall of 1961.

The ship will be fitted to accommodate numerous disciplines, including meteorology, upper atmosphere studies, marine and terrestrial biology, physical oceanography, submarine geology, and geomagnetic studies.

The agreement between the Foundation, which administers the Antarctic Research Program, and MSTs, which owns and operates the Eltanin, provides for conversion of the cargo vessel into a polar research ship during the summer and fall. Cost of conversion will be principally borne by the Foundation, but the MSTs will award the conversion contract and supervise the ship's modification.

Versatility and flexibility of equipment and laboratory deck spaces compatible with the demands of seaworthiness and safety are incorporated in the plans for alteration. It is planned to convert the present cargo hold and between decks to laboratories, quarters for scientific parties, and scientific stores. In addition, enclosed laboratories will be built on the forward part of the main deck extending from the fore-castle head to the main mast. Main deck space forward of the bridge superstructure and aft of the main mast will in general be clear for trawling and allied overside operations.

A helicopter deck is to be installed aft of the bridge.

Under the terms of the agreement, the Eltanin will continue to be owned and operated by MSTs. The Foundation, as sponsor of the ship, is responsible for the scientific program and will designate a senior scientist aboard. It is expected that the ship will work in Antarctic waters at least ten months a year. Individual cruises will vary from a month to two or more months in length, depending on the research in progress. During refueling calls at Southern Hemisphere ports, scientists will be able to change equipment for experiments and resupply their projects.

The Eltanin is a small ice-strengthened cargo ship designed and built for polar supply missions. She is 266 feet long, has a 51-foot beam, and will draw about 19 feet. Double-hull feature is extended up to the main deck and other cold-weather operation characteristics are built in. Classed as T-AK 270, she is of welded steel construction with a raked icebreaker-type form bow and a modified cruiser stern. Engine space and

crew quarters are aft. Propulsion power is Diesel-electric, driving twin screws; shaft horsepower is 2,700, speed approximately 13 knots, and range at 12 knots about 10,000 miles.



Atomic Waste

UNIVERSITY RECEIVES GRANT FOR STUDY OF OCEAN DISPOSAL PROBLEMS:

The U. S. Atomic Energy Commission (AEC) has awarded Columbia University's Lamont Geological Observatory a contract to study ocean waters to determine the effect of atomic waste disposal in the oceans.

The research, scheduled to begin this summer in the North Atlantic near Bermuda, will include studying ocean movements by dropping a common red dye into the ocean at selected sites.

Water will be sampled at various ocean depths by a ship towing a sensitive device that can record as little as two parts of dye to 100 billion parts of water. The device will also contain other instruments for measuring the temperature and depth of the ocean water sampled.

Until the actual mixing, spreading, and circulation rates of specific ocean areas are known, no reasonable control over atomic waste disposal in the ocean can be expected, the director of the Observatory and the project said.

Although the research will cover a small portion of the Atlantic Ocean, the AEC hopes the program can eventually be extended to cover major ocean areas.

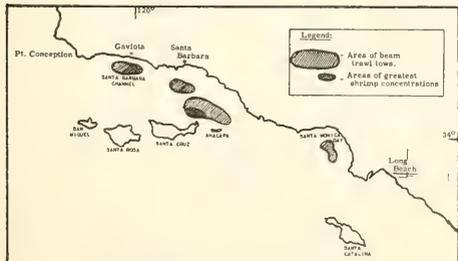
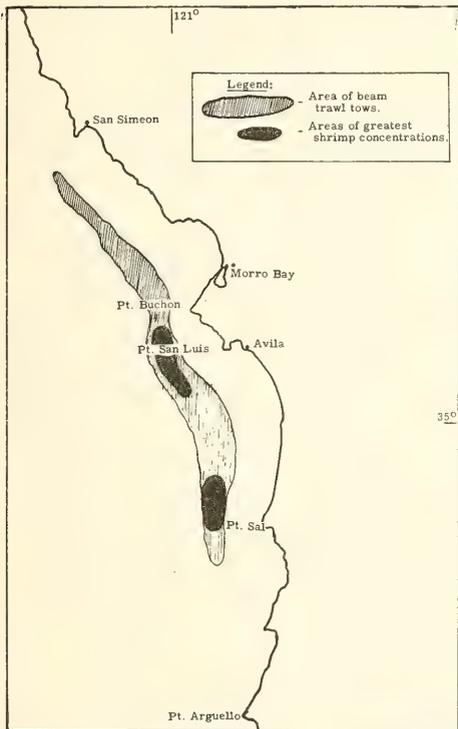
The research by the Observatory will be financed by a \$290,000 grant from the AEC. Another contract, involving \$200,000, was awarded by AEC to a Washington, D. C., firm for developing and testing the equipment to be used in the study.



California

SHRIMP STUDY OFF CALIFORNIA
COAST CONTINUED:M/V "Alaska" Cruise 61-A-1-Shrimp;

The coastal waters off central and southern California from San Simeon to Santa Monica were surveyed (Jan. 16-Feb. 14, 1961) by the



M/V Alaska Cruise 61-A-1-Shrimp.

California Department of Fish and Game research vessel Alaska. Objectives were (1) to conduct exploratory fishing operations for pink shrimp, Pandalus jordani, to locate areas of concentration; (2) to determine size, sex and weight of shrimp from the areas examined; (3) to obtain bottom temperatures in shrimp-fishing areas; and (4) to determine species, numbers, and weights of fish and invertebrates caught with the shrimp.

A total of 122 tows was made with the 20-foot beam trawl, each averaging 20 minutes fishing time.

Summary of Exploratory Fishing for <u>Pandalus jordani</u> .			
Area	Number of Tows	Depth (fathoms)	Results
Santa Monica Bay	10	88 to 150	Only a few shrimp in this area.
Santa Barbara Channel	54	107 to 170	Shrimp were in fair quantities off Santa Cruz Island; a trace or none in other areas.
Pt. San Luis, Morro Bay, Pt. Buchon, San Simeon	58	107 to 150	Greatest concentrations were off Pt. San Luis and Pt. Sal. Traces found off Morro Bay, Pt. Buchon. None off San Simeon.

Shrimp were captured in 54 of the 122 tows. Samples were taken of the shrimp and biological data are being processed to determine the potential for each of several species. Amounts per tow ranged from about 900 pounds of shrimp in one 20-minute haul to as few as one or two individuals.

A total of 120 bathythermograph casts was made. Bottom temperatures ranged from 8.4° to 10.3°C (47.12° - 50.54°F).

The fish caught along with pink shrimp were primarily small hake, Merluccius productus, and splitnose rockfish, Sebastes diploproa. Invertebrates were chiefly jellyfish, sea urchins, and sea pens.

Note: Also see Commercial Fisheries Review, Feb. 1961 p. 16.



Central Pacific Fishery Investigations

COLLECTION OF BIOLOGICAL DATA ON TUNA AT AMERICAN SAMOA:

A biologist from the Hawaiian Biological Laboratory of the U. S. Bureau of Commercial Fisheries during the six-week period ending March 6 surveyed the American Sa-

moa tuna industry preliminary to establishing a station for collecting biological data.

The only tuna cannery is located on the island of Tutuila, American Samoa. Processing and canning of long-line-caught tunas was started in 1954 by the present management; however, the basic cannery facilities were erected some years prior to 1954. The tunas are supplied by a fleet of mostly Japanese and one or two Korean long-line vessels. As these fish are available to the long-line fishing gear throughout the year, the cannery operates the year-around. The catch is predominantly albacore and during the trip made by the biologist, albacore made up 86 percent of the total catch of 1,926 fish.

Fresh blood samples were collected on board the Yuki Maru, a combination salmon gill-netting and tuna long-lining vessel. During the trip, fishing operations were carried out on 22 days in waters north and northwest of the Samoan Island group. The blood collection brought back to the Hawaii Laboratory included 85 albacore, 30 yellowfin, and 24 samples from other miscellaneous species taken on long-line gear.

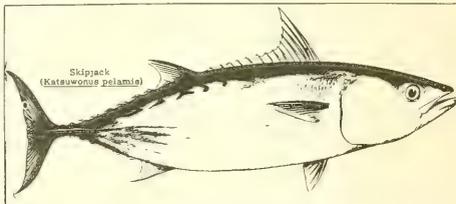
Other data collected on the trip included the daily catch, vessel position, length and sex of various species of fish, and details of the operational aspects of fishing. With regard to the latter, it is interesting to note the long hours of work that the long-line fishing method requires. The Yuki Maru fished 280 baskets of gear (1,400 hooks) with setting operations commencing at 5 a.m. and ending about 8:30 a.m. Hauling operations started at about 12:30 p.m. and generally did not end till about 2 a.m. the following morning.

The organization of a biological sampling program at the cannery was found to be feasible for albacore tuna. Under the present operating conditions, the size and sex of albacore can be obtained at the butchering line since these fish are landed in the round. On the other hand, with yellowfin and big-eyed tuna, the sex determinations at the cannery lines are dependent upon gonad remnants in the body cavity, since those fish are gutted at sea. General locality of capture information may be obtained by interviewing vessel personnel.

* * * * *

THREADFIN SHAD CONTINUES TO SHOW PROMISE AS LIVE BAIT FOR SKIPJACK TUNA:

The threadfin shad (*Dorosoma petenense*) was introduced in Hawaii by the U.S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu and the Hawaii State Division of Fish and Game as a possible supplementary live bait for skipjack tuna and as feed for some of the fresh-water game fishes. This variety of shad has been used extensively in United States lakes and rivers as a forage fish. Its prolific spawning habits and relatively small size (maximum length about 7 inches) make it ideal for this purpose. It naturally feeds on water weeds, microscopic plants, and animals, and has been kept successfully as commercial trout feed in captivity.



The first large-scale introduction to Hawaii was made in August 1959, when an estimated 4,000 shad arrived aboard a freighter in a specially made fish tank. These shad had been gradually shifted from fresh to sea water before the voyage from California, and were shifted back to fresh water after their arrival in the islands. The change from fresh to sea water and back was made very gradually over a period of 3 days to avoid killing the fish.

Plantings ranging from 200, and up to 1,200 fish were made in 3 reservoirs and 2 rivers during August-September 1959. Besides those that were released in reservoirs and rivers, well over 1,000 shad were kept in outdoor and indoor tanks at the Bureau's Honolulu Laboratory for observation.

The shad spawned successfully in Wahiawa Reservoir, Nuuanu Reservoir #4, and in Maui Reservoir #44. There were no signs of spawning in the Anahulu and Wailua Rivers, nor in the tanks at the Bureau's Laboratory.

Sea tests aboard a skipjack tuna sampan using shad as live bait were made in 1958 by

the Hawaiian Tuna Packers and Bureau biologists. The results were very encouraging as they showed that skipjack tuna readily accepted this type shad as food, and the rate at which skipjack tuna were caught with threadfin shad was better than with other live bait (nehu) during the test. However, this was not conclusive since only a few buckets of threadfin shad were available for the tests. Further studies will have to be made before it can be determined whether threadfin shad will be a good supplementary live bait for skipjack tuna.



Clams

NEW ENGLAND HARD CLAMS TRANSPLANTED IN FRANCE THRIVE:

French fishery scientists have been so successful in growing New England hard clams that they have requested another shipment, according to the U. S. Bureau of Commercial Fisheries. Two years ago the Director of the Bureau's Biological Laboratory at Milford, Conn., while in Europe consulting with other shellfish scientists, described the success achieved by his laboratory in the artificial cultivation of oysters and clams and suggested that French scientists experiment with New England grown juvenile molluscs. The French scientists eagerly accepted his offer. New England hard-shell clams or quahogs (*Venus mercenaria*) were chosen for the test. A total of 70,000 young clams were carefully shipped by air to Paris where they were met by French fishery scientists and sped to experimental beds at Arcachon and La Tremblade for planting.



These pioneer clams have done so well in French waters that recently the French Institute Scientifique et Technique des Pêches Maritimes, an institution corresponding to our Bureau of Commercial Fisheries, has asked for an additional shipment. This time, the clams will be assigned to the Mediterranean where they are expected to thrive in the much warmer waters than are found along the west coast of France.

Clams sent several years ago by the Milford Laboratory to Florida have made remarkable progress so there are high hopes for the latest shipment which will make

their new home in the warm waters off the south of France.



Films

INTERIOR RECEIVES INTERNATIONAL MOTION PICTURE AWARD FOR FISHERY FILM:

Presentation of awards for two Department of the Interior sound-color films shown at the Edinburgh, Scotland, International Film Festival were made at the British Embassy in Washington, D. C., on March 28, 1961.

The films are Salmon--Catch to Can, produced by the Bureau of Commercial Fisheries, and financed by the salmon industry, and The Whooping Crane, produced by the Bureau of Sport Fisheries and Wildlife.



Using a conveyor belt to unload fresh salmon at a cannery. Salmon being transported to be washed and cleaned prior to canning.

Salmon--Catch to Can is a documentary portraying the biology of salmon, methods of catching, and a glimpse at its utilization. It was one of the seven U. S. Government films so honored at the Film Festival in 1960.

The Whooping Crane is a documentary of America's all-but-extinct whooping crane. It was shown at the Edinburgh Festival in 1959. Presentation of the award was unavoidably delayed.



Family of whooping cranes at Long Lake, Aransas Refuge, Tex.

The awards are diplomas of participation in acknowledgement of the fact that the pictures were selected and shown at the Edinburgh Festival. To qualify for such a showing the films had to undergo a severe screening test in this country in competition with other Government-produced films and then equally severe screenings in London and Edinburgh before final selection. The Edinburgh International Film Festival is held each September.

Other Bureau of Commercial Fisheries films honored at Edinburgh in past years were The Story of Menhaden in 1951 and Outboard Fisherman U.S.A., 1956. The Whooping Crane also won an award at the 1959 Venice, Italy, International Film Festival.

Note: These films and others are available on a free loan basis. Write to the Office of Information, Fish and Wildlife Service, U. S. Department of the Interior, Washington 25, D. C.

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SPONGE FILM OF U. S. BUREAU OF COMMERCIAL FISHERIES WINS RECOGNITION:

Sponge--Treasure from the Sea, a 16-mm, sound-color film recently made available to the public.



has won an American Film Festival award. The award is a certificate showing that the film passed screening requirements for screening at the Film Festival April 19-22 at the Barbizon-Plaza Hotel in New York City. The Festival is sponsored by the Educational Film Library

Association which has its headquarters in New York.

The action of the screening committee put Sponge--Treasure from the Sea in the Blue Ribbon competition in the Agriculture, Conservation and Natural Resources category.

The picture tells the story of the natural sponge industry in the United States which is conducted with all the old world color and culture. It shows the two methods of harvesting, hooking and "hard hat" diving; the sponge auction which features a silent auctioneer, with gestures taking the place of calls; the blessing of the waters and the diving for the Golden Cross. The center of the American sponge industry is Tarpon Springs, Fla., where sponge divers of Greek origin carry on their work in traditional style.

The film was produced by the Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service. It was sponsored by the Sponge and Chamois Institute and the Sponge Industry of Tarpon Springs.

Note: Prints are available on a free loan basis from cooperating film libraries throughout the country and from the Bureau of Commercial Fisheries, U. S. Department of the Interior, P. O. Box 128, College Park, Maryland.



Fish Flour

INTERIOR SECRETARY LUNCHEON POINTS WAY TO END PROTEIN DEFICIENCY:

A prelude to a program aimed at helping to end dietary protein deficiency, and which may prove a boon to peoples in underdeveloped areas, was given on April 4 at a luncheon at the Department of the Interior by Secretary Stewart L. Udall.

Secretary Udall served cookies to his guests to which had been added fish flour, a convenient supplement to diets of protein-starved persons--an innovation which many believe could change the lives of countless persons in the nations of the world. Over two-thirds of the world's population suffer from protein malnutrition.

The term "fish flour" is actually a misnomer, and those engaged in the research to produce this material in quantities prefer to call it "animal protein concentrate." It contains little or none of the carbohydrates and

starches found in grain flour. Rather, it contains up to 95 percent of animal protein. These proteins contain all of the 10 amino acids which are essential for the development of bone and muscle and for the daily maintenance and repair of bodily tissues.

The concentrate can be made from non-utilized fishes, the Department's Fish and Wildlife Service technicians report. The United States alone could easily supply from one locally available species of fish and without reference to other species of industrial fish commonly available, sufficient concentrate to treat 100 million humans with a dietary supplement level of one ounce of concentrate daily, for about a year.

The amount could be increased many times by utilization of the numerous domestic fish species which are little used or not used at all, at present. In developing countries, where many but not all of the 10 amino acids are available from vegetable protein sources, the United States production from one species of fish alone would adequately supplement the diet of 330 million humans for a year.

Major obstacles to the development of a substantial fish concentrate industry in this country is the lack of process engineering studies which would assure an inexpensive but consistently highly nutritious product. The Bureau of Commercial Fisheries, Fish and Wildlife Service, hopes to undertake such work in the near future.

The Bureau's home economists made the cookies used by Secretary Udall today. In the amounts used, the concentrate was undetectable as to taste or appearance. Nevertheless the protein concentrate added was sufficient for five cookies to provide 14 percent of the animal protein needed daily by a 6-year-old child, and 8 percent of the amount needed by a 154-pound United States adult male.

Guests at the Udall luncheon included Frank P. Briggs, Assistant Secretary of the Interior for Fish and Wildlife; Charles E. Jackson, General Manager of the National Fisheries Institute, and Harold J. Humphrey, consultant to the Food Conservation Division of the United Nations International Children's Emergency Fund. Jackson presented the cookies to Secretary Udall and explained the possibilities of the concentrate in the diet of underdeveloped nations and to people of all nations.



Secretary of the Interior Stewart L. Udall (right), Charles E. Jackson, Gen. Mgr., N.F.I. (left), and Asst. Sec. of the Interior for Fish and Wildlife Service, Frank P. Briggs (center), enjoy cookies made from fish flour at the luncheon. The "fish flour," actually an "animal protein concentrate," designed to end dietary protein deficiency, may prove an addition to menus everywhere, and a boon to peoples in underdeveloped areas.

At the fish meal meeting in Rome held by the United Nation's Food and Agriculture Organization in late March several matters pertinent to the world's diet were discussed.

Lack of adequate protein in the child's diet results in failure of growth, muscular wasting, and oedema of varying degrees--the so-called "kwashiorker" of West Africa--or in "marasmus", failure of growth and wasting of tissues. The mortality rate in both instances, if untreated, is high.

The Rome meeting attempted to estimate how many human beings in the world now suffer from protein deficiency. An estimate of at least 500 million was made, including four-fifths preschool age children with most of the remainder being pregnant and nursing mothers.



Fisheries Loan Fund

**LOANS APPROVED,
JANUARY 1-MARCH 31, 1961:**

From the beginning of the Fisheries Loan Fund program in 1956 through March 31, 1961, a total of 905 applications for \$27,428,566 have been received by the Fund as administered by the Bureau of Commercial Fisheries of the U. S. Department of Interior. Of

these, 488 (\$11,649,419) have been approved, 303 (\$8,254,073) have been declined or found ineligible, 77 (\$4,752,132) have been withdrawn by applicants before being processed, and 37 (\$1,529,463) are pending. Of the applications approved, 180 were approved for amounts less than applied for and the total reduction was \$1,243,479.

The following loans were approved during January, February, and March of 1961:

New England Area: John Bruno & Son Co., Inc., Boston, Mass., \$15,000; Schooner Joseph S. Mattos, Inc., Gloucester, Mass., \$13,722.

South Atlantic and Gulf Area: Crawford Packing Co., Palacios, Texas, \$85,000; Dougherty Shrimp Co., Fernandina Beach, Fla., \$16,000; Herbert M. Storter, Naples, Fla., \$14,000; Mack Terrebone, Brownsville, Texas, \$22,500; and James E. Wade, Brownsville, Texas, \$20,300.

California Area: Frank Brenha, Jr., et al, San Diego, \$80,000; Roy A. Gowdy, San Diego, \$6,172; G. P. Ellington, Long Beach, \$80,000; Herbert C. Packer, Eureka, \$7,600; Donald H. Richcreek, Crescent City, \$9,950; Jose da Silva, et al, San Diego, \$80,000; and Walter E. Wallin, Eureka \$3,725.

Pacific Northwest Area: Edward J. Fagan, McMinnville, Oreg., \$8,489; Harold R. Jensen, Edmonds, Wash., \$3,800; Pete M. McNally, Port Angeles, Wash., \$5,500; Walter E. Nev-aril, Seattle, Wash., \$3,948; and Don Sjogren, Mount Vernon, Wash., \$6,896.

Alaska: Donald J. Adams, Ketchikan, \$3,050; Jesse Galloway, Ketchikan, \$2,000; Marion F. Goodrich, Wrangell, \$3,500; Edwin T. Grabowski, Seldovia, \$30,000; Johnnie W. Huff, Ketchikan, \$5,500; Wilhelm Jordan, Petersburg, \$1,800; Kenneth G. Nauska, Sr., Wrangell, \$3,000; Hjalmar Savikko, Douglas, \$4,000; Annie L. Taylor, Petersburg, \$2,500; and Horace S. True, Juneau, \$4,264.



Fishing Vessel Construction and Differential Subsidy

FIRST APPLICATION RECEIVED:

The first application to the U. S. Bureau of Commercial Fisheries for a construction

differential subsidy to aid in the construction of a fishing vessel to be used for fishing for groundfish in New England fishing areas has been received, Assistant Secretary Frank P. Briggs announced on April 25, 1961.

The application was filed from New Bedford, Mass. The proposed vessel will be approximately 78 feet in length and is expected to cost about \$90,000.

The payment of construction differential subsidies with certain restrictions was approved by the Congress in 1960. The amount of subsidy, where applications are approved, will be equal to the difference between the cost of construction in a shipyard in the United States and the cost in a foreign shipyard, or one-third the cost of construction, whichever is the smaller.

To be eligible for a subsidy, the vessel must be designed for use in a fishery which has received a finding of injury due to increased imports. The plans and specifications must be approved by the Maritime Administrator and the Secretary of Defense. The finding of injury is made by the Secretary of the Interior except when the fishery is eligible to apply for, or has obtained, a recommendation for relief from the Tariff Commission as an "escape clause" action.

When completed, the vessel must be documented as a United States vessel, must employ only citizens or resident aliens in its crew, and must deliver its catches to a port in the United States.



Fishing Vessel Mortgage and Loan Insurance

CASES APPROVED, JANUARY-MARCH 1961:

The Federal Fishing Vessel Mortgage and Loan Insurance Program was implemented



the latter part of 1960 as a result of enabling legislation passed by the Congress in that year. Administered by the Bureau of Com-

mercial Fisheries, U. S. Department of the Interior, the program provides for Federal Government insurance of mortgages and loans for construction, reconstruction, and reconditioning of fishing vessels. The first insured mortgage and loan under the program was approved early this year. The mortgages and loans insured under the program during January, February, and March 1961, were:

New England Area: Major J. Casey Corporation, New Bedford, Mass., \$60,000.

South Atlantic and Gulf Area: Ric-Man Shrimp Co., Inc., Tampa, Fla., \$34,500.

Pacific Northwest Area: Joseph R. Fribrock, Seattle, Wash., \$75,000.



Great Lakes Fishery Investigations

LAKE ERIE FISH POPULATION SURVEY FOR 1961 SEASON BEGINS:

M/V "Musky II" March 1961: The 1961 field operations of the U. S. Bureau of Commercial Fisheries research vessel *Musky II* on Lake Erie were begun on April 1. Installation of crew quarters, galley, and laboratory facilities was completed during the winter. Subsequent cruise schedules and operations will most certainly be improved as a result of these additions. The 1961 program will be largely a continuation of 1960 activities which includes the spring, summer, and fall 3-day series of trawl operations off Bono and East Harbor, periodic visits to other areas of the western basin, and biological samplings at seven established stations. In addition, the *Musky II* will be used for one week each month to obtain limnological data.

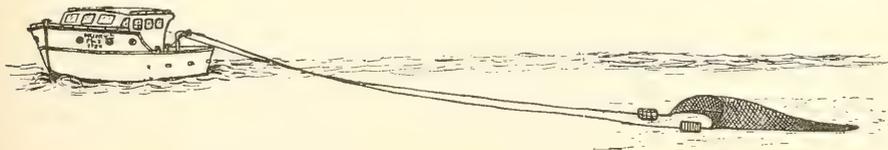
Unlike a year ago, the western section of Lake Erie was relatively ice-free for the opening dates of the new fishing season. Ice and weather conditions, however, delayed somewhat, commercial activities to the east. High winds and rough waters, which are not unusual for the time of year, hampered fish-

ing. Landings consisted mostly of yellow perch, sheepshead, carp, white bass, and to a lesser extent, yellow pike--principally of the 1959 year-class.

A brief resumé of the early life history of various fish, as determined from records of the past year, is as follows: Studies of young-of-the-year fish in western Lake Erie in 1960 have demonstrated a rather wide divergence in growth characteristics of some of the more important species. The general hatching span for these fish covered May 1 through July 15. Major hatching periods and average temperatures for individual species were: May 1-15 (50° F.) smelt, yellow pike, and yellow perch; June 1-15 (68° F.) spot-tail shiner and trout-perch; June 15-30 (72° F.) alewife and gizzard shad; July 1-15 (75° F.) white bass, emerald shiner, and sheepshead.

Differences in lengths of newly hatched fish larvae are large and lengths of incubation periods vary widely between species. Sheepshead larvae may be only 1/10-inch long, but gizzard shad larvae may be as long as ¼ inch. Sheepshead and emerald shiners may hatch less than 24 hours after the eggs are laid. Perch and yellow pike eggs may not hatch for as long as 3 weeks and eggs of the fall spawners (cisco and whitefish) usually require several months to hatch after spawning.

Growth for the season of these young-of-the-year fish largely terminated during the following periods: September 16-30 (70° F.) yellow perch and emerald shiners; October 1-15 (65° F.) smelt, spot-tail shiner, alewife, gizzard shad, and sheepshead; October 15-30 (60° F.) trout-perch, white bass, and yellow pike. Average lengths at the end of the growing season and weekly growth increments (in parentheses) for each species were as follows: yellow pike, 10.0 inches (0.44 inch); sheepshead, 4.5 inches (0.31 inch); alewife, 4.4 inches (0.20 inch); gizzard shad, 4.3 inches (0.28 inch); white bass, 4.0 inches (0.27 inch); yellow perch, 3.4 inches (0.20 inch); trout-perch, 3.3 inches (0.17 inch); spot-tail shiner, 3.0 inches (0.18 inch); em-



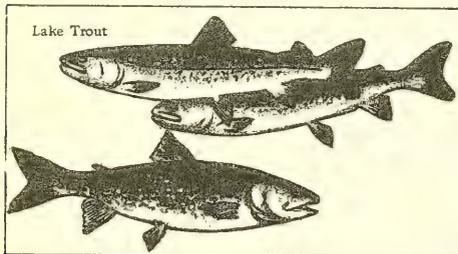
erald shiner, 2.4 inches (0.22 inch); and smelt, 2.4 inches (0.10 inch). Average weekly increments were determined by dividing the number of week's growth into the differences in length at the time of hatching and at the end of the growing season.

The age of a fish, to some extent, will determine the length of its growing season. Young-of-the-year yellow perch and yellow pike, for instance, start growth in early May, whereas growth of the older fish may be delayed until about June 1. On the other hand, young-of-the-year white bass may not hatch and start growing until July 15 but older fish will put on growth as early as June 1.

* * * * *

RESEARCH VESSEL "SISCOWET" PROGRAM FOR 1961:

The 1961 operations of the U. S. Bureau of Commercial Fisheries research vessel Siscowet have been designed to meet the needs of individual projects of the Lake Superior research program and to continue long-term observations of environmental conditions and fish populations.



Special studies will cover problems such as early life-history observations, food-habit studies for several species, electrophoretic analyses of the coregonids and lake trout, and collection of data and materials on the spawning habits of several species. Other operations will be devoted to limnological surveys at "index" stations and systematic fishing with trawls and gill nets at various depths and locations in western Lake Superior.

A fishery survey of the Whitefish Bay region is planned. Gill nets and trawls will be fished at various depths and locations to study the abundance and distribution of lake trout, whitefish, herring, and chubs. Samples of chubs will be preserved for study in the laboratory.

A study of lake trout in the Keweenaw Bay area is also planned. Information will be gathered on the contribution of hatchery-reared fish to native stocks of young trout, and attempts will be made to evaluate the comparative survival of lake trout planted from shore with those planted offshore with boats. A study of the Isle Royale area is contemplated to assess the abundance of small lake trout and to make further collections of chubs from the region.

The annual assessment of spawning populations of lake trout in western Lake Superior will take place in October. Discontinuance of the spawn-taking operations of the Wisconsin Conservation Department makes this study of vital importance in following the status of the lake trout in Lake Superior.

Other operations will be devoted to the collection of data and materials on the life history of the common whitefish.



Gulf Fishery Investigations

Following are some of the highlights of the studies conducted by the Galveston, Tex., Biological Laboratory of the U. S. Bureau of Commercial Fisheries during January-March 1961:

SHRIMP FISHERY INVESTIGATIONS:

Population Dynamics: Activity during the quarter centered upon completing a detailed examination and gross analysis of the first 4 years' commercial shrimp catch statistics.

Collection and organization of various shrimp measurement data continued. Computation and analysis of factors relating length to weight, total length to carapace length, "tail" weight to total weight, etc., neared completion. While certain of these factors will primarily aid the industry in standardizing buying and selling practices, all will provide biologists and statistical agents with means for converting research data and fishery statistics to comparable units.

Bait Shrimp Production: A summary of 1960's statistics reveals that the Galveston Bay system yielded an estimated 943,000 pounds of shrimp to commercial bait shrimp fishermen. Consisting of approximately 60 percent white and 40 percent brown shrimp,

this represented an 83-percent increase over the previous year's production. Retail value was estimated at \$1.1 million.

During the first quarter of 1961, white shrimp dominated Galveston Bay's bait shrimp fishery, being infrequently supplemented by small amounts of pink shrimp and *Trachypeneus* sp. For the first time in 6 years, bait-size white shrimp were consistently plentiful throughout the winter. Catches came almost exclusively from the deep waters of the Galveston Ship Channel.

Shrimp Migrations: Emphasis throughout the quarter was given recovery phases of shrimp marking experiments initiated late last year. Commercial fishermen turned in 42 and 76 recaptures, respectively, from releases at Bottle Key (13,300) in November and Lower Pine Island Sound (32,900) in December. Of the Bottle Key recaptures, 10 were taken in Florida Bay within 6 miles of the release site, and 32 on the Tortugas grounds about 120 miles to the west. To date all Pine Island Sound recaptures have been taken on the southern portion of the Sanibel fishing grounds, 20-25 miles south and southwest of the release site. The results of these and previous experiments indicate that: (1) all of Florida Bay constitutes nursery area for pre-recruit segments of the Tortugas pink shrimp stock, and (2) Barnes Sound and Biscayne Bay on the east coast, and estuaries north of Cape Romano on the west coast, may be discounted as such.

The number of shrimp marking (staining) experiments that can now be carried out concurrently is restricted by the number of stains that have proved satisfactory for this purpose. Investigation has disclosed, however, that supplementary marks produced with certain machine inks can at least double present marking possibilities. Shrimp injected with Trypan blue or fast green dyes which concentrate in the gills may be given a secondary mark with black or red machine ink in the subabdominal region. The most suitable for this purpose appears to be Sanford's check-writer ink, red (No. 639), which leaves a very discrete, easily detected spot when injected under the cuticle at the base of the pleopods. It remains clearly distinct in living shrimp over periods of at least 60 days. Clearance for field use is now being solicited from the Pure Food and Drug Administration.

Shrimp Larvae Studies: A new phase of the shrimp larvae project was begun during the quarter. Objectives are:

1. - Delineation of penaeid shrimp spawning grounds in the Gulf of Mexico adjacent to Galveston.
2. - Determination of spawning conditions of the various species with respect to season, area, and depth.
3. - Study of the effects of environmental factors (such as temperature, salinity, and bottom composition) on the distribution, abundance, and spawning activities of penaeids.
4. - Study of seasonal and areal abundance of penaeid larvae and the importance of currents in their transport to inshore nursery areas.

The 60-foot shrimp trawler *Miss Angela* of Freeport, Tex., has been chartered for sea sampling. Four cruises at 3-week intervals have been made over an area extending from Freeport, Tex., to Cameron, La., and from 7 to 45 fathoms. Eleven stations are occupied during each 395-nautical-mile cruise. Biological sampling at each station consists of a 1-hour drag with a 45-foot flat trawl and a 20-minute step tow of the Gulf V Plankton Sampler. Hydrographic observations include vertical profiles of temperature, salinity, and current direction and velocity.

Preliminary examination of data resulting from the first three cruises (January 17-19, February 8-10, and March 28-April 3) shows:

1. - The great majority of penaeid females were undergoing some ovarian development during this season.
2. - Female brown shrimp, *Penaeus aztecus*, and rock shrimp, *Sicyonia brevirostris*, were most advanced in their sexual development.
3. - Ovaries of white shrimp (*P. setiferus*), pink shrimp (*P. duorarum*), *Sicyonia dorsalis*, and *Trachypenaeus similis* were generally less advanced in their development.
4. - The most abundant form of penaeid larvae found in the plankton samples was the mysis stage.
5. - Nauplii were taken only at 25- and 45-fathom stations.

6. - Post-larvae of the genus Penaeus were taken at a 45-fathom station some 80 miles offshore.

In attempts to rear early penaeid larvae, ripe females of Penaeus aztecus, Sicyonia brevirostris, S. dorsalis, and Trachypeneus similis were held in the laboratory. Although spawning occurred in some cases, the eggs failed to develop. One spawn of S. brevirostris took place in the recently completed recirculating sea-water system. The resulting eggs appeared relatively free of micro-predators and generally in better condition than eggs previously spawned in standing-water systems.

To complement post-larval rearing experiments, live plankton was brought in from offshore collections. An attempt is being made to develop satisfactory procedures for the description of succeeding instars of larvae obtained from these live plankton samples.

INDUSTRIAL FISHERY STUDIES: A total of 27 life-history samples were processed during the quarter from the dominant species group. Length-frequency and length-weight curves have been worked out for some of this group. Studies show that fish caught west of the Mississippi River Delta are larger in size generally than those east of the river. Studies on geographic differences are continuing. Length-weight relationships between individuals of spot, Leiostomus xanthurus, are scattered after 200 mm. in length for all samples worked to date. However, the croaker, Micropogon undulatus, has shown an excellent curve in the 1 year of data completed this quarter.

All specimens of all species examined show close conformity to spawning periods as described in the literature.

Routine sampling was continued throughout the quarter. A total of 78 landings were sampled. The program was reduced somewhat during March when the local plant curtailed landings to install new equipment for facilitating fish handling. Many vessels of the fleet took advantage of the respite to perform overhaul tasks which further reduced local landings.

In January a total of 577.5 pounds were sampled from 1,572,108 pounds landed. Croaker, trout, and spot constituted 88 percent by weight and species of less than 1 percent by weight were 9 percent of the total.

In February 490 pounds were sampled from 1 million pounds landed. Croaker took an unusual upturn to 72 percent by weight, while spot and trout were 10 and 3 percent, respectively. Miscellaneous species contributed 9 percent of the total.

In March croaker was somewhat more than 50 percent of the total, while trout and spot were 11 and 10 percent each. Miscellaneous species were 9 percent by weight.

The average number of species in January was 12, while in February and March it was 13 each.

Thirteen frozen fish samples taken off the Texas coast by the Bureau's M/V Oregon were processed this quarter. The long-spine porgy (Stenotomus caprinus) bumper (Chloroscombrus chrysurus), and thread herring (Opisthonema oglinum) were the dominant species, comprising by number 49 percent of the total catch.

Additional fish samples are being obtained through extended activity of the shrimp larval study project. Two random 5-pound samples are being taken at each of 11 stations which range in depth from 7½ to 45 fathoms, on a 3-week basis. Thus far, 64 such samples have been received and processed, and a total of 74 species have been identified.

Examination of plankton samples for the removal of fish eggs and larvae was continued. This phase of the larval fish study is nearing completion.

EFFECT OF PESTICIDES ON MARINE ORGANISMS: Results of bioassays conducted in small glass and polyethylene jars at a volume of 6 liters indicated strongly that toxic elements are partially absorbed or otherwise bound by the polyethylene. During this quarter, the acquisition of larger-capacity glass jars (40 liters) permitted a more extensive study of this problem. The hypothesis that polyethylene significantly reduces the toxicity of these chlorinated hydrocarbons tested thus far was confirmed. Pinfish (Lagodon rhomboides) exposed to DDT at a concentration of 0.05 ppm. suffered 80 percent mortality in glass jars compared to 10 percent in polyethylene vessels. At a concentration of 0.07 ppm. in glass, 100 percent mortality was noted in 10 hours. A slightly higher concentration (0.08 ppm.) in polyethylene caused only 50 percent

mortality in 48 hours. Since it has been demonstrated by others and corroborated here that at equal concentrations, solutions increase in toxicity with increasing volume (at least up to some level), an experiment was run concurrently to compare the effects of 100 liters of the 0.05 ppm. solution. Only polyethylene vessels, however, were available. Despite the fact that polyethylene reduces the toxicity of a solution, the greater volume caused 100 percent mortality in less than 24 hours, which is higher than that noted in 40 liters either in glass or in polyethylene. These problems are being considered further.

Tests of technical chlorinate hydrocarbons on postlarval blue crabs (*Callinectes sapidus*, approximately 4 mm. in carapace width) yielded the following 24-hour TLM values: DDT (0.003 ppm.), Endrin (0.01 ppm.), Dieldrin (0.05 ppm.), and Heptachlor (0.05 ppm.).

Studies of sublethal levels of pesticides on estuarine organisms were initiated this quarter. Young sailfin mollies (*Mollinisia latipinna*, 16-17 days old) were exposed to a running solution of DDT (2 parts per billion). Experimental tanks hold approximately 40 liters and new medium is added at the rate of approximately 1 liter per hour. Every 2 weeks, animals are counted, measured, and returned to the tanks. Thus far, growth and survival in the control animals have been slightly but insignificantly greater than in the experimental animals. Initial length of all animals was 11.3 mm. Studies of environmental factors that affect the toxicity of pesticides suggest that silt is important. The addition of 4 gm. of fine clay (Pennsalt Diludust) significantly reduced the toxicity of 40 liters of a 0.05 ppm. solution of DDT to pinfish. In 48 hours only 20 percent mortality was recorded compared to 80 percent in a similar concentration without clay.



Hawaii

COMMERCIAL FISHERIES LANDINGS, 1960:

The commercial fisheries landings of sea and pond fish and shellfish in the State of Hawaii during the calendar year 1960 amounted to 11.1 million pounds valued at \$2.7 million ex-vessel, according to the Hawaii Division of Fish and Game. Compared

with the previous calendar year, the catch showed a decrease of 5.4 million pounds (32.8 percent) in quantity and \$473,899 (14.9 percent) in value. The decrease was largely due to the skipjack tuna (*Katsuwonus pelamis*)

Species	English Name	Hawaiian Name	1960		1959	
			Quantity 1,000 Lbs.	Value US\$ 1,000	Quantity 1,000 Lbs.	Value US\$ 1,000
Ocean Catch:						
Amberjack		Kahala	86	25	79	23
Big-eyed scad		Akule	298	207	156	125
Dolphin		Mahimahi	91	50	119	53
Goatfish		Weke-ua Moana Kumu	141	79	127	78
Crevalles*		Uta Omitu	102	45	63	29
Mackerel		Opelu	193	82	192	76
Shapers:		Uku	46	21	46	22
Pink		Opakapaka	105	55	110	56
Red		Ulaula Kose (Onaga) Ulaulu (ehu)	59	51	73	65
Swordfishes, sailfishes, spearfishes, & marlins		A'u & A'u Iepe	584	168	797	200
Tuna & tunalike fish:						
Ahi		Ahipalaha	9	3	11	2
Big-eyed & bluefin		Ahi	1,286	582	1,322	574
Yellowfin		Ahi	356	152	369	178
Skipjack		Aku	7,360	1,001	12,413	1,475
Bonito		Kawakawa	4	1	19	4
Shellfish:						
Crabs		Kona, Papai	14	7	8	4
Limpet		Opihi	14	6	13	5
Lobster, spiny		Ula	10	7	12	8
Octopus		Hee	5	3	4	3
Shrimp		Opae	-	-	-	-
Squid		Muhee	5	2	5	2
Turtle		Honu	4	1	-	-
Other fish & shellfish			297	115	346	139
Total ocean catch			11,079	2,563	16,484	3,121
Pond Catch:						
Clams		Olepe	1	-	3	1
Crabs		Kuakonu, Papai, Samoa	6	3	2	1
Milkfish		Awa	8	4	32	13
Mullet		Amaama	94	29	45	37
Other species			8	6	14	6
Total pond catch			57	42	95	58
Grand Total			11,136	2,705	16,580	3,179

landings which dropped 5.1 million pounds (40.7 percent) in quantity and \$474,225 (32.1 percent) in value. The skipjack tuna catch in 1959 was nearly 6 million pounds more than in 1958. In addition to skipjack tuna, landings of other important species which decreased-substantially were yellowfin tuna (*Neothunnus macropterus*) by 212,963 pounds (37.5 percent) and black marlin (*Makaira ampla*) by 118,256 pounds (27.1 percent). Landings increased for crevalles (*Carangidae*) by 39,430 pounds (73.4 percent) and big-eyed scad (*Tachurops crumenophthalmus*) by 142,838 pounds (91.8 percent).

Note: Also see Commercial Fisheries Review, May 1960 p. 25.

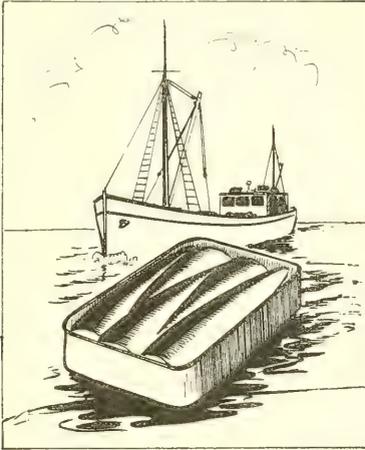


Maine Sardines

CANNING INDUSTRY READY FOR 1961 SEASON:

When the small herring start running along the Maine coast, 31 canneries will be

ready to convert them into sardines. Although the 1961 canning season legally opened on April 15, no significant production was expected until late May or early June if the spring runs of fish follow the same pattern of the past 10 years.



The Maine canning industry produced nearly 2 million cases (100 3 $\frac{1}{4}$ -oz. cans) during the 1960 season, which is the pack goal for the plants until the closing date on December 1, 1961.

Milbridge which was recently totally destroyed by fire.

Veteran fishermen see no reason why the fish should be running in large numbers any earlier than in the past few years.

CANNED STOCKS, APRIL 1, 1961:

Distributor's stocks of Maine sardine totaled 267,000 actual cases on April 1, 1961--15,000 cases more than the 252,000 cases on hand April 1, 1960. Stocks held by distributors on January 1, 1961, amounted to 233,000 cases, and on November 1, 1960, totaled 277,000 cases, according to estimates made by the U. S. Bureau of the Census.



Canner's stocks on April 1, 1961, totaled 506,000 standard cases (100 3 $\frac{1}{4}$ -oz. cans), an increase of 109,000 cases (27.0 percent) as compared with April 1, 1960. Stocks held by canners on January 1, 1961, amounted to 1,029,000 cases and on November 1, 1960, totaled 1,258,000 standard cases.

The 1961 packing season opened on April 15, 1961, but no production was expected before late May or early June.

At the beginning of the 1960 packing season on April 15, 1960, the carryover in the

Table 1 - Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, April 1, 1961, With Comparisons 1/

Type	Unit	1960/61 Season			1959/60 Season				
		4/1/61	1/1/61	11/1/60	7/1/60	6/1/60	4/1/60	1/1/60	11/1/59
Distributors	1,000 actual cases	267	233	277	172	197	252	235	296
Canners	1,000 std. cases 2/	506	1,029	1,258	359	235	397	843	1,001

1/ Table represents marketing season from November 1-October 31.
2/ 100 3 $\frac{1}{4}$ -oz. cans equal one standard case.

Correction: In the March 1961 issue of Commercial Fisheries Review, Table 1 on page 32, the first column under "1960/61 Season" should read "1/1/61."

Sales were excellent in the early months of 1961 and the industry was reported to be in a good inventory position.

This will be the fourth consecutive season during which the State-administered quality control program has been operating, and regulations are expected to be even more strict than in the past.

An additional plant at Eastport, Maine will be in operation in 1961 but there is still some question as to the status of a plant at

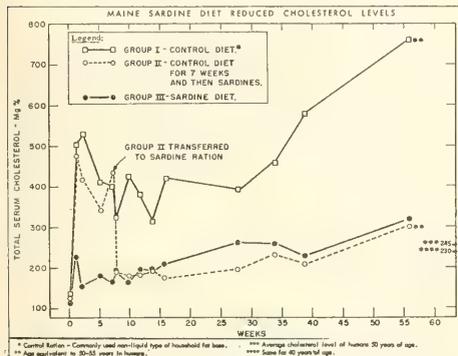
hands of canners from the 1959 pack was 335,000 cases. This carryover plus the 1960 pack of 1,998,000 cases of all types of Maine sardines made the available supply as of April 15, 1961, a total of 2,333,000 cases--more than the supply of 2,171,000 cases on April 1, 1960. Canners' shipments from April 15, 1960 to April 1, 1961, amounted to 1,794,000 cases as compared with 1,774,000 cases for the same period a year earlier.

Note: Also see Commercial Fisheries Review, March 1961 p. 32.

FEEDING TESTS INDICATE VALUE AS A CHOLESTEROL DEPRESSANT;

A 55-week feeding test has shown that a diet with a Maine sardine base will greatly reduce high serum cholesterol levels in laboratory animals. The project was conducted for the Maine Sardine Council by an internationally famous research organization.

Blood cholesterol is currently considered by many leading physicians and nutritionists to be definitely related to numerous serious heart diseases affecting or killing millions of people annually.



Graph of tests showing change in cholesterol levels as the animals were fed the cholesterol-choleic acid added diets of Maine sardines versus a control ration.

The Sardine Council's Chairman states that the researchers and one of the country's top nutritionists considered the results of the test to be so impressive that they had recommended that a similar study be conducted on humans.

Examination of the animals at the end of the test showed the cholesterol level of those on the sardine diet to be less than half as high as those on a control diet with a highly saturated fat base of a commonly used non-liquid type of household fat.

Furthermore, according to the Chairman, the study showed that when a group of animals on the control diet for seven weeks was transferred to the sardine ration their cholesterol level dropped by more than 60 percent in a short time.

Numerous experts have long contended that foodstuffs with a high saturated fat content tend to favor increased cholesterol lev-

els in humans while those with unsaturated fat content, such as Maine sardines, appear to help control cholesterol levels.

A much larger than normal amount of cholesterol was added to both diets for each feeding and the serum levels for those on the control rose steadily to an abnormal high at the end of the tests. Those on the sardine ration enjoyed a steady low and more normal level.

The animals used attained an age equivalent of 50-55 years in humans by the 55th week and the tests indicated that their bodies were less able to adapt to the added cholesterol as they got older.

The tests were hailed as an important research development in the field of nutrition and may boost the consumption of Maine sardines once the results are generally known.



Michigan

SMELT DIP-NET FISHING SEASON PROSPECTS POOR:

Prospects were not encouraging for Michigan's dip-net smelt season which was due to begin in mid-April in tributary streams of the Great Lakes. Winter's generally below-par snowfall points to low water levels which were expected to cut down spawning runs of smelt.



Dip-net fishing for smelt in Great Lakes.

The Great Lakes commercial catch, a good barometer of spring catches in streams, was up from 1960 during the first months of this year. However, last year's commercial take was down nearly 50 percent from the year before. During spring runs, smelt fishermen on tributary streams usually approach the annual catch of commercial fishermen in the Great Lakes.

Major upstream migrations of smelt were expected to start about April 10 and hit their peak about April 20. Exact timing of runs may vary considerably from stream to stream or even with the same stream, depending upon water temperatures. Smelt begin their upstream journeys when water temperatures rise to about 40°F.

Heaviest runs normally occur in streams which flow into the northern third of Lake Michigan, including the Green Bay region. Streams and cuts that drain into Saginaw Bay generally yield good returns. The smelt catch has picked up somewhat during recent years in Lake Michigan tributaries along the southwestern part of the State and in streams of the northeastern Thumb area.

Hand nets not more than five feet in circumference may be used to dip smelt from March 1 to May 31 in waters designated by the Michigan Conservation Department.



National Fisheries Institute

16th ANNUAL CONVENTION:

Representatives of the United States commercial fishery industry, meeting at the 16th Annual Convention of the National Fisheries Institute (NFI), at Washington, D. C., April 14-18, learned that domestic consumption of edible fishery products will climb to nearly 6 billion pounds (round weight) a year by 1975. According to U. S. Bureau of Commercial Fisheries estimates, this will be an increase of about 1.5 billion pounds over the 1960 fishery products consumption.

Nearly 800 delegates from the commercial fisheries and allied industries attending the 4-day convention heard addresses by NFI officers, Government officials, and nutritional specialists. Among the principal speakers who addressed the convention were Secretary of Interior Stewart L. Udall, As-

sistant of Interior for Fish and Wildlife Frank P. Briggs, and Dr. Frederick J. Stare, Chairman of Harvard University's Department of Nutrition. The theme of one of the General Sessions was "New Frontiers in Food Service." Another General Session consisted of two panel hours: "New Product Opportunities Build on Research" and "Implementing Industry Voluntary Operating Practices." Also, on the agenda were meetings covering food services in restaurants and other dining-out places, outdoor cookery of seafoods, advances in technological research, and handling and distribution of frozen fishery products.



Fig. 1 - At the fishery cook-out demonstration during the National Fisheries Institute Convention on the hotel terrace: Congresswoman Gracie Pfof, Idaho; Congresswoman Iris Faircloth Blicht, Georgia; Mrs. Rose Kerr, Chief of the Home Economics Unit, U. S. Bureau of Commercial Fisheries.

During the convention, a number of other fishery associations had meetings: The National Shrimp Congress; American Seafood Distributors Association; Shrimp Association of the Americas; National Shrimp Breeders Association; as well as the Fish 'N Seafood Promotions Division of NFI and Fish 'N Seafood Parade.

The Fishery Market News Service of the U. S. Bureau of Commercial Fisheries established a temporary office at the convention hotel where information on landings, receipts, prices, and market data on fishery products was received by teletype from the Market News Service field offices, and made available to those attending the convention.

Make America More Conscious of the Value of Fishery Products: The theme of Secretary of Interior Udall's address was

that "no industry can consider itself an isolated or solitary unit. Each industry affects and is affected by industries in other countries, and that the major task ahead is fitting the American fishing industry into world economics." The Secretary told his audience that one way to improve the standing of the fishing industry in this country and put it in a stronger position in the international field would be to make America more conscious of the value of our product--not only in terms of advertising, but in terms of research. This research, he declared, should put the industry in a more competitive position by increasing the variety of the products and by improving techniques in their preparation and marketing. The Secretary conceded that "there may be times when the industry feels that the Nation does not appreciate its problems or its efforts... . But I want to impress this point upon you. This Administration is deeply concerned over the problems of the fishing industry and is trying to render maximum service. America has many problems of its own--internal and external. It cannot solve one set of problems without first studying the possible effect on others. America itself is adjusting to fit into the world economy," he declared.

Harvesting Crops from the Sea a Conservation Challenge: In his address, Frank P. Briggs, Assistant Secretary for Fish and Wildlife of the Interior Department, stated that he believed the task of harvesting the crops from the seven seas as one of the greatest conservation challenges of all times. The big conservation challenge for the ocean conservationists, he added, is an interlocking problem of fishery biological and technological research, exploratory fishing and gear research, and market research and market development. In part, Assistant Secretary Briggs stated:

"...The goal, it appears to me, is to learn all we can about the fishes of the sea and the various natural phenomena which affect them in order that we may have the maximum sustained yield from the sea to give the people of the world the food they need. Second to this, but of top importance, is the orderly harvest of those resources so that each nation will get its fair share of the resources.

"This puts conservation on an international footing far greater than at any other time in history... ."



Fig. 2 - Frank P. Briggs, Assistant Secretary for Fish and Wildlife, U. S. Department of the Interior, addressing the Sixteenth Annual Convention of the National Fisheries Institute in Washington, D. C., April 15.

The Assistant Secretary then pointed out that the conservation movement is to accomplish three things--(1) assure the world the highest sustained yield of our ocean food resources; (2) arrange for orderly harvest and utilization thereof; and (3) finally, see that the American fishing industry gets a fair share of this harvest and the benefits thereof.

Fishing Industry Must Meet Challenge to Supply Food from the Sea: T. D. McGinnis, President of the National Fisheries Institute, declared on April 10 in opening the convention: "The nation's fisheries must be ready to meet the challenge set forth in President Kennedy's recent plea for appropriations of \$97.5 million to study means of feeding future populations with foods from the sea." McGinnis cited President Kennedy's letter of March 29th to Vice President Johnson, in which the President noted:

"The seas offer a wealth of nutritional resources. They already are a principal source

of protein... Within two decades our own nation will require over 1,000,000 more tons of seafood than we now harvest."



Fig. 3 - National Fisheries Institute election at the Convention, April 18, Washington, D. C. left to right: Louis Vitale, Los Angeles Smoking and Curing Co., newly-elected treasurer; T. H. Shepard, Jr., Schulman-Shepard, New Orleans, new secretary; T. D. McGinnis, Virginia Seafoods, Irvington, retiring president, who becomes chairman of the board; Harvey Bundy, Jr., Gorton's of Gloucester, new president; Charles E. Jackson, general manager of N.F.I., Washington, D. C.

America's fishing industry, McGinnis said, "is meeting the challenge right now by developing quality standards, conserving our resources, and designing boats and fishing equipment that will catch fish from ocean depths as yet unfished."

Producing Fish at a Price Competitive With Foreign Products is Principal Fish Industry Problem: The principal problem facing the United States commercial fishing industry is to produce fish at a price competitive with foreign products, Donald L. McKernan, Director of the U. S. Bureau of Commercial Fisheries, told the convention. He said that research directed at learning more about fish resources offers the surest hope of meeting foreign price competition. In addition, he said, product research designed to provide a greater quantity, quality, and variety of fish is required if fish dishes are to compete with other products for the American dinner table. He also emphasized that in addition to this research effort, the Government must also work closely with private industry to develop broader markets for fish.

McKernan said he has confidence in the future of the fish industry because of such recent important developments as: (1) Increased interest throughout the world in fish product research. (2) Increased world-wide awareness of the need to make available high protein fish products to people in many na-

tions now suffering from low-protein intake. (3) A growing awareness in fishing industries throughout the world of the need to develop more economical means of catching, processing, preparing, packaging, and distributing fish products.

Fish in the Diet Four Times a Week Recommended: "Two-thirds of the males in this audience and on this dais will die of arteriosclerosis," Dr. Frederick J. Stare, Chairman of Harvard University's Department of Nutrition, told the members of the fishing industry attending the convention.

Dr. Stare, who is Chairman of the Heart Institute, told his audience of the causes of arteriosclerosis, including cholesterol in the blood, obesity, heredity, and high blood pressure. He then emphasized the fact that fish and seafoods included in the diet will prevent many of these causes.

"We recommend that fish be included in the diet four times a week," he said, and then went on to tell why. "Seafoods fulfill the modern conception of good nutrition. They are high in the protein that contains the important amino acids, high in mineral content, low in fats--and those fats that fish do have are of the polyunsaturated type."

He went on to explain that saturated fats are the most suspect in causing cholesterol in the blood, which in turn causes atherosclerosis, the form of arteriosclerosis responsible for strokes and heart disease. By eating foods containing polyunsaturated fats, the chance of building too much cholesterol in the body is cut down.

Dr. Stare also stressed the desirability of keeping weight down. "One third of the nation's population," he said, "consumes too many food calories a day." Most seafoods are low in calories--another reason for including fish and shellfish in the diet often.

He urged that the fishing industry promote its products so that Americans will know why they should eat more fish. He also urged that private individuals, industries, and associations appropriate funds for research and help doctors, scientists, and technologists in their search for ways to cut down the incidence of heart disease and hardening of the arteries.

"New Frontiers in Food Service" Panel Discussion: "New Frontiers in Food Service"

was the theme of a panel discussion at a general session of the convention

A panel of five guest speakers were introduced by the chairman of the Institutional Food Day Committee. The opening speaker, president of a food service company in Philadelphia, spoke on "Catering and In-Plant Feeding." He was followed by the president of a vending company of Washington, D. C., who spoke on "Vending and In-Plant Feeding." The "School Lunch Program" was covered by a speaker from the U. S. Department of Agriculture; the Director of Food Service for the University of Maryland spoke on "College and University Food Services." The final speaker was a dietetic specialist for the Veterans Administration Hospitals, who discussed "Veterans Administration Hospitals."

After each 5-minute speech the meeting was open first to questions from a "discussion panel" of ten fishing industry members, and then to questions from the floor.

The president of the Philadelphia food service company pointed out that, "No industry has made such conspicuous progress" in developing fish products for the institutional market. He reminded the audience that the future offers tremendous opportunities for new labor-saving foods. He recommended more standardization and more precise specifications of products to encourage their use in the quantity-food service field.

All the speakers stressed the importance of learning more about the needs and problems of the specific markets they were interested in selling to. The president of the Washington, D. C., vending company reminded the audience that vending is still in the pioneering stage and the fishing industry can participate in its development. The Agriculture Department speaker recommended that the State School Lunch Directors could offer expert advice and suggestions for those N.F.I. members interested in supplying fish for the 13½ million school lunches served every day. Finally, creativity and imagination were stressed as important factors in encouraging customers in all types of quantity-feeding operations to order and eat more fish products.

Shrimp Continues to be the Favorite Shellfish in U. S.: Shrimp continues to be America's favorite shellfish dish in 1960, according to the President of the Shrimp Association of the Americas. Reporting to the Asso-

ciation's Board of Directors' meeting in conjunction with the 16th Annual Convention of the National Fisheries Institute, he noted that the American people consumed more than 260 million pounds of shrimp (heads-off) last year, with nearly 60 percent of the total representing domestic consumption.

The Shrimp Association President said that one of the most important recent trends in the group's industry was the growing market for peeled and deveined shrimp. He predicted that the Association and the shrimp industry would have to support an aggressive publicity-promotion effort in the years ahead if the shrimp industry is to remain the Nation's most valuable fishery.

Resolutions Adopted by Convention: The following resolutions were adopted by the convention:

- 1 - Resolved that the National Fisheries Institute reaffirm its vigorous support of the exemption from ICC regulation of motor vehicles transporting fresh and frozen fishery products in interstate and foreign commerce, and otherwise preserve the flexible distribution system which is vital to the continued expansion of the fishing industry.
- 2 - Resolved that the National Fisheries Institute, in annual convention assembled, in Washington, D. C., April 18, 1961, petition the President and the Congress that adequate funds be made available to the Department of the Interior for the undertaking and pursuit of comprehensive time-temperature tolerance studies on frozen fish and shellfish during the coming fiscal year.
- 3 - Resolved that the Fish and Wildlife Service be requested to consider the feasibility of going one step further than exploration of new fishery resources and seek ways to solve technological and practical problems involved as an aid to industry.
- 4 - Whereas action has been taken recently, and in the past, by the Executive Branch of the Federal Government which has been injurious to segments of the fishing industry of the United States; and whereas such action has been taken without consulting the fishing industry and its representatives in Congress; now, therefore, be it resolved that the National Fisheries Institute, on behalf of the fishing industry of the United States, register protest against such

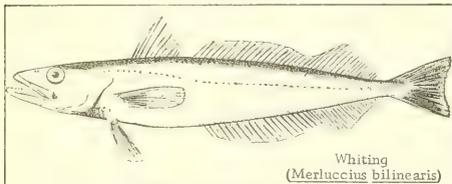
action by the Federal Government and request that in the future an opportunity for a hearing be provided before action is taken.



North Atlantic Fishery Investigations

VERTICAL MOVEMENTS OF WHITING STUDIED:

M/V "Delaware" Cruise 61-4 (March 17-27, 1961): A survey of the vertical movements of whiting (*Merluccius bilinearis*) conducted on the fishing grounds off the Middle Atlantic Coast by the U. S. Bureau of Commercial Fisheries research vessel Delaware, indicated that the whiting remained on or



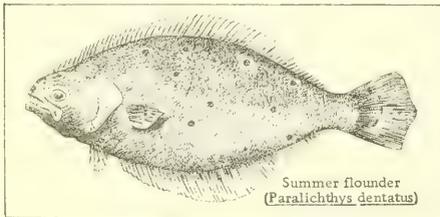
Whiting
(*Merluccius bilinearis*)

near the bottom both day and night. Large quantities of whiting were taken with the otter trawl during daylight bottom fishing. However, only a few whiting were caught during night fishing in mid-water depths. During the cruise, hydrographic data were collected throughout the area under study.

* * * * *

FLUKE TAGGED OFF MIDDLE ATLANTIC COAST:

M/V "Delaware" Cruise 61-5 (March 30-April 7, 1961): About 1,800 fluke or summer flounder (*Paralichthys dentatus*) were tagged on the Middle Atlantic fishing grounds by the U. S. Bureau of Commercial Fisheries research vessel Delaware. The fluke is the most important flatfish species



Summer flounder
(*Paralichthys dentatus*)

in the commercial fisheries of the Middle Atlantic area.

In addition to tagging operations, data were collected on various phases of the life history of this species. The survey will aid the biologists to determine the seasonal movements, growth rates, and population units of the fluke found off southern Massachusetts and New York.



North Pacific Exploratory Fishery Program

PELAGIC TRAWL-GEAR DEVELOPMENT:

M/V John N. Cobb Cruise 49: Initial underwater observations made by a U. S. Bureau of Commercial Fisheries staff member, with the assistance of master divers from the U. S. Naval Torpedo Station at Keyport, Wash., indicated a need for extensive modifications to the net design, during an 8-week pelagic trawl-gear development cruise completed April 6, 1961 by the Bureau's exploratory fishing vessel John N. Cobb. Tests and trials were made in the vicinity of the San Juan Islands, Georgia Straits, and off Cape Flattery.

Observations conducted after modifications were performed revealed that desired improvements in the net's performance had



Hauling in the midwater trawl net aboard the John N. Cobb.

been attained. All of the approximately one million meshes in the net were observed to be fully opened forming mesh configurations varying between 60-degree "diamonds" and 90-degree squares.

A maximum towing speed of 2.9 knots created an expansion force sufficient to cause the net to assume a near circular cross section. Webbing seams throughout the net followed straight lines of configuration indicating equalization of strain. Underwater photographs taken during the cruise depict the gear's performance.

A horizontal opening of 80 feet and a vertical opening of 90 feet was achieved using newly-designed hydrofoil doors measuring approximately 5 feet by 8 feet in conjunction with patented "phantom" trawl otter boards. Many adjustments and trials were made with the unique four-door hook-up before the maximum net opening was achieved.

Offshore fishing trials with the new gear rigged to tow with the float line on the surface were limited to eight drags, which gave indications of the net's ability to catch many varieties of fish. Small catches of salmon, ranging in size from fingerling up to 8 pounds, were made repeatedly. One drag produced 11 king salmon (*Oncorhynchus tshawytscha*). Other fish taken by the net include: silver salmon (*Oncorhynchus kisutch*), surf smelt (*Hypomesus pretiosus*), anchovies (*Engraulis mordax*), herring (*Clupea pallasii*), sand sole (*Psetichthys melanostictus*), English sole (*Parophrys vetulus*), starry flounder (*Platichthys stellatus*), pompano (*Peprilus similimus*), ling cod (*Ophiodon elongatus*), capelin (*Mallotus catervarius*), electric ray (*Tetranarce californica*), tom cod (*Microgadus proximus*), dogfish (*Squalus acanthias*), true cod (*Gadus macrocephalus*), hake (*Merluccius productus*), rattfish (*Hydrolagus colliei*), shrimp (*Pandalus jordani*), rex sole (*Glyptocephalus zachirus*), whiting (*Theragra chalcogramma*), butter sole (*Isopsetta isolepis*), squid, and two varieties of rockfish (*Sebastes flavidus* and *Sebastes entomelas*).

Mid-depth and additional surface trials are to be conducted during July and August.

* * * * *

BOTTOM FISH TRAWLING EXPLORATION OFF OREGON COAST:

M/V "John N. Cobb" Cruise 50: An 8-week exploratory trawling cruise for bottom fish

in cooperation with the Oregon Fish Commission was scheduled for the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb from April 24-June 16, 1961. The area of operations was offshore from Newport to Coos Bay, Oreg.

Purposes of the cruise were to locate new trawling grounds and to evaluate the commercial potential of bottom fish inhabiting such grounds. Biologists from the Oregon Fish Commission planned to tag flounders and rockfish to study their rates of growth and migratory habits.

Sonic equipment was used to survey the bottom and a standard otter trawl net was to be towed over grounds indicated by the sonic gear as being trawlable. Catches made by the net were to be examined to assess the commercial fishing potential of the region.

Oceanography

CALIFORNIA INSTITUTION RECEIVES GRANT FOR MARINE RESEARCH VESSEL:

A \$462,945 grant to Stanford University of California, awarded by the National Science Foundation (NSF), will enable Stanford's Hopkins Marine Station to convert a two-masted schooner long owned by philanthropist George Vanderbilt to a modern sea-going marine research vessel that will be the largest sailing ship in the world used for scientific purposes.



The grant provides for converting and outfitting the steel-hulled, 172-foot vessel, as well as for maintenance and operation during a subsequent three-months shake-down cruise. When this is accomplished, the vessel, named the Pioneer and currently the largest private sailing vessel under Unites States registry, will be used on a year-round schedule of research and graduate student training. While the vessel will then be capable of operations almost anywhere in the world, it is anticipated that the major effort will be directed toward investigations in the northeastern Pacific Ocean.

The Pioneer was offered by the former owner as an outright gift to Stanford University, provided that support became available from other sources for its conversion and operation as a facility for research and graduate training in biological oceanography. The National Science Foundation has provided this support in the form of the announced grant, and it is anticipated that further support will facilitate operation and maintenance in the future.

With the acquisition and operation of the Pioneer, the Hopkins Marine Station, located at Pacific Grove, Calif., will be taking its first excursion into open-ocean biological oceanography. Owned and operated by Stanford University and an integral part of the University's Department of Biological Sciences, Hopkins was established in 1892, making it the oldest marine station on the West Coast and the third oldest in the country, yielding in age only to Woods Hole (1888) and Cold Spring Harbor (1890). It has retained its traditional emphasis on marine biology rather than on physical or chemical oceanography.

The Pioneer will be used on a continuing schedule for research and graduate training, with functions analogous to those of a biological field station. Its participants, however, will be free from narrow geographical limitations, able to work in various climatic areas, and be afforded a much needed opportunity for experience on the high seas. Although the major effort of the ship's operation will be in the northeast Pacific, the surveying of poorly known portions of the world's oceans is also contemplated. The working time of each year will be divided into four terms of about ten weeks each, roughly corresponding to academic quarters. This will leave several weeks between terms and allow at least a month for an annual overhaul during September. Most of each term will be spent at sea.

The Pioneer will be staffed originally by 3 senior scientists (faculty members) and 12 junior scientists (graduate students) recruited from universities and scientific institutions throughout the United States.

On leaving port at the beginning of each term, the vessel will embark on a basic plan of surveying a section of the ocean. Biological specimens will be collected at all depths and physical and chemical characteristics of the water will be investigated at all

stations. Data and collections gathered will be available to any qualified scientists wishing to study them.

Under the direction of the senior scientists, the junior scientists will assist in handling the many diverse types of gear, keeping the biological log, sorting and cataloguing biological collections, making physical observations and chemical determinations, and preparing data in an attempt to correlate results of their investigations. Field and laboratory work will be supplemented by a series of daily lectures and each student will be required to submit a final report on his activities during the term.

The number of oceanographic problems open to attack from a vessel such as the converted Pioneer are limited only by the imagination and ingenuity of the scientific staff. They include such things as studies of oceanic food chains, niche specialization, and competition among pelagic organisms; studies of the biological economy of the deep-sea benthos and of the functional anatomy of oceanic forms, and investigations of the reproduction and development of deep-sea animals.

The entire scientific program aboard the Pioneer will be under the supervision of the Chief Scientist who is Assistant Director of the Hopkins Marine Station, Professor of Biology at Stanford University, and principal investigator of NSF's grant to Stanford. He will be charged with the conversion and equipping of the vessel and with the development of the program, including selection of faculty members and students.

The Pioneer has a 28-foot beam and a draft of 16 feet. She was built in 1927 at a cost of \$1.4 million. In 1938, she changed ownership, was renamed the Pioneer and was used to collect marine biological specimens for various museums. During World War II, she was used as a training ship by the U. S. Navy. Exploratory work in the Pacific accounted for most of her postwar Activity. Since 1951, the Pioneer has been "laid up" afloat at Newport Beach, Calif., but maintained in excellent condition.

While the vessel has in the past been used for biological investigations, these have not been of as extensive and intensive a character as now contemplated. With the aid of an earlier NSF grant, the Pioneer

was the subject of a preliminary feasibility study when it was found that with certain alterations and installation of the necessary specialized equipment, the vessel would be suited for use as a floating laboratory.

Notable additions and conversions will include dry and wet laboratories on the weather deck, an A-frame for trawling, and three oceanographic winches. Electrical, radio, sonar, radar, loran, and depth-recording equipment will also be installed. Main deck modifications will be aimed at consolidating and maximizing the living quarters space and arranging convenient storage space for scientific gear. All machinery will require complete overhauling and one of the present 60-kilowatt Diesel generators will have to be replaced by a 75-kilowatt unit.

In addition, hydrographic, scientific, diving, photographic, and general equipment and supplies will be installed, making the vessel a completely operational biological laboratory ready for her shakedown cruise approximately six months after the onset of conversion activity.

The Pioneer's main engine is a 400 brake horsepower Diesel. She is equipped with a gyro compass, a 500-gallon-per-day freshwater evaporator, a 7½-ton air conditioning system, and a 7½-ton refrigeration plant. With a capacity of 6,000 gallons of fuel oil, 250 gallons of lubricating fuel, 12,500 gallons of fresh water, and existing accommodations for 34 persons, she has a range of approximately 4,000 miles and a speed of 7-8 knots.

* * * * *

COMMERCE DEPARTMENT ANNOUNCES FIRST OCEAN-WIDE SURVEY:

An entirely new approach to deep-sea oceanography will be tested this year when the Coast and Geodetic Survey ship Pioneer sails from San Francisco to its working area in the North Pacific Ocean, the Secretary of Commerce announced April 9, 1961.

The 311-foot Pioneer was expected to get under way early in April and begin a systematic study of 3 million square miles of ocean between the Hawaiian Islands and the Aleutian Islands. This marks the first serious attempt by the Government to study wide ocean areas with systematic, closely-spaced observations encompassing nearly all aspects of oceanography.

The President recently asked Congress for additional funds to spend on a national oceanography program, in order that more comprehensive surveys, such as this one, may be undertaken. The Coast and Geodetic Survey will provide the necessary leadership to implement the Department of Commerce phase of the oceanographic program. The pilot project

will be followed by more comprehensive programs as facilities and personnel are expanded to meet developing requirements.

Operating out of Alaska and Hawaii, the Pioneer will navigate along a series of north-south lines spaced 10 miles apart across an area about 300 miles wide and 2,000 miles long. The first line is planned to follow a course 10 miles east of the 158th meridian, commencing at a point just south of the Alaska peninsula and extending southward to the Island of Oahu, Hawaii. Subsequent lines will move eastward during the 1961 season.

The project ultimately will extend from the Hawaiian Archipelago to the Aleutian Islands and from the 153rd meridian westward to the 180th meridian. Ocean surveys of this magnitude have never been attempted before. In the past, oceanographic expeditions have been limited to relatively isolated reconnaissance lines or have concentrated on one particular phase of oceanography related to a specific research problem.

A systematic survey of the oceans is possible today with the development of modern techniques, equipment, and data processing. The Pioneer will be fitted with Loran C positioning equipment for control purposes. Anticipated range of this system is 1,500 nautical miles for ground waves and 3,000 nautical miles for sky waves. Accuracy of position is reported to be 1,000 feet at 1,000 miles using ground waves. Loran C Stations in the Hawaiian Islands are not yet operational. Work during the first part of the season will be limited to that area effectively covered by the Aleutian Loran C control system.



The 311-foot Pioneer is one of the largest ships in the Coast and Geodetic Survey fleet.

The first phase of the survey will include a continuous profile of the ocean bottom obtained with a precision depth recorder, a continuous profile of the total magnetic field made by a towed Varion Proton Magnetometer, regular gravity observations by a La Coste-Romberg gravity meter, regular meteorological balloon releases, and a sea-water temperature observation every two hours. Aboard the Pioneer during this phase will be geophysicists from the U. S. Geological Survey and the Coast and Geodetic Survey, a meteorologist from the U. S. Weather Bureau, oceanographers from the Coast and Geodetic Survey, and if present plans materialize, student oceanographers from one or more universities. This is in addition to the 90-man crew of the Pioneer, including 21 commissioned officers of the Coast and Geodetic Survey.

Additional observations at predetermined locations will be made during the second phase beginning in September. At these locations bottle casts will be made for temperature, salinity, dissolved oxygen, and such other variables as the cooperating agencies may wish to measure. Sediment cores will be made at each station, and the U. S. Geological Survey will process this sediment data. Plankton tows are planned with the U. S. Bureau of Commercial Fisheries supplying biologists and equipment. Current measurements are planned in the Alaska Boundary Current. These oceanographic observations will be spaced along a course north from the Hawaiian Islands to the Aleutian Trench,

west along the axis of the trench to turn south in the area of Adak, and proceeding past Midway Island to 23 degrees 30 minutes north, thence east to Hawaii.

The Committee on Oceanography of the U. S. National Academy of Sciences-National Research Council proposed this survey approach to oceanography in Chapter 9 of its report, "Oceanography 1960-1970." This report recommends an ocean-wide survey with all maritime nations cooperating. If the job is ever to be completed, it must obviously be an international effort of formidable proportions. The Coast and Geodetic Survey in the Pioneer surveys is undertaking a trial run to see how much one ship can accomplish, to see what observations should be undertaken, and to see if the results justify the effort.



Oregon

OVER 11 MILLION SALMON RELEASED IN STATE'S WATERS:

The release of over 11 million yearling salmon from Oregon Fish Commission hatcheries early this year has given the State's fish population a hearty boost, according to the Director of Fish Culture for the Commission. The young salmon were started on a "wet" ration utilizing a pasteurized fishery byproduct. After about two months, they were placed on the recently-developed Oregon moist pellet, a nutritionally-complete ration developed in cooperation with Oregon State University scientists. The yearling fish were in prime physical condition at the time of release, the Fish Commission Director stated.

Being held at Fish Commission hatcheries for later release in Columbia River tributaries are 81,000 steelhead yearlings.



Oysters

CELL STRUCTURE OF PACIFIC OYSTERS TO BE STUDIED:

What happens to the cell tissue of sick oysters will be studied by scientists of the University of Washington College of Fisheries under an initial \$10,000 research grant from the U. S. Fish and Wildlife Service.

This will be the first systematic study ever undertaken of alterations in the cell structure of oysters under various environmental conditions created by controlled laboratory experiments, according to the principal investigator at the College of Fisheries.

Results of the research are expected to lead to more productive oyster cultivation in the Pacific Northwest by providing a better understanding of abnormal changes that occur in oyster tissue under varying conditions.

The oyster pathology study will be conducted through the Fisheries Research Institute, the research arm of the College of Fisheries. The grant covers the first year of a proposed three-year program.

In the research, oysters of several species will be subjected to a series of experiments involving changes in environment, such as the effects of varying salt and oxygen concentrations in water, extremes of water temperature, chemical irritants in the water, physical injuries to the oysters, and diseased tissue.

Cell changes caused by these variations will be studied at various stages through post-mortem examinations.

When it is possible to recognize the relationship between abnormal cell conditions and specific abnormalities in environment, it will be possible to diagnose the causes of oyster mortality more precisely, the investigator explained.

Although the University of Washington has received many contracts for specific research projects from the U. S. Fish and Wildlife Service, this is the first grant the Service has ever awarded to any institution in support of an investigation in a general field of research.

The University's College of Fisheries principal investigator, an authority on oysters and other invertebrates, also is conducting significant studies on shellfish mortality and environment under grants from the National Institutes of Health and Initiative 171 funds.

In the new project, he will be assisted by a graduate student in the College of Fisheries and a laboratory technician.



Salmon

KING SALMON EGGS SENT BY WASHINGTON STATE TO JAPAN HATCH SUCCESSFULLY:

Chinook or king salmon originating from the State of Washington were swimming in Japanese streams this spring when the product of 100,000 chinook salmon eggs sent to Japan in November 1960 by that State were released from salmon hatcheries in Japan.

The Washington Fisheries Director received a letter from the President of the Japan Salmon Resource Conservation Association in Tokyo, saying that the experimental shipment of eggs showed a high degree of success in survivals.

He stated that the eggs arrived by air freight in perfect condition, with virtually no mortalities. The eggs were hatched in three salmon hatcheries and the young have now attained the feeding stage with only a two-percent loss.

The chinook eggs were distributed as follows: Chitose salmon hatchery, Hokkaido, 50,000; Tsugaruishi salmon hatchery, Iwate Prefecture, 25,000; and Otsuchi salmon hatchery, Iwate Prefecture, 25,000.

The shipment of 100,000 eggs was the second lot the Washington Fisheries Department has sent to Japan to aid that country in efforts to create runs of chinook salmon. The first lot was sent in 1959.

* * * * *

TEST FISHING IN COLUMBIA RIVER AIDS MANAGEMENT OF RESOURCE:

How many fish are there in the Columbia River's current spring chinook or king salmon run? When will the peak of the spring run hit any particular part of the river? Oregon Fish Commission and Washington Department of Fisheries biologists are trying to find the answers to these and other questions of major importance in properly managing the Columbia River system's salmon resources.

Currently in operation is a run-sampling gill-netting program now in its third year with an Oregon Fish Commission crew working in the vicinity of Woody Island some 15 miles above Astoria and a Washington Department of Fisheries crew fishing in the Corbett area below Bonneville. No hit-or-miss proposition, the fishing activities and equipment must be so standardized that day-to-day and year-to-year information is

comparable. This net fishing data, as well as other information, will provide a basis for setting commercial gill-netting seasons in keeping with the best interest of the resources.

Fish taken alive from the test fishing net are marked with a plastic dart-type tag and released for subsequent recovery information. Those killed during the operations are placed in cold storage in Astoria for distribution by the Oregon State Board of Control to various state institutions.

Results of the test fishing at Woody Island thus far show a sharp increase in the number of chinook taken between March 15, 1961, when 13 were landed, and April 6 when 67 chinook were taken. Based on previous years tagging observations, this increase in numbers of salmon caught is probably the result of Willamette River spring chinook passing through the lower Columbia River. A later peak in the catch is expected as fish bound for upriver spawning tributaries pass the Woody Island section.

The Oregon Fish Commission's director of research pointed out that spring chinook of the Willamette River stock for the most part pass up the Columbia and into the Willamette before the commercial season opens. He indicated, however, that a considerable fluctuation in fish runs necessitates a continuing program of sampling so that fisheries biologists remain current on any significant changes in anadromous fish populations.



South Carolina

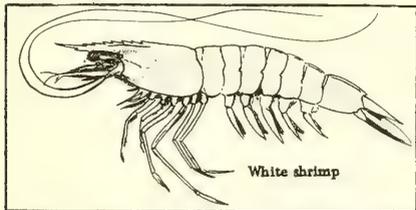
FISHERIES BIOLOGICAL RESEARCH PROGRESS, SEPTEMBER 1960-MARCH 1961:

The following is a report on the progress of biological research by the Bears Bluff Laboratories, Wadmalaw Island, S. C., for September 1960 through March 1961.

Shrimp Research: Experimental trawl data collected during the last quarter of 1960 showed that white shrimp were slightly more abundant than in the same period of 1959. Croakers were much less numerous, but spot were three times more abundant during the 1960 quarter.

On the whole, 1960 was a good year for white shrimp, judging from experimental catch data at Bears Bluff Laboratories. White shrimp had a good spawning in the summer of 1960 and were more abundant in

1960 than during the last several years. Cast net records showed that white shrimp were about 5.5 times more abundant in the October-December quarter of 1960 than for the same period in 1959. Small white shrimp, which will form the bulk of the 1961 spawning stock, were unusually plentiful in inshore waters through December 1960.



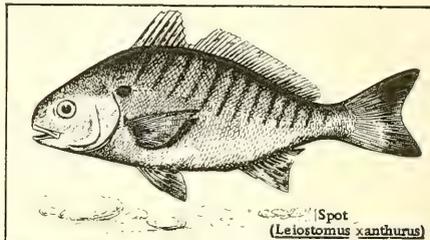
Catch data for fish and shrimp in experimental trawl drags during January-March of 1961 were tabulated for comparison with the same period in 1960. Results showed that spot were slightly more abundant at regular stations during the 1961 quarter, but croakers had decreased by almost five times in that period as compared with 1960. White shrimp, averaging about 60 count, heads on, were quite common through March of 1961, and were slightly more abundant than during the same period in 1960. These shrimp are remnants of last year's crop which survived the winter and will enter the commercial catch this spring. Judging from the numbers of white shrimp this early in the season, 1961 may well prove to be another successful year for this species.

Young menhaden, 3-6 inches in length, were very abundant in experimental drags, particularly in St. Helena Sound and North Edisto River. In those areas, menhaden were approximately 20 times as abundant through March of 1961 as in 1960, and about 10 times more numerous as during that period in 1959.

Plankton tows were continued as a part of the regular shrimp survey program. Experimental plankton tows indicated a scarcity of postlarval brown shrimp this year. These postlarvae were over 10 times more abundant at coastal river and sound stations during January-March of 1960 than in 1961. The situation might improve, however, since the recruitment period for brown shrimp postlarvae extends into May.

Larval and postlarval spot were quite plentiful in inshore plankton tows. The abun-

dance of small spot during the quarter was about equal to, and in certain areas, greater than for the same period in 1960. This would indicate that spot will remain plentiful in coastal waters for the next year or so, providing no great mortalities occur in the meantime. Larval croakers, on the other hand, were scarce, in plankton tows in both 1960 and 1961. Judging from this, plus the fact that croakers have shown a decline in experimental trawl drags, the outlook for this species in 1961 seems rather poor.



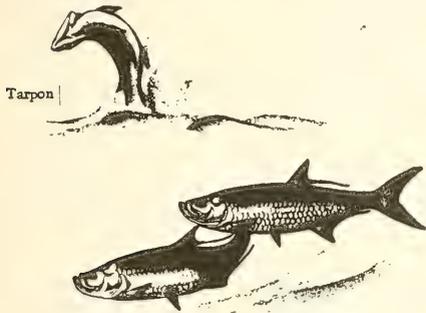
Blue Crab Studies: Regular experimental trawl hauls in September-December 1960 indicated that the relative abundance of crabs in the quarter was about the same as in the same months of 1959.

At the eight stations where regular trawl samples are taken, blue crabs, mature and immature, were more abundant during the first quarter of 1961 than during the first quarter of 1960. Mature crabs were 34 percent more abundant and immature crabs were about 40 percent more abundant. Sponge crabs appeared earlier this year.

Despite this relative increase in abundance the commercial catch, at least for the first two months of 1961, was 450 percent less than for the comparable period last year. This is the direct result of price. Last year the fisherman was getting 7 to 11 cents per pound for his catch; this year 4 to 5 cents.

Pond Cultivation: A commercial-scale shrimp pond located near Dale, S. C., was drained and harvested between October 8 and October 21, 1960. The shrimp harvest was not impressive, being only about 300 pounds, heads-on. The failure of the shrimp crop in the pond, however, can almost certainly be attributed to the tremendous numbers of predaceous fish present. It is estimated that at least 5,000 pounds of large

spot, winter trout, mullet, and other fish were present in the pond at the time of draining. Apparently, the screens on the pond flood gate had broken earlier in the year, allowing larger fish to enter and deplete the stock of small shrimp in the pond.



Of considerable interest was the occurrence of tarpon in the pond. Ten fish were taken in a cast net when the pond was being drained. These averaged 9 inches in length.

A one-tenth acre experimental shrimp pond at Bears Bluff Laboratories was drained on October 26, 1960. This pond was stocked with postlarval white shrimp in late July and August of 1960 and had been treated with tea seed cake on October 3, in an effort to kill any predatory fish which might be present. The success of this treatment was apparent immediately, as many small trout and other fish were observed to be dying soon after the poison was put in the pond. When the pond was harvested almost no fish, with the exception of several small mullet, were found. The shrimp harvest from this small pond was very encouraging as approximately 700 white shrimp from 2 to 6 inches were collected at the time of the draining.

On December 15, a one-acre experimental pond was drained in preparation for its use in shrimp cultivation research in 1961. Approximately 400 small (3-6 inch) winter trout and about 200 channel bass (3-5 inch) were collected alive. This pond had been harvested in September and was screened completely with quarter-inch wire mesh, so the young bass and trout probably entered through the screen as larvae or very young fish. These results lend an encouraging note to the pros-

pect of raising salt-water sport fish in ponds.

Experimental ponds at the Laboratories were made ready for postlarval shrimp stocking during the first quarter of 1961. Two large (one acre) ponds were drained, treated with a commercial fish poison to kill remaining fish, and screened with $\frac{1}{4}$ -inch wire screening. These ponds were allowed to refill and were opened in February to begin natural stocking of postlarval shrimp.

A one-quarter acre pond which had been stocked with flounders in 1960 was drained on March 1, 1961. Only a few of the stocked flounders had survived, but these had grown considerably and were in good condition. When stocked, these fish were from 3 to 8 inches in total length; when harvested, from 11 to 14 inches. This indicates that there is some possibility of rearing flounders in ponds.

On March 28, 1961 a small one-tenth acre pond was drained. This pond had been opened in January 1961 to allow water to enter from the creek on each tide. A large plankton net was placed over the drainage trunk while the pond was draining in order to collect any organisms which had previously entered. Killifish, small spot, mysids, and hardback shrimp were abundant in the collection, but postlarval brown shrimp were few in number. This tends to support the findings of the plankton work, which indicates that postlarval brown shrimp have been scarce in inshore waters to date.

The one-tenth acre pond was then allowed to dry, closed off and refilled by means of a four-inch fish pump (described in Commercial Fisheries Review, vol. 17, no. 2, February 1955), acquired from the U. S. Fish & Wildlife Service. This pump will be used throughout the coming year in experiments on the possibilities of stocking shrimp ponds with postlarvae by means of pumping water into them from the creek near the Laboratory.

Experimental work with tea seed cake, with saponin as the active ingredient, both in aquaria and ponds at Bears Bluff has indicated that this material is an excellent specific poison, killing fish but leaving shrimp unharmed. The supply of tea seed cake given to the Laboratory by the U. S. State Department and by Dr. Yun-an Tang

has been exhausted. Current prices on saponin are such that it would cost \$150 per acre to treat shrimp ponds. Such costs would be prohibitive for commercial growers of shrimp.

Studies were made to determine the feasibility of using rotenone in place of tea seed cake to remove unwanted fish from shrimp ponds. Experiments in Laboratory aquaria indicate that rotenone powder has little, if any, effect on shrimp or shrimp larvae, although it is quite deadly to fish at concentrations of 1 to 3 parts per million. Further research is needed, however, before rotenone is used on a large scale.

King Whiting: Research on king whiting was continued throughout the last quarter of 1960. Data collected on these fish since 1953 have now been tabulated and are being used to supplement the present study. Approximately 1,500 specimens were scientifically processed during 1960 and much valuable information is coming to light regarding the biology of these valuable food and game fishes.

The present investigation indicates that king whiting are much more important off South Carolina both as sports and food fish than is generally supposed, and that these fishes have showed no major decline in numbers during recent years. Information being collected regarding spawning, distribution, and life history in general seems to show that there is no immediate threat of a decrease in numbers of king whiting in South Carolina waters.



Standards

VOLUNTARY QUALITY STANDARDS PROPOSED FOR FROZEN FRIED SCALLOPS:

Public meetings to discuss the recently-developed quality standards for frozen fried scallops were announced by the U. S. Bureau of Commercial Fisheries.

Developed by the Bureau at its technological laboratory in Gloucester, Mass., the standards are another important step in a continuing effort by Government and industry to make fishery products more acceptable to the consumer.



Preparing scallop meats for deep frying in the plant of a leading New Bedford firm.

Similar quality standards have been developed and are in use for fish sticks; fish blocks; salmon and halibut steaks; cod, haddock, and ocean perch fillets; raw breaded fish portions; and raw breaded and raw headless shrimp.

All interested parties were invited to attend public meetings held in April and May 1961, at Chicago, Ill., and New Bedford, Mass.



United States

FISHERY TRENDS FOR 1960 SHOW TUNA AND SHRIMP POPULARITY INCREASED:

Tuna, which six decades ago was a "throw-away" fish, and shrimp, a popular seafood, have an increasing appeal to the United States consumer.



In 1960 the per capita consumption of fishery products in the United States was 10.5 pounds. This approximates the long-time average. Of this total, 2.05 pounds were credited to canned tuna, 1.42 pounds to ocean perch and groundfish fillets (cod, haddock, hake, cusk, and pollock), and 1.19 pounds to shrimp.

Ocean perch and groundfish fillet consumption since 1949 has varied from 1.29 pounds to 1.56 pounds. The use of canned tuna, however, has increased steadily from 0.9 pound in 1949 to the present 2.05

pounds. Consumption of shrimp has increased from 0.71 pound to 1.19 pounds during the same period.

Decreases in the catch of salmon and sardines compared with earlier years is reflected in decreased consumption of those products in recent years.

The total domestic catch was placed at 4.93 billion pounds valued at \$347 million ex-vessel. The tuna catch was 296.9 million pounds with a value of \$37 million and the shrimp (heads-on) harvest was 249 million pounds worth \$66.9 million. The industrial fish--menhaden--accounted for nearly 2 billion pounds of the 1960 catch.

The value of the catch to the processor was \$599 million; to the wholesaler, \$827 million; and to the retailer, \$1,078 million. The retail value for the 1959 catch was \$1,075 million, despite the fact that the 1959 catch was somewhat higher than that of 1960.



United States Fishing Fleet^{1/} Additions

MARCH 1961:

A total of 41 vessels of 5 net tons and over were issued first documents as fishing

Table 1 - U. S. Vessels Issued First Documents As Fishing Craft By Areas, March 1961

Area	March		Jan.-Mar.		Total 1960
	1961	1960	1961	1960	
	(Number)				
New England	2	1	9	3	34
Middle Atlantic	1	1	1	5	13
Chesapeake	8	-	12	9	76
South Atlantic	8	4	11	14	45
Gulf	6	6	24	13	85
Pacific	14	10	23	19	138
Great Lakes	2	2	3	3	17
Puerto Rico	-	-	2	-	-
Total	41	24	85	66	408

Note: Vessels assigned to the various areas on the basis of their home ports.

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft By Tonnage, March 1961

Net Tons	Number
5 to 9	20
10 to 19	13
20 to 29	1
30 to 39	1
40 to 49	4
90 to 99	1
130 to 139	1
Total	41

craft during March 1961--an increase of 17 vessels as compared with March 1960. The Pacific area led with 14 vessels, followed by the Chesapeake and South Atlantic with 8 vessels each. The Gulf, New England,

^{1/}Includes both commercial and sport fishing craft.

Great Lakes, and Middle Atlantic areas accounted for the remaining 11 vessels.

During the first three months of 1961, a total of 85 vessels were issued first documents as fishing craft--an increase of 19 vessels compared with the same period of 1960.



U. S. Fish Meal and Solubles Production and Imports, January-February 1961

During the first two months of 1961, the United States production of fish meal amounted to 4,800 tons, compared with 4,900 tons for the same period in 1960. There was a drop of nearly 400 tons in tuna and mackerel meal, but menhaden and other fish meal were up slightly as compared with the same period the previous year.



Imports of fish meal totaled 23,900 tons for the 2-months period in 1961--7,200 tons more than in the same period of 1960. Im-

U. S. Supply of Fish Meal and Solubles, January-February 1960-61 and Total for 1960

Item	January-February		Total 1960
	1961	1960	
	(Tons)		
Fish Meal:			
Domestic production:			
Menhaden	531	440	218,423
Tuna and mackerel	2,880	3,263	26,325
Herring, Alaska	-	-	6,071
Other	1,383	1,212	38,897
Total domestic production	1/4,794	1/4,915	289,716
Imports:			
Canada	3,898	6,211	30,982
Peru	17,334	6,092	68,156
Chile	1,061	2,768	21,183
Angola	-	-	888
Union of South Africa	1,486	1,511	7,073
Other countries	96	70	3,279
Total imports	23,875	16,652	131,561
Available fish meal supply	28,669	21,567	421,277
Fish Solubles (wet weight):			
Domestic production ^{2/}	2,631	3,509	98,929
Imports:			
Canada	194	186	869
Denmark	-	1,858	1,858
Other countries	180	45	447
Total imports	374	2,089	3,174
Available fish solubles supply	3,005	5,598	102,103

^{1/}Based on reports from firms which accounted for 92 percent of the 1960 total production.
^{2/}Includes production of homogenized-condensed fish.

ports from Peru (17,300 tons) during that period comprised about 75 percent of the total, and were nearly 3 times greater than imports from that country in the 2-months period of 1960. Canada followed with the next largest amount (3,900 tons) but the quantity was down to less than one-half that of the comparable period in 1960. The tie-up of the British Columbia fleet (because of a disagreement on the ex-vessel price offering) was responsible for the lower imports from Canada. The remaining 2,600 tons were from Chile, Union of South Africa, and a very small quantity from other countries.

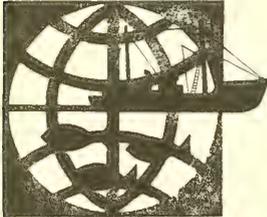
During the first two months of 1961, the domestic production of fish solubles amounted to 2,600 tons--a drop of 900 tons as compared with the same period in 1960. Imports of fish solubles in the 2 months period of 1961 totaled only 400 tons as compared with 2,100 tons for the comparable period in 1960. The very low prices which have prevailed for some time on fish solubles are responsible for the drop in domestic production and imports. Many industrial products produced in the United States and in foreign countries are adding the solubles to the meal to increase its protein content.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, FEBRUARY 1961:

Imports of edible fresh, frozen and processed fish and shellfish into the United States during February 1961 decreased by 2.8 percent in quantity and 2.2 percent in value as compared with January 1961. The decrease was due primarily to lower imports



of groundfish fillets (down 4.8 million pounds) and frozen shrimp (down 3.4 million pounds). The decrease was partly offset by a 4.7-million-pound increase in the imports of frozen tuna other than albacore and frozen fillets other than groundfish fillets (up 2.4 million pounds).

Compared with February 1960, the imports in February this year were up by 31.7

percent in quantity and 30.7 percent in value due to higher imports of frozen albacore and other tuna (up 9.7 million pounds), groundfish fillets (up 3.5 million pounds), and canned tuna in brine (up 2.1 million pounds). Compensating, in part, for the increases was a drop of about 4.0 million pounds in the imports of fillets other than groundfish and canned salmon (down 2.6 million pounds).

U. S. Imports and Exports of Edible Fishery Products, February 1961 with Comparisons					
Item	Quantity			Value	
	1961	1960	1960	1961	1960
	(Millions of Lbs.)			(Millions of \$)	
Imports:					
Fish & shellfish: Fresh, frozen, & processed 1/ . . .	82.8	62.8	1,011.2	26.8	20.5
Exports:					
Fish & shellfish: Processed only 1/ (excluding fresh & frozen) . . .	4.4	5.3	48.7	1.9	1.3
1/Includes pastes, sauces, clam chowder and juice, and other specialties.					

United States exports of processed fish and shellfish in February 1961 rose 75.5 percent in quantity and 72.7 percent in value as compared with January 1961. Compared with the same month in 1960, the exports this February were lower by 16.2 percent in quantity, but were up 46.2 percent in value. The lower quantity of exports in February this year as compared with the same month in 1960 was due to lower exports of California sardines and squid. The higher value of the exports in February 1961 was due to increased exports of relatively high-priced canned salmon and shrimp, and frozen shrimp.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

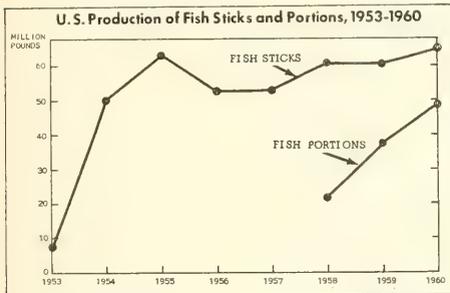
The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1961 at the 12½-percent rate of duty is 57,114,714 pounds. Any imports in excess of the quota are dutiable at 25 percent ad valorem.

Imports from January 1-April 1, 1961, amounted to 11,822,619 pounds, according to data compiled by the Bureau of Customs. Imports in 1960 for the period January 1-April 2 amounted to 8,581,279 pounds.



U. S. Production of Fish Sticks and Portions, January-March 1961

United States production of fish sticks during the first quarter of 1961 amounted to 20.3 million pounds and the production of fish portions totaled 14.9 million pounds. This was a gain of 427,000 pounds (2 percent) in fish sticks and 3.3 million pounds (28 percent) in fish portions as compared with the same quarter of the previous year.



Cooked fish sticks (19.1 million pounds) comprised 94 percent of the total fish stick production, while the remaining 1.2 million pounds (6 percent) consisted of raw fish sticks. A total of 14.4 million pounds of breaded fish portions (of which 11.7 million pounds were raw) and 0.5 million pounds of unbreaded portions were processed during the first quarter of 1961.

Table 1 - U. S. Production of Fish Sticks by Months and Type, January-March 1961 1/

Month	Breaded		Total
	Cooked	Raw	
	(1,000 Lbs.)		
January	5,730	336	6,066
February	6,718	341	7,059
March	6,671	507	7,178
Total 1st quarter 1961	19,119	1,184	20,303
Total 1st quarter 1960	18,616	1,260	19,876

1/Preliminary data.

Month	Production of Fish Sticks, 1957-1961				
	1961 1/	1960 2/	1959	1958	1957
	(1,000 Lbs.)				
January	6,066	5,504	6,277	5,471	4,261
February	7,059	6,535	6,352	5,925	5,246
March	7,178	7,837	5,604	5,526	5,147
April	-	4,864	4,717	4,855	4,492
May	-	3,700	4,407	4,229	3,380
June	-	4,362	4,583	4,702	3,522
July	-	3,684	3,790	4,574	3,821
August	-	5,006	3,879	4,358	4,643
September	-	5,417	5,353	5,328	4,861
October	-	6,554	5,842	5,485	5,162
November	-	6,274	4,831	5,091	4,579
December	-	5,322	4,743	5,467	4,014
Total	-	65,059	60,378	61,011	53,128

1/Preliminary data.

2/Revised.

Area	1961 1/		1960 2/	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	22	16,526	24	16,410
Inland and Gulf States	5	1,974	5	1,532
Pacific Coast States	8	1,803	7	1,934
Total	35	20,303	36	19,876

1/Preliminary data.

2/Revised.

The Atlantic Coast was the principal area in the production of both fish sticks and portions with 16.5 and 9.3 million pounds, respectively. The remaining 3.8 million pounds of fish sticks and 5.6 million pounds of fish portions were represented by the inland, Gulf, and Pacific Coast States.

Month	Breaded			Un-breaded	Total
	Cooked	Raw	Total		
	(1,000 Lbs.)				
January	677	3,449	4,126	133	4,259
February	739	3,924	4,663	202	4,865
March	1,300	4,339	5,639	166	5,805
1st Quarter					
Total 1961	2,716	11,712	14,428	501	14,929
1st Quarter					
Total 1960	1,879	9,360	11,239	393	11,632

Area	1961 1/		1960 2/	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	24	9,324	24	6,832
Inland and Gulf States	7	5,183	5	4,521
Pacific Coast States	6	422	5	279
Total	37	14,929	34	11,632

1/Preliminary data.

2/Revised.

Month	Production of Fish Portions, 1958-1961			
	1961 1/	1960 2/	1959	1958
January	4,259	3,604	2,692	1,973
February	4,865	3,434	3,025	1,254
March	5,805	4,594	3,225	1,471
April	-	3,399	2,634	2,269
May	-	3,171	2,684	1,478
June	-	3,922	3,247	1,504
July	-	4,020	2,227	2,161
August	-	3,496	2,796	1,516
September	-	5,543	3,558	1,566
October	-	5,148	4,314	2,560
November	-	4,462	3,483	1,979
December	-	4,327	3,262	2,060
Total	-	48,300	37,147	21,790

1/Preliminary data.

2/Revised.



Virginia

FISHERIES LANDINGS IN 1960 TOP 30-YEAR AVERAGE:

The 1960 landings of fish and shellfish in Virginia amounted to 353.8 million pounds, valued at \$19.4 million. The Institute of Marine Science at Gloucester Point, Va., reported that despite adversities, landings were well above average. Although the 1960 harvest fell short of the 1959 yield, it was over 60 million pounds more than the average landings for the past 30 years. The 1960 crop topped the 30-year average value by nearly \$7 million.

The lower 1960 oyster production was predicted by the Institute's scientists. The drop from 21 to 15 million pounds, however, was less than was believed would occur. Croaker landings declined to 2.5 million pounds in 1960--over 5 million pounds less than the 1959 catch of 7.5 million pounds. Institute scientists held little hope for improvement of this fishery for at least two summers. Cold weather, occurring at the time when young croakers were in fresh water, was believed to have killed off great numbers during recent winters.

Although there was a decline in the menhaden catch during the summer of 1960, it was not due to the scarcity of fish. A superabundance of menhaden in 1959, when a near record of over 412 million pounds were landed, plus increasing competition from foreign sources had depressed the fish meal market, and the amount landed was voluntarily restricted by the processors.

Scup and sea bass, the mainstay of the winter trawl fishery, were taken in larger numbers during 1960, and grey sea trout were somewhat more plentiful than in 1959. Over 0.5 million pounds of swellfish or puffers were landed in 1960--an increase of 200,000 pounds from the previous year. These fish appear as "sea squab" on the market and the menus of better restaurants, and are becoming more popular.

Blue crabs were in short supply during the early season of 1960, but were very plentiful in August. The increased blue crab

harvest had been predicted by the Institute at least six months before it occurred, and also assured crab fishermen that additional regulation of this fishery would not be necessary in order to improve the yield. So many crabs were available to the winter dredge fishery that the industry requested the Virginia Commission of Fisheries to limit the 1960 season catch to 20 barrels per day. A good supply of crabs for the 1961 summer pot and scrape fishery is again predicted.

The U. S. Bureau of Commercial Fisheries expanded its statistical services during the past year in Virginia and has for the first time issued monthly bulletins of fish and shellfish landings in Virginia.

Note: The Institute of Marine Science was formerly the Virginia Fisheries Laboratory.

* * * * *

OCEANOGRAPHIC RESEARCH VESSEL REQUESTED BY FISHERIES LABORATORY:

Funds have been requested from the National Science Foundation for the construction, maintenance, and operation of an oceanographic research vessel for The Institute of Marine Science at Gloucester Point. The Institute's Director announced on April 19, 1961, that the proposed ship would be about 200 feet long, and would accommodate 46 scientists and crewmen up to 120 days at sea. "Our vessel should be a general purpose ship capable of making hydrographic casts under way and at rest; of taking cores and bottom grabs at depths of at least 3,000 fathoms, and of trawling and dragging to depths of about 1,500 fathoms, the Institute's Director declared.

The proposed new ship would contribute to the development of the research capabilities of Virginia's marine laboratory and also aid in the entire United States Oceanographic Research effort. It would provide for both research and for the training of future oceanographers. The vessel, if granted would be used to conduct biological and physical research on the continental shelf off Virginia and beyond in the North Atlantic Ocean, and to train marine scientists and students. It would be constructed and equipped to take care of all conceivable biological work as well as for collecting hydrographic data from the ocean depths, and serve in the testing of new gear and instruments.



MEHADEN VESSEL
APPROACHING REDUCTION PLANT

The estimated cost of the proposed vessel is about \$4.5 million plus an additional \$500,000 for instruments. The Institute's Director contemplates that the ship should be in service by the summer of 1964, if approved by the National Science Foundation.



Wholesale Prices, April 1961

The April 1961 wholesale price index for edible fishery products (fresh, frozen, and canned) at 125.4 percent of the 1947-49 average declined 4.9 percent from the preceding month, but was up 1.7 percent from April 1960. The drop in the index from mid-March to mid-April this year was due mainly to seasonally-lower prices for fresh drawn haddock, sharply lower prices for the fresh-water varieties, and slightly lower prices for fresh shrimp, fresh or frozen dressed salmon, and frozen haddock and ocean perch fillets.



New York City Fulton Fish Market. General view of street side of the older of two sheds after selling activity is about over.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, April 1961 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ^{1/} (\$)		Indexes (1947-49=100)			
			Apr. 1961	Mar. 1961	Apr. 1961	Mar. 1961	Feb. 1961	Apr. 1960
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					125.4	131.9	133.0	123.3
Fresh & Frozen Fishery Products:					130.1	140.8	148.9	137.7
Drawn, Dressed, or Whole Finfish:					130.0	131.3	140.2	144.3
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.06	.12	55.8	122.4	100.5	60.8
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.33	.33	103.1	101.1	99.0	92.8
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.85	.88	191.0	195.0	205.0	179.2
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.46	.70	114.0	173.0	180.0	241.7
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.50	.70	101.2	141.1	130.4	212.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.51	.70	119.0	164.2	141.8	234.5
Processed, Fresh (Fish & Shellfish):					143.4	150.1	155.1	137.1
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.27	.42	90.2	141.2	114.0	83.0
Shrimp, lge. (26-30 count), headless, fresh.	New York	lb.	.79	.85	124.0	134.3	138.2	123.2
Oysters, shucked, standards	Norfolk	gal.	7.25	7.00	179.4	173.2	185.0	140.0
Processed, Frozen (Fish & Shellfish):					113.7	115.1	117.4	110.2
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	100.8	100.8	102.1	93.5
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.32	.34	100.5	105.2	113.0	84.8
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.31	110.8	122.8	122.8	111.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.70	.70	107.2	107.2	108.0	118.0
Canned Fishery Products:					111.2	111.2	110.9	104.8
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	23.00	23.00	140.1	140.1	140.1	129.8
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.00	11.00	79.3	79.3	79.3	80.0
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	7.75	7.75	91.0	91.0	91.0	93.9
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.75	8.75	93.1	93.1	90.5	93.1

^{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.

From April last year to this April, higher prices for frozen dressed halibut and salmon, haddock fillets, canned salmon, fresh shrimp, and shucked oysters more than offset lower prices for the fresh fish items and frozen shrimp.

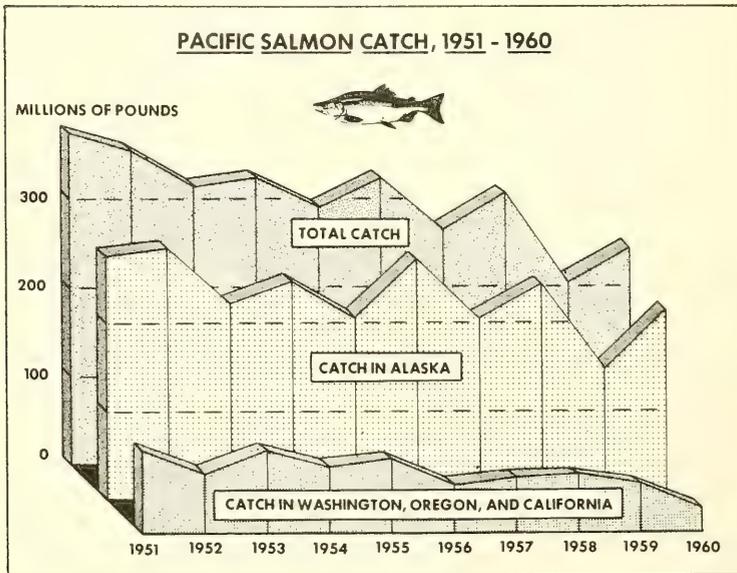
The fresh and frozen drawn, dressed, or whole finfish subgroup index for this April dropped 13.8 percent from the preceding month. The more significant price declines were in fresh drawn haddock as a result of seasonally heavier landings at Boston and in fresh-water fish because of new seasonal supplies. Good demand and low stocks in storage were responsible for an increase in prices for frozen halibut--the only item in the subgroup that increased. When compared with April last year, the subgroup index this April dropped 3.7 percent. Higher prices for frozen dressed halibut (up 11.1 percent) and salmon (up 6.6 percent) failed to offset sharp declines (averaging about 50 percent) for the three fresh-water items and an 8.2-percent drop in prices for fresh drawn haddock.

From March to April this year the fresh processed fish and shellfish subgroup index declined 4.5 percent due to lower prices for fresh small haddock fillets (down 36.1 percent) and fresh shrimp at New York City (down 7.7 percent). The declines were partly offset by higher prices for shucked oysters at Norfolk, Va. As compared with April last year, subgroup prices this April were higher by 4.6 percent. A drop

of 3.6 percent in fresh haddock fillet price at Boston was more than balanced out by an increase of 9.4 percent in shucked oyster prices and a slight increase (0.6 percent) in the fresh shrimp price.

Wholesale prices this April for frozen processed fish and shellfish were down 1.2 percent from the preceding month because of lower prices for frozen haddock fillets (down 4.5 percent) and frozen ocean perch fillets (down 4.9 percent). Prices for frozen flounder fillets at Boston and frozen brown shrimp at Chicago were unchanged from March to April this year. The subgroup index declined 2.2 percent from April 1960 to this April. While prices were up for frozen haddock fillets by 18.5 percent and for flounder fillets by 1.3 percent, frozen shrimp prices at Chicago dropped 9.2 percent and prices for frozen ocean perch fillets were unchanged.

Wholesale prices for canned fishery products from March to April this year were unchanged, but rose 6.1 percent from the same month a year ago to April of this year. The increase from a year ago was entirely due to a 14.3-percent increase in canned pink salmon prices, which was offset somewhat by lower prices for canned California sardines (down 3.1 percent) and canned tuna (down 0.9 percent). Maine canned sardine prices this April were the same as a year earlier.





International

FISHING LIMITS

BRITISH-ICELANDIC DISPUTE SETTLED:

The 2½-year dispute between Iceland and Britain over fishing limits off the Icelandic Coast was settled with an exchange of notes between the two Governments on March 11, 1961.

The note from Britain to Iceland reads in part as follows:

"I have the honour to confirm that in view of the exceptional dependence of the Icelandic nation upon coastal fisheries for their livelihood and economic development, and without prejudice to the rights of the United Kingdom under international Law towards a third party, the contents of Your Excellency's Note are acceptable to the United Kingdom and the settlement of the dispute has been accomplished on the terms stated therein. I also confirm that the United Kingdom Government agrees that the settlement becomes effective forthwith and that the Notes exchanged today shall be registered with the Secretary-General of the United Nations in accordance with Article 102 of the United Nations Charter."

On March 11, the Government of Iceland issued necessary regulations to apply to British trawling off Iceland and wiped clean the slate of any remaining fines against British trawlers which had illegally entered the fishing limits zone. The agreement with the United Kingdom provided that the base lines of the fisheries boundary would be revised outward in certain areas to protect an added 5,065 square miles. (United States Embassy, Reykjavik, March 13 & 22, 1961.)

FOOD AND AGRICULTURE ORGANIZATION

FISHERY OFFICER TO HEAD ECUADORAN FISHERY INSTITUTE:

A former Food and Agriculture Organization (FAO) fishery officer in Libya, Tunisia,

and Haiti was scheduled to arrive in Ecuador the latter part of April for a four-year assignment as Director of the National Fisheries Institute at Guayaquil, Ecuador. The Ecuadorian National Fishery Institute is the second major United Nations Special Fund fisheries project, with FAO as executing agency, to be established in Latin America. The project calls for a Government contribution of \$663,040 over a four-year period, and a U. N. Special Fund contribution of \$633,800.

The FAO fishery officer has been in Haiti since July 1960. Prior to that, he was fishery officer and FAO representative in Tunisia for 3½ years. While in Tunisia, he was active in finding and charting new fishing grounds, improving the sardine fisheries, and in extending Tunisian trawling farther offshore. Together with an FAO master fisherman, he introduced the use of underwater lamps into Tunisian sardine fishing. The FAO specialist, who holds a master's certificate in the French Merchant Marine, joined the French Fisheries Service in 1945 as fisheries expert and administrator. He was previously fisheries adviser to the Viet Nam Government and fisheries expert with the Supreme Commander for the Allied Powers (SCAP). His first assignment for FAO was in 1956 in Libya.

The purpose of the Ecuadorian Institute is to help the Government foster the country's economic development by a substantial expansion of fishing and ancillary activities. Pier facilities, maintenance for the Institute's two research vessels, and personnel are to be provided by the Ecuadorian Navy. The Navy also will provide hydrographic and meteorological information on areas not studied by the Institute's vessels and will provide a ship for several months of whale-marking each year in the seas off Ecuador.

The Director of FAO's Fisheries Division said the institute is intended to be permanent, and the foreign staff will gradually be replaced by a trained national staff. It is designed to improve knowledge of fish availability and methods of catching, handling, proc-

International (Contd.):

cessing, and marketing fish. In Ecuador, this should mean better management and exploitation of fish stocks, particularly bonito, anchoveta, and shrimp.

* * * * *

REGIONAL FISHERIES BODY FOR WEST AFRICA UNDER CONSIDERATION:

A regional fisheries body to serve member countries of the Food and Agriculture Organization (FAO) in West Africa as other FAO fisheries bodies do in the Mediterranean and in the Indo-Pacific regions, was the subject of invitations issued on March 29, 1961, by the Director-General of FAO.

The invitations, sent to all FAO member and associate governments in an area bounded by the Straits of Gibraltar and the Cape of Good Hope, including the regions which drain into the Atlantic Ocean and Lake Chad, convened a meeting May 15-20, 1961, in the Republic of Senegal to explore the possibility of establishing a fisheries consultative body in the Western African region.



The Director-General was requested at the 10th session of the FAO Conference in November 1959 to explore the establishment of such a commission. The proposal was endorsed by the United Nations Economic Commission for Africa (UNECA) in February 1960 and by the first FAO Regional Conference for Africa at Lagos held in November 1960.

The main purpose of the meeting was to seek advice from delegates as to the scope of activity and terms of reference for such a consultative body and the area which it will serve. It also considered the Commission's relationship with other international bodies concerned with fisheries in the West African area.

The delegates were asked to give a brief statement concerning the general problems facing fishery development in their countries, where the solutions might be facilitated by international action by a fisheries consultative body under the aegis of FAO.

Invitations to attend the meeting as observers were sent to UNECA, the Commission for Technical Cooperation in Africa South of the Sahara (CCTA), the International Council for the Exploration of the Sea (ICES), and the Permanent Commission of the International Fisheries Convention - 1946.

In addition to the Fisheries Division Director, FAO was represented at the meeting by the FAO Regional Representative for Africa and the Regional Fisheries Officer for Africa, both stationed at Accra, Ghana.

FOURTH CONVENTION ON ECONOMIC RELATIONS WITH THE AFRICAN CONTINENT

MEETING HELD IN NAPLES, ITALY, STRESSES FISHERIES:

From April 4 to 6, 1961, representatives of the African nations of Cameroun, Central Africa, the Congo (Brazzaville), Gabon, Niger, Senegal, and Chad visited Naples, where they attended a conference on maritime traffic, shipbuilding, and fishing, and toured industries generally related to the subjects of the conference. The Africans came to Italy as delegates to the "Fourth Convention on Economic Relations with the African Continent" sponsored by the Italian Institute for Africa. The Naples Port Administration availed itself of their presence in the country to invite them to Naples for the program that took place there.

The purpose of the conference was not to accomplish any specific concrete result, but simply to plant the seeds of further Italian-African cooperation in the fields covered. The African representatives are reported to have played more the part of observers than of active participants in the proceedings. To the extent that they did express their views, the item on the agenda of most interest to them was fishing.

The papers presented at the conference were generally brief. They did not purport to be extensive expositions of the subjects on the program. However, at least two points of interest were made. The first of these related to the type of shipping that would be employed in the African-Italian trade in the foreseeable future.

The other principal theme discussed was the possibility for greatly increased technical and economic cooperation between Italy and the African states in the development of Afri-

International (Contd.):

can fisheries. Given the poverty of the Mediterranean as a fishing sea, one speaker noted, the Italian Government is moving toward a policy designed to foster the operation of Italian fishing fleets in the Atlantic and to put the fishing industry on a more industrial basis. In line with this policy, the speaker said, mutually profitable arrangements could be made between Italy and the African states. Italy could supply the modern motor vessels needed and the key members of the crew. The Africans who completed the crew would, in time, become qualified to take on the more specialized jobs. Agreements on fishing could also provide for the development of freezing plants in African states and for the exportation of the frozen fish to Italy. Another type of industrial plant suggested as an example was for processing fish waste to make fertilizer.

The conference adopted two resolutions. They were:

(1) That Italo-African meetings be more frequent and more regular, and that the Mostra d'Oltremare (Naples fair grounds) become the permanent site for such meetings.

(2) That legislative and administrative policies designed to strengthen the ties between Italy and the African countries in the fields of maritime transportation, shipbuilding, and fishing be developed. (United States Consulate in Naples, April 12, 1961.)

SEALING

HUNTING BY CANADIANS, NORWEGIANS, AND RUSSIANS IN NORTHEAST ATLANTIC:

At one time, one-third the male population of Newfoundland was engaged in the seal industry--400 sailing ships and 15,000 men hunted seals. Wooden steam vessels, "Dundee whalers," and later steel ships hunted together. The seal industry did much for the economy of Newfoundland when it was active.

However seal hunting later declined, and by 1960 the Newfoundland seal fishery accounted for 22,388 seals valued at C\$74,955 with only three vessels.

In March 1961 it was reported that Newfoundland's seal fleet was not having a good season. Bad weather and ice conditions combined kept them out of reach of sizable

herds, and reports indicated that some may have "lost their spring." At that time, a Russian vessel appeared to be doing better than the Newfoundland craft. It was a large ship, and reportedly capable of maneuvering through ice more satisfactorily than Canadian vessels.



Seal hunting.

Russia also is reportedly having remarkable success cod fishing off the coast of Newfoundland.

Russia has previously hunted seals in the northwest Atlantic, but never before near Newfoundland. In March 1961, when the large Russian sealing vessel was spotted off the coast of Newfoundland, it killed seals efficiently aided by two helicopters. This aroused considerable concern in St. John's. One Newfoundland operator with two ships engaged in the seal fishery this year complained that the Russian helicopters scattered a herd of 3,000 seals they were prepared to kill.

The success of the Russian vessel, together with the success of Norwegian hunters (in March 1961 Norwegians caught 50,000 seals near the Grey Islands) has given rise to the question of how Newfoundland sealers can be protected.

Canada, for the first time, is now licensing vessels for seal hunting and has reached an agreement with Norway and Denmark relating to killing seals. A Canadian official has stated that the only solution is an international commission to control seal hunting. (United States Consulate, St. John's, March 23, 1961.)



Angola

FISHING INDUSTRY DEPRESSED:

The fishing industry is one of Angola's most important economic activities and has earned substantial sums of foreign exchange. In the past decade, fishery products have been Angola's third largest export, following coffee and diamonds. Following very profitable years in the early and mid-1950's, the industry is now experiencing a depression with its very existence in question. This has been caused by (1) the shortage of fish in the traditional fishing grounds; (2) uneconomic manufacturing plants (though a few fish meal factories are very modern) and methods of production; and (3) low fish meal prices on the world market. The depression has had grave influences on the economies of the Mocamedes and Benguela areas, the two major fishing centers.



Government assistance to the industry has been slow, but effective measures may be in the offing. Some Government loans were made to firms. In 1959, subsidies were being granted for fish meal and oil exports to make up the difference between the market price and the cost of production. The Fund to Aid the Fishing Industry has been created to give financial assistance. To oversee both the short-run assistance to the industry and the long-run reorganization, the Institute of Fishing Industries of Angola has been formed. Technical studies are being made of the life cycles of fish so as to aid fishermen in their search for fish.

It is expected that the industry will be reorganized into a small number of large cooperatives which will concentrate on producing dried fish, fish fillets, and canned and frozen fish, with fish meal and oil assuming secondary roles. Except for dried fish, the concentration of effort heretofore has been on fishery byproducts (fish meal and oil). Along marketing lines, the Institute is to search out foreign markets, and it is joining with fish meal associations of other countries to try to control market prices. All this activity is just beginning. The outlook is still uncertain because of the gravity of the crisis in the Angolan fishing

industry, uncertainty as to what measures will be taken, and the degree of influence to be exercised by entrenched fishing interests and the Institute. (United States Embassy, Luanda, March 30, 1961.)



Belgium

DUTY IMPOSED ON FISH MEAL IMPORTS:

On March 9, 1961, the Belgian Ministries of Agriculture and Economic Affairs issued a decree levying the following special duties, effective March 18, 1961, on the importation of fish meal and feedstuffs containing fish meal:



- (1) Fish meal and powder, Belgian francs 2.00 per kilo (US\$36.29 a short ton);
- (2) Feedstuffs containing fish meal or powder, (a) of which the gross protein content amounts to 15 percent or less, Belgian francs 0.20 per kilo (\$3.63 a short ton); (b) of which the gross protein content amounts to more than 15 percent but less than 25 percent, Belgian francs 1.50 (3 U. S. cents) per protein unit and per 100 kilos; and (c) of which the gross protein content amounts to more than 25 percent, Belgian francs 2.00 per kilo (\$36.29 a short ton).

In addition to these import duties, there is also a "taxe de transmission" (sales tax) of 8 percent on fish meal, and 5 percent on feedstuffs containing fish meal.

The decree was issued as a result of negotiations between the Belgian Government and the association of fish-meal manufacturers, which had requested that measures be taken to protect the Belgian fish-meal industry against the alleged dumping practices of the Peruvian fish-meal industry. Imports of Peruvian fish meal, which account for most of Belgium's imports of the product, have shown a tremendous increase during the last few years, rising from about 19,000 metric tons in the first 11 months of 1959 to 41,277 tons in the corresponding period of 1960.

It is expected that Belgian imports of fish meal will decline somewhat because of the import duty which may also result in an expansion of the small local fish-meal industry which now has an annual production of between

Belgium (Contd.):

6,000 and 10,000 metric tons. (United States Consulate, Antwerp, March 21, 1961.)

Note: Belgium francs converted at rate of BF 1 equals 2 U. S. cents.

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FISH-MEAL PRICES, APRIL 1961:

Belgium fish-meal prices early in April 1961 were higher than a month earlier for imported meal and unchanged for domestic meal. Imported Meal: 65 percent protein, US\$94.25 per metric ton or about \$85.50 a short ton, c. & f. Antwerp (80-90 percent digestible). Domestic Whole Meal (fish solubles added): 62 percent protein, \$99.20 a metric ton or about \$90.00 a short ton f.o.b. plant (93-94 percent digestible). Domestic Regular Meal: 50-55 percent protein, \$69.50-76.45 a metric ton or about \$63.05-69.36 a short ton f.o.b. plant (about 90 percent digestible). A special duty is now in effect on imported fish meal and it is probable that prices for domestic fish meal will increase in the future, the United States Consulate in Antwerp reported on April 5, 1961.



Canada

NEW CANNED LOBSTER REGULATIONS REQUIRE CERTAIN DATA ON CANS:

Canada issued the following amendments to the Canned Fish and Shellfish and Cannery Inspection Regulations on February 22, 1961. The portion referring to the daily coding of the cans to indicate the day, month, and year of canning will not be implemented until the 1962 season.

1. Section 9A of the Canned Fish and Shellfish and Cannery Inspection Regulations is revoked and the following substituted therefor:

"9A. (1) Every can of lobster, tomalley or lobster paste packed in a cannery for which a permit has been issued shall be embossed on one end with the letter 'L' and with code markings that identify the cannery and indicate the day, month, and year of canning.

"(2) A copy of the key to every code used pursuant to subsection (1) shall be sent to the Minister at the beginning of canning operations each year.

"(3) Subject to subsection (5), every can of tomalley or lobster paste packed in a cannery for which a permit has been issued shall be embossed on one end with the letter 'T.'

"(4) No person shall buy, sell, ship, export or have in possession any can of lobster, tomalley or lobster paste that is not embossed as required by this section and every can of lobster, tomalley or lobster paste that is not so embossed may be seized and confiscated by an inspecting officer.

"(5) Lobster paste that is packed in the three-ounce can of the size designated (211 x 108) need not be embossed with the letter 'T.'"

* * * * *

LAKE ERIE GILL NET MESH SIZE RESTRICTIONS REMOVED:

All restrictions governing the mesh-size of gill nets in the Canadian waters of Lake Erie have been removed, as an experimental measure for 1961. Fishermen in their daily regular reports are required to indicate the size of mesh that was used. Sale of fish under legal size will not be permitted, however. (Bulletin, March 27, 1961.)

* * * * *

LAW DEFINING "FISHING VESSEL" REVISED:

On March 14, 1961, the Canadian House of Commons adopted a bill amending the Coastal Fisheries Protection Act so as to redefine what constitutes a Canadian fishing vessel. The new definition provides:

"1. Paragraph (a) of section 2 of the Coastal Fisheries Protection Act is repealed and the following substituted therefor:

"(a) 'Canadian fishing vessel' means a fishing vessel

(i) that is registered or licensed in Canada under the Canada Shipping Act and is owned by one or more persons each of whom is a Canadian citizen, a person resident and domiciled in Canada or a corporation incorporated under the laws of Canada or of a province, having its principal place of business in Canada, or

(ii) that is not required by the Canada Shipping Act to be registered or licensed in Canada and is not

Canada (Contd.):

registered or licensed elsewhere but is owned as described in subparagraph (i);"¹¹

The previous definition read as follows:

"(a) 'Canadian fishing vessel' means a fishing vessel that is

- (i) registered in Canada,
- (ii) owned by one person domiciled and resident in Canada,
- (iii) owned by two or more persons, all of whom are domiciled and resident in Canada, or
- (iv) owned by a body corporate incorporated under the laws of Canada or the laws of a province and having its principal place of business in Canada;"¹¹

Senate approval was expected shortly.

In the debate prior to adoption of the legislation by the House of Commons, the Minister of Fisheries stated that the "main purpose of the act is to protect fisheries in Canadian territorial waters against encroachment by foreign fishing vessels and to regulate the privileges accorded to foreign fishing vessels in our ports." He stated further that "subject to any treaty rights, the act prohibits fishing operations by foreign fishing vessels in our waters."¹¹

Several members criticized the legislation for not dealing with the situation which permits foreign vessels to fish up to 3 miles of the Canadian coast line while Canadian vessels over certain size are not permitted closer than 12 miles to the shore line. In response to the criticism the Minister stated that he was hopeful that before the present session of Parliament adjourns, an amendment to the Fisheries Act will be introduced by the Government "which will bring a greater element of justice to the situation in which a number of Canadian trawlers find themselves as compared with foreign trawlers and yet at the same time protect the rights and interests of inshore fishermen in smaller boats."¹¹

On the general question of territorial waters the Minister stated:

"With regard to the width of our territorial waters, may I say that this again is an entirely different matter as is the baseline from which the width of territorial waters are to be measured. At the conference held under the auspices of the United Nations in Geneva last year there was the required two-thirds approval of several matters, one of which was the method of measuring territorial waters. When these 22 countries, I believe it is, ratify that agreement, this method will come into effect. The matter of the actual width of territorial waters or an exclusive fishing zone is a matter for further international agreement. I still have not given up hope that some international agreement may be reached. As to the need for further amending of this act if agreement is reached, that will depend on the type of agreement."¹¹ (United States Embassy in Ottawa, March 29, 1961.)

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MARKET FOR BRITISH COLUMBIA FISH MEAL IMPROVES AS FISHING SEASON ENDS:

The British Columbia (Canada) herring fishing season closed early in March 1961 with the export price of fish meal between C\$1.55 and C\$1.60 per unit of protein f.o.b. Vancouver (C\$100,50-112.00 a short ton, 70 percent protein).

The increase in price is attributed to a higher price for soybeans in the United States, as well as a firmer market for Peruvian fish meal.

It is estimated that about 5,000 short tons of fish meal remained unsold in March. However, fishery sources believe that this inventory will be disposed of within the next few months.

It is generally understood that the fishing companies may at least break even in their fish meal production and sales. There is some reason to believe that the herring fishery may be resumed in June if the salmon run proves to be light.

The 1960/61 season herring landings were 171,941 short tons. This is down slightly from the previous year because of the late start of the fishery caused by the failure of the reduction plants and the fishermen to agree on a price for the fish. (United States Consulate, Vancouver, March 29, 1961.)

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Canada (Contd.):

MARKET PROSPECTS FOR CANNED SALMON:

A review of the current and future market for British Columbia's canned salmon pack was published in the March 1961 Facts on Fish, issued by the Fisheries Association of B. C. in Vancouver.



(1) The record-high prices for canned salmon, which were a direct result of the high costs and small production in 1960, have slowed consumption in the Canadian market as well as in export markets. The small pack of 1960 plus the carryover from 1959, has proved sufficient to supply the reduced demand which accompanied the higher prices.

(2) A feature of the current market is the greatly reduced volume of sales to the United Kingdom. At the end of February in the current market year, these sales were down 60 percent from last year at the same date. This reflects, of course, our reduced supply situation in British Columbia, but it also reflects a greatly reduced demand in the United Kingdom. British distributive outlets are now very heavily stocked with canned salmon, particularly Japanese, and the rate of consumption has declined.

(3) From last year's production, the Japanese are carrying over approximately 425,000 cases of canned salmon of which approximately 280,000 cases are sockeye. The present price of Japanese sockeye 48 1/2's is C\$21.15 f.o.b. Japan, which may be compared with the current Canadian price of \$25.00. The 1961 Year Book Number of the Pacific Fisherman (a United States fishery trade periodical) makes the following observations with respect to the marketing of the 1960 pack:

"With so little to sell, as a result of one of the worst fishing years in provincial history, salmon marketers in British Columbia experienced a bleak and hungry season in the fall of 1960. It was certainly not a year when aggressive selling brought its usual rewards. Broadly speaking, the salesmen could have sat on their hands all year and come up with approximately the same results as if they had been really hustling.

"But the overpowering problem of salmon marketing in B. C. is the continuing prospect of consumer resistance to sky-rocketing prices. In 1958, the season of the big pack on the Fraser, export prices for sockeye halves averaged \$18.50 a case, which was considered relatively high at the time. In 1959 the price advanced to \$23.00 and in 1960 it rose to \$25.00. 'How long,' packers, brokers and exporters asked, 'could the market stand such steadily rising prices?'

"They had at least part of their answer during the season just passed because they found the United Kingdom, usually anxious to buy the limit on sockeyes, was for the first time shopping elsewhere--almost solely because of price. There were no large purchases by the United Kingdom wholesale houses at all. Nearly all the canned salmon marketed there from B. C. (British Columbia) went to the 'big label companies.' The United

Kingdom regarded halves disdainfully and bought virtually nothing in that category."

British Columbia canners are hoping for an average or better-than-average pack of all species in 1961. They are hoping also that it will be possible to achieve cost reductions and price reductions which will enable a start to be made on rebuilding the rate of canned salmon consumption in all of the markets which are served by British Columbia. This is an important objective for it is of interest and value to everyone in the industry if we can approach 1962 with a healthy market situation rather than the reverse.

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PLANS TO CONTINUE SUBSIDY ON DOGFISH LIVERS IN 1961/62:

Final reports on the dogfish liver subsidy for the fiscal year ending March 31, 1961, show that a total of 990,169 pounds of dogfish livers were landed in British Columbia between October 11, 1960, and March 31, 1961, and the total subsidy paid at the rate of 12 cents per pound amounted to C\$118,820.

The Canadian Minister of Fisheries announced on April 17, 1961, that the dogfish liver subsidy of 12 cents a pound had been reintroduced for the current year and a total of C\$150,000 had been earmarked by the Government to cover this fiscal year's subsidy program. This is the same amount that was appropriated for the 1959/60 fiscal year.

Note: Also see Commercial Fisheries Review, May 1961 p. 43.

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USE OF CITRIC ACID PERMITTED IN CANNED SPRING MACKEREL:

The Canadian Food and Drug Regulations (Paragraph B. 21.008) were amended by P. C. 1961-345 dated March 9, 1961, to permit the use of citric acid in canned spring mackerel with appropriate label declaration.



Ceylon

FISHERIES TRAINING CENTER TO BE ESTABLISHED WITH AID OF JAPANESE:

An agreement was signed in Ceylon on March 20, 1961, by the Minister of Agriculture, Land, Irrigation and Power and the Japanese Ambassador whereby the Governments of Ceylon and Japan will establish a Fisheries Training Center at Negombo, a fishing town on the coast above Colombo. The project was originally offered by Japan in August 1958 and details were discussed in February 1960.

Ceylon (Contd.):

The training to be provided at the Center will provide: (1) courses in fishing gear for 20 trainees, every four months, selections being made by the Government of Ceylon from local fishermen who will in turn carry the benefit of their training to their fellow fishermen in their villages; (2) courses in the operation and maintenance of marine engines--ten trainees will be trained every year; and (3) instructions in general aspects of the fishing industry.

The Government of Japan is to send a training vessel and other equipment as well as eight Japanese experts. Capital aid from Japan over the three-year period of the agreement will amount to Rs.1,3 million (US\$274,000). The Government of Ceylon is to provide the buildings, accommodations, Ceylonese student staff, and running expenses, incurring capital expenditure of about Rs.250,000 (\$53,000) and annual recurrent expenditure of about Rs.60,000 (\$13,000).

The project should be of practical benefit to Ceylon if her fishermen are to keep pace with the mechanization program. Reports have been heard from time to time that they neglect the maintenance of the newly mechanized boats and that they are incompetent to handle modern gear. The agreement is applauded in the press which expresses the hope tinged with skepticism that the Government of Ceylon will promptly implement the establishment of the center and make further provision for the trainees ultimately to own their own gear and boats.

Japan has long been interested in the fishery potential of these waters and provided the recommendations incorporated in the Ten Year Plan section on the development of the fishery industry. Over a year ago a team of Japanese harbor experts visited Ceylon and drew up a report on the potential development of a network of small fishery harbors but nothing more has been heard of it since June 1960.

Japanese interests own 45 percent of a Ceylonese fishing company which catches tuna in northern waters for canning in Japan and export to the United States. This is something that the Ceylonese would like to be in a position to export direct and plans to expand facilities are under consideration, the United States Embassy to Colombo reported on March 24, 1961.



Denmark

EXPORTS OF FISH SOLUBLES, 1957-60:

Exports of fish solubles by Denmark rose sharply from 4,957 metric tons in 1957 to a peak of 23,426 tons in 1959 and dropped to only 233 tons in 1960.

Year	Quantity				Total	Total Value		
	United States	West Germany	Netherlands	Other		1,000 Kr. ^{1/}	US\$ 1,000	
(Metric Tons).....							
1960	-	216	226	48	490	233	34	
1959	20,659	2,604	104	59	23,426	10,805	1,564	
1958	10,080	3,341	64	599	14,084	6,562	950	
1957	4,668	180	96	13	4,957	1,788	259	

^{1/}Danish krone converted at rate of 6.908 kroner equal US\$1.

Growth of the export market for fish solubles was overwhelmingly dependent on United States demand, and when United States consumers switched to other suppliers at more competitive prices, the Danes dropped out of the market. Most of the herring-meal solubles at the Danish reduction plants are now being blended back into the meal, improving its quality.

There was no change in the export pattern during the first two months of this year, with shipments, mostly to the Netherlands and West Germany, totaling only 85 tons. Average f.o.b. export prices remain at 450-500 Kronur (US\$65-72) per metric ton, or unchanged from the boom years of 1958 and 1959.

* * * * *

SHRIMP PROCESSING METHODS:

In Denmark, the main types of frozen shrimp packed are: (1) raw, unpeeled, with or without head; (2) raw, peeled shrimp meat; (3) boiled, unpeeled, with or without head; (4) boiled and peeled.

Scandinavian deep-sea shrimp are mainly frozen after boiling and peeling. This presents a serious problem as regards the prevention of damage to meat quality during frozen storage.

Experiments by the Danes with American species of shrimp give evidence that processing before freezing markedly affects keeping quality during frozen storage. Deterioration increases with the length of boiling, and the salinity of the brine. Danish experiments have also shown that deterioration increases as salinity increases.

Investigations of freezing boiled and peeled shrimp have shown that storage life depends on the method of packaging. It is important that packaging material be air- and water-vapor-tight.

Denmark (Contd.):

The best quality and longest storage life are obtained by vacuum packing in plastic bags. Some shrimp packages contain free air spaces. In such packages, shrimp lose water, which condenses as ice in the free air spaces. The resulting damage to quality may be delayed, if frozen shrimp is given an ice glaze before packaging.

In the Scandinavian canning industry, shrimp are processed by the wet pack method. Salt acid and sugar are the main ingredients of the brine in the can.

The shrimp meats are cooked before being packed in the can, otherwise weight loss will occur. Salt brines of varying concentrations are used for boiling shrimp prior to canning.

As the concentration of citric acid in the brine of the wet-packed canned shrimp fell, from 1 to $\frac{1}{4}$ percent, the pH factor of the brine increased from 5.9 to 6.8. The drained weight of the finished product--in percentage of the fill-in weight of precooked shrimp--increased from 92 to 102.

In Denmark, shrimp waste has been found to contain as much as 14 percent crude protein, when processed in the traditional way. Shrimp meal with 10 percent water content contains 50 percent crude protein.

Shrimp waste, fed to egg-laying hens, produced a reddish-colored yolk.

The practice of boiling shrimp on board ship immediately after capture is in use in Norway and Sweden, but has been abandoned in Denmark, where shrimp are packed in wooden boxes, with crushed ice, and landed 1 or 2 days after being caught. In Denmark some shrimp are graded by machine into three sizes--large, which are hand peeled; medium, machine peeled; and small which are not processed.

Success of industrial shrimp processing depends, to a great extent, on the manner in which shrimp are cooked. Boiling for 2 minutes gives a weight loss less than half obtained by boiling for 6 minutes. When boiled, no more shrimp should be added than can flow freely. After 1-2 minutes in water at 100° C. (212° F.), shrimp come to the sur-

face. Boiling time at 100° C. (212° F.) should not exceed 3-4 minutes.

Shrimp are often boiled in varying degrees of brine.

Shrimp boiled within a few hours of catching have a firmer texture than those boiled after longer storage.

Danes find that the easiest method of peeling shrimp by hand is while they are still warm.

American peeling machines are now used for peeling red deep-sea shrimp, either raw, after 2-3 days' chilling in ice or ice water, or after a short cooking time to loosen the shell.

The weight loss of peeled raw shrimp boiled in a weak brine solution at 100° C. (212° F.), rose from 39 to 48 percent with boiling time increased from $\frac{1}{2}$ to 4 minutes.

Raw shrimp boiled after peeling curls more than shrimp boiled before peeling.

The boiled, peeled shrimp can be freed of loose shell more effectively by air blowing, than by washing. An undesirable effect of cleaning in water is the loss of much surface coloration. (Meddelelse fra Fiskeriministeriets Forsøyslaboratorium, December 1960.)



Ecuador

ADHERES TO INTER-AMERICAN TROPICAL TUNA CONVENTION:

The Ambassador of Ecuador deposited with the U. S. Department of State on April 7, 1961, the instrument of adherence by the Government of Ecuador to the Convention Between the United States of America and the Republic of Costa Rica for the Establishment of an Inter-American Tropical Tuna Commission. The Ecuadoran instrument of adherence stipulated that the effective date of adherence by Ecuador to the Convention shall be the date of deposit of the instrument, which was April 7, 1961. The adherence of Ecuador brings the number of countries signatory to the Convention to four. Panama adhered to the Convention on February 16, 1954. (United States Embassy, Quito, April 13, 1961.)

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Ecuador (Contd.):

FISHING INDUSTRY, 1961:

The fishing industry in Ecuador continues to develop with a promising outlook for the future. The total 1960 catch was about 25 million pounds. While the shrimp industry continues to show the effects of several lean years and 1960 tuna production declined about 15 percent from 1959, both of these major industries are basically healthy and look forward to increased production in 1961. The sardine-canning industry shows little increase in production, although recent tariff protection afforded by the Government has caused an improvement in sales.

The fishing industry in Ecuador can be divided roughly into four components for reporting purposes: Shrimp; tuna; sardines; and miscellaneous fishing in canoes and small boats. The first three components, for which fairly reliable statistics are available, account for about 90 percent of the total Ecuadoran catch.

Total Ecuadoran tuna landings for 1960 were about 15.5 million pounds, of which about 40 percent was yellowfin and 60 percent skipjack tuna.

A small number of foreign-flag vessels reportedly did some tuna fishing in Ecuadoran waters during 1960. Two United States-flag vessels are employed by the dominant Ecuadoran tuna company as freezer-ships only.

This firm, the only producer of fish meal, produced 943,000 pounds during 1960, all for domestic consumption.

Of the 1960 Ecuadoran tuna landings, about 12.8 million pounds were exported, about half being canned and half frozen. In the past, almost all of the exported tuna went to the United States, but in 1960 about 14 percent of Ecuadoran tuna exports went to the following new markets: Great Britain, West Germany, Panama, Guam, Jamaica, Belgium, and Greece.

About 27 Ecuadoran pole-and-line tuna vessels were in operation during most of 1960 with 5 or 6 additional vessels in repair and maintenance.

Of the 4 or 5 principal sardine canners in Ecuador, only two are operating with regularity, both in Guayaquil. The two plants,

which are very similar in size and equipment, with a capacity of about 1,680,000 pounds of canned sardines, produced about 750,000 pounds in 1960.

Both plants have automatic scaling machines and semi-automatic can sealers. Women workers are paid between 7.2-12.0 U. S. cents per 100 fish for cutting off heads, tails, fins, and removing entrails. The wholesale price of canned sardines sold by Guayaquil canneries is 39 U. S. cents a pound.

The sardine canners are very encouraged by a recent (January 1961) import tariff on foreign canned sardines. The leading cannery said that he was 15 days behind in filling orders for the first time in the four years' existence of his plant. All of the canners look to the future with confidence.

A negative factor in this small industry is that the sardine canneries have no regular source of supply. They depend upon the enterprise of individual fishermen rather than their own fleet, which they are not yet big enough to afford. During the fall of 1960, almost three months went by during which the canneries were closed for lack of fish. At the present time, the two leading canneries would work 24 hours per day if they had more fish. Ecuadorian canners do not export any sardines. (United States Consulate, Guayaquil, March 27, 1961.)

Note: Statistics supplied by fishing industry may vary to a considerable extent from Government statistics.

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SHRIMP INDUSTRY:

The Ecuadoran shrimp fishing industry has been depressed in recent years, due mostly to an increase in the number of vessels and a smaller catch per vessel. The decreased catch per vessel in 1958 and 1959 has resulted in lower profits and inadequate maintenance of vessels. For this reason, the fleet is presently not in good repair and construction of new vessels has stopped.

Shrimp industry executives in the Guayaquil area, who export almost 100 percent of their production to the United States, are extremely concerned about the proposed United States tariff on shrimp imports. One spokesman even said the tariff would be "the end of the Ecuadoran shrimp industry."

As of March 1961, there were five shrimp-processing plants in Ecuador. All of them have freezing facilities, but all processing is done by hand. There is no machinery for breaching or peeling. There is no discernible trend toward mechanization.

The total shrimp catch for 1960 was estimated at about 6 million pounds. The only reliable figures are those of organized shrimp fishing companies which export practically 100 percent of their production. The total landings by such companies in 1960 was about 4.5 million pounds. The differ-

Ecuador (Contd.):



Port of Manta in Ecuador. In right background are a number of typical fishing vessels at anchor.

ence between the two figures given is accounted for by independent fishermen operating alone who keep no records.

The principal species caught and percentage of total catch are: white (50 percent); sea bob (40 to 45 percent); and tiger (5 to 10 percent).

Export prices (f.o.b. Guayaquil) for white shrimp (heads-off) during 1960 were approximately as follows: 10 count and under, 81-84 U.S. cents a pound; 15-20 count, 74-76 cents a pound; 21-25 count, 66 cents a pound; and 26-30 count, 61 cents a pound.

Wage rates for processing at Guayaquil's most modern plant is about 1.8 U.S. cents for deheading and packing a 5-pound carton. The rate at this plant is lower because they have a sorting machine. At other plants, where sorting by size must be done by hand, the rate for sorting, deheading, and packing is 3 cents per 5-pound carton. The rate for peeling is 0.6 cents per 5-pound box. All of the foregoing work is done by women.

Wage rates for shrimp fishermen at a representative company are based on the position in the crew, experience and nationality, size of trip, and size and species of shrimp landed.

Wages of Ecuadorans catching white shrimp for the representative company were: captain, \$36 per 1,000 pounds; engineer, \$12 per 1,000 pounds; and crewmen, \$9 per 1,000 pounds.

A Puerto Rican captain was paid 14 percent of an amount equal to 50 cents a pound after first subtracting the cost of fuel for the vessel and food for the crew. A Mexican captain was paid a flat 5 cents a pound.

Wage rates for catching other species of shrimp equal as little as 30 percent of the white shrimp rate.

The best possibility for expanding the shrimp production of Ecuador is in fishing deeper offshore waters. Present fishing vessels operate only in shallower waters due to the limitation of their gear and the dictates of local custom. A local shrimp expert estimates that such expansion would be substantial. (United States Consul in Quayaquil, March 7, 1961.)



France

FISH MEAL AND OIL PRICES, FIRST QUARTER 1961:

Average fish meal and oil prices reported for the first three months of 1961 by the

head of the French Fish Meal Manufacturers Association:

Product	Protein Content(%)	Price	
		NF/Metric Ton	US\$/Short Ton
Fish Meal:			
French fish meal 1/	55	450-470	82.81-86.48
" " " 1/	60	500-530	92.01-97.53
" " " 1/	65	600	110.41
Peruvian fish meal 2/	60-65	520-600	95.69-110.41
Angola fish meal 2/	65	540-580	99.37-106.73
Norwegian herring meal 2/	73	700-750	128.81-138.01
Fish Oil:			
French oil (herring, dark)	10	550	101.21
French oil (herring, light)	5-6	600	110.41
1/ Ex-plant loaded aboard car or truck, 15 metric tons minimum.			
2/ Loaded aboard car French port, customs paid, 15 metric tons minimum.			
Note: Values converted at rate of 4.93 new francs equal US\$1.			

From January to February 1961 average prices for fish meal increased about 3.9 percent and in March prices were up about 5.4 percent from January. (United States Embassy, Paris, April 7, 1961.)



German Federal Republic

TRAWLER TRADE SEEKS LARGE SCALE GOVERNMENT SUPPORT:

The financial deterioration of the West German trawler trade was the subject of a memorandum submitted by the Association of German Deep-Sea Fisheries to the legislative and executive branches of the West German Government early this year.

In its memorandum the Association pointed out that the over-all trawler fish catch dropped 28 percent from 1955 to 1960. During this period, the catch of herring, traditionally considered the economic backbone of the trawler trade, dropped 64 percent, while the white fish catch rose only 6 percent. Gross proceeds of the catch dropped 8.5 percent from 1955 to 1960. On the other hand, the Association claimed, production costs increased progressively from 1955 to 1960. On the basis of criteria established in a Government investigation of the financial position of the West German trawler trade in 1957 and 1958, the Association arrived at the conclusion that the 1960 gross proceeds were DM 25 million (US\$6 million) below production costs, including overhead and depreciation.

German Federal Republic (Contd.):

The Association claimed that the deterioration of the trawler trade's income is attributable to several causes:

1. The fish take from traditional, nearby fishing grounds has declined significantly because of changes in hydrobiological and climatological conditions and because of the extension of national fishing limits.
2. The loss of fish catches in traditional waters has been offset only to a limited extent by expanded fishing in distant waters.
3. The necessity to build trawlers equipped to operate in distant waters has increased construction costs to about DM 4.5 million (\$1.1 million) per vessel as compared with DM 2.5 million (\$600,000) for conventional trawlers, and has led to a disproportionately high indebtedness of the trade. The Association claimed that because of the rapid change in trawler operations, vessels which were built before 1955 (about 60 percent of the West German trawler fleet) are now obsolete. Although these vessels are still in good shape and their write-off for depreciation has not yet been completed, they can be used only in less productive, nearby fishing grounds. The burden of renewal of the trawler fleet weighs all the more heavily, according to the memorandum, because the financial resources of the trawler trade were depleted to a large extent in rebuilding the 80 percent of the fleet destroyed in World War II and in replacing unproductive trawlers built in early postwar years under occupation specifications. Even before the building of new factory trawlers for operation in distant waters started, a Government investigation showed that only 13 percent of the total assets of the trawler trade was owned by the trade itself.
4. Nearly complete liberalization of fish, which permitted imports to rise 78.3 percent over the 1955 level, has had a depressing effect on prices, particularly because imports often were allowed to enter the country with little or no regard to domestic fish supply conditions at the time of entry. The fish-meal price slump, claimed the Association, in turn induced Danish and Swedish fishermen to step up significantly their landings of edible fish in German ports. With regard to the timing of imports, the coordination of Icelandic fish landings in German ports with West German trawler operations has failed to produce satisfactory results, and the voluntary coordination of operations and fish landings of the West German trawler fleet has therefore been rendered ineffective. Liberalization of fish imports has, according to the Association, reduced the domestic share in the total West German fish supply by 32 percent from 1938 to 1960. Moreover, competition from imported fish is in many instances considered unfair by the Association because of the subsidization of fisheries in countries such as Iceland and Great Britain.

5. Substantial losses were incurred by the trawler trade as a result of the slump in fish-meal prices which reduced its returns for fish sold to the reduction industry and which impaired the profitability of fish-meal plants installed aboard many trawlers.

In its memorandum the Association pointed out that the trawler trade has endeavored to cope with its difficulties in many ways. Through the fusion of independent firms and the establishment of cooperatives, the number of trawler companies has been reduced from 40 in 1938 to 19 in 1961. Total investments in the modernization of the trawler fleet since 1949 have accumulated to more than DM 400 million (\$96 million). The trawler trade has adopted coordinated fish catching and landing programs and has also established a joint sales organization. A total of DM 5 million (\$1.2 million) has been spent by the trade to promote the freezing of fish and to further fish exports. In addition, the trade has introduced self-imposed quality standards. For sever-

al years the trawler trade has made contributions to a joint fish advertising and fish sales promotion organization at the rate of DM 0.80 (19 U.S. cents) a metric ton. Only recently, the trawler trade decided to introduce an additional levy of DM 10.00 (\$2.40) a ton to intensify fish sales promotion.

The rapid technical progress of the West German trawler fleet in recent years will make a further increase in productivity a slow and tedious process, claimed the Association, and competition from other protein foods forbids any significant increase of fish prices. In view of these facts, said the Association, the following Government assistance is requested.

1. In order to improve trawler fleet operations, the annual Government appropriation for exploratory fishing and the testing of pelagic fishing gear should be increased from DM 415,000 (\$99,600)^{1/2} to DM 4 million (\$960,000) for a three-year period. In addition, annual Government subsidies on interest rates for commercial loans used for adapting trawlers to distant-water operations should be increased for the next three years from DM 270,000 (\$64,800)^{1/2} to DM 400,000 (\$96,000). The Association also requested Government credit guarantees and grants in the amount of DM 3.5 million (\$840,000) per year for the promotion of domestic fish consumption, as well as guaranteed, interest-subsidized loans of DM 5 million (\$1.2 million) to finance the carrying of frozen fish stocks.

2. In order to tide the trawler trade over its momentary financial ebb, the Government should grant emergency credits at 2 percent interest per annum (analogous to aid granted to farmers for crop failures) for the consolidation of maturing bank loans. As additional relief for a three-year period, the Association requested the extension of Diesel fuel subsidies currently granted to the lugger and cutter fisheries to the trawler trade (cost about DM 4 million or \$960,000 per year), as well as the subsidization of coal used by 40 percent of the fleet (estimated expense about DM 7.5 million or \$1.8 million per year).

3. In the realm of foreign trade policy, the Federal Government should in bilateral trade agreements include provisions that would regulate the timing, the quantities, and the pricing of fish imports and see to it that administrative restrictions on West German fish landings in foreign countries are removed. Further, the Government was requested to introduce an import levy on fish meal, and to subsidize West German fish exports to the extent of DM 4-5 million (\$960,000-1,200,000) per year. Finally, the Association proposed the use of Government loans for the construction of facilities to dry fish, which would then be exported to developing countries under West Germany's forthcoming foreign aid program.

^{1/2}These are the amounts that were prorated to the West German trawler trade under Government support extended to the entire West German fishing industry for exploratory fishing and the modernization of fishing vessels.
Note: Values converted at rate of DM 1 equals 24 U.S. cents.

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FISH MEAL PRICES, APRIL 7, 1961:

Prices reported at Hamburg Commodity Exchange as of April 7, 1961, for fish meal delivered ex-Hamburg warehouse, or c.&f. West German sea port (see table on following page).

As compared with March 10, 1961, fish meal prices on the Hamburg exchange on April 7, 1961, ranged from unchanged to slightly lower for both domestic and imported fish meal. (United States Consulate, Bremen, April 10, 1961.)

German Federal Republic (Contd.):

Type of Fish Meal	Protein Content (%)	Delivery	DM/Metric Ton	US\$/Short Ton
German fish meal	50-55	prompt/Apr. 1961	455	103.19
" " "	55-60	" Apr. 1961	460	104.33
" " "	60-65	" " "	465	105.46
" " Std. brands	60-65	Apr. 1961	472.50	107.16
Icelandic cod	65-70	Apr.-June 1961	580	131.54
" herring	70-75	Aug.-Oct. 1961	595	134.95
Peruvian fish meal	65-70	prompt/Apr. 1961	437.50	99.23
" " "	65-70	May-June 1961	450	102.06
" " "	65-70	July-Dec. 1961	470	106.60
Danish herring meal	72-75	Apr.-May 1961	605	137.21
" " "	72-75	June-Sept. 1961	597.50	135.51

Note: Values converted at rate of 4,0 deutsche marks equal US\$1.



Ghana

EXPANSION OF FISHERIES AIDED BY GOVERNMENT PLANNING:

Ghana, rapidly mechanizing and modernizing its fishing industry, has also been considering an age-old problem--once production is increased, what should be done with the fish?

The Ghanaians are traditionally the fishermen of the West Africa coast, and it is estimated that 20 percent of the population is involved in some branch of the fishing industry.

As the major new ports at Tema and at Elmina swing into production, the Ghanaians who now yearly catch fish valued at about £2,300,000 (US\$6,440,000), will need new marketing methods to dispose of their increasing catches.

Large quantities of herring are already caught between June and September each year and there are ample indications that this season can be extended for 8 or 9 months. Abundant schools of tuna also appear the year round off the coast.

To aid the new independent African State in planning its industrial growth in fisheries, a fish-marketing expert from New South Wales, Australia, and the Food and Agriculture Organization (FAO), has been in Ghana helping to improve its fish marketing system.

The Government has introduced mechanized vessels in anticipation of increasing

production and the FAO expert advised on the type of shore installations needed for handling the additional landings and the best methods of distribution to benefit both the consumer and the producer. In his survey of the present Ghana fish marketing system he noted that it was too well established and complex to be changed quickly.

At present, the trade is completely controlled by the traditional women fish-mongers, who keep no records of any type, act as agents for the fishermen, and sell their catches.



Fishing canoes on a beach in West Africa.

The Government, following the FAO expert's advice to set up a pilot market, has built a modern market at Takoradi, which is at present the main base for the mechanized fleet.

Under the new set-up, the market acts as agents for the fishermen, selling the fish directly to the women traders at a negotiated price. In return, the traders, who have been

Ghana (Contd.):

able to handle only a small amount of fish in the past, are provided with ice and cold storage facilities to help them extend their business.

An early task undertaken by FAO's representative was to find out the number of canoes and fishermen in Ghana. He and his Ghanaian assistant visited every port of landing in Ghana. They counted 8,956 canoes, and estimated 67,000 fishermen to man them. This represents a very dense fishing population for Ghana's 360 miles of coast.

The FAO marketing specialist also surveyed the main fish markets in Ghana to determine the quantity of fish sold, its distribution through surrounding districts, whether the markets could handle more fish as production increased, and the number of people involved in marketing. At Kumasi, the largest market of its kind in Africa, he found a maximum of 919 women fish traders--a staggering number of traders even for a huge market. The minimum number of traders selling was 103--counted on a rainy day.

Although the survey showed that the cocoa growing area around Kumasi could absorb much more fish, the Kumasi market is too congested to accommodate more trade. It was suggested that the retail and wholesale trade be separated at Kumasi and other principal markets, and that the retail trade should be suburbanized.

Ghana's yearly catches are valued at about £2.3 million, but the country still imports £2.5 million (\$7 million) worth of fish, which is the main and cheapest source of protein for many Ghanaians.

The prices fluctuate, but during the herring season they drop to a level that anyone can afford. The Ghana Government has a very sound and farsighted fisheries policy for both the country's need and to develop an export trade. There are already 160 small mechanized vessels in use and the Government plans to launch a loan scheme to help the fishermen put outboard motors on their canoes.

It is also planned to develop the industrial side of the fishing industry by building a cannery and edible fish-meal plant, and a large

freezing plant which could handle tuna for export. (Ghana Daily Graphic, April 11, 1961.)

The principal aspect of fish marketing, which is not covered above, is the effect on the market of the substantial sales of frozen fish from Soviet and Japanese vessels operating in nearby waters. This fish is sold direct to the women traders in Accra, Tema, and Takoradi either at the pier or from private cold-storage plants. Despite the fact that the fish from the Soviet trawlers is regarded as imported and thus pays duty at 10 percent ad valorem, it has usually been sold at below the going price for Ghanaian-caught fish. Some of the Japanese boats operate under the Ghanaian flag and thus avoid the payment of duty.

To compete with this cheap Russian and Japanese fish, the local fisheries will have to be better organized and better equipped. The Ministry of Agriculture and the Agricultural Development Corporation are developing programs to this end, and the United Ghana Farmers Council is expected to launch a fisheries cooperative with modern equipment. (United States Embassy in Accra, April 12, 1961.)



Iceland

FISHERY PRODUCTS EXPORT TO SOVIET BLOC, 1960:

Iceland's exports of fishery products and byproducts to countries of the Soviet Bloc during the calendar year 1960 amounted to 54,048 metric tons, with f.o.b. value of about 508.9 million kronur (about US\$13.4 million at current rate of exchange of 38.0 kronur to US\$1). (See table.)

A decline in Iceland's trade with the Soviet Bloc countries which appeared during the first six months of 1960 continued until the end of that year. Over-all trade in both directions with the Bloc dropped from 31.8 percent of total trade with all countries in 1959, to 22.9 percent during 1960. The Soviet Bloc share of all imports decreased from 30.6 percent during calendar year 1959 to 22.7 percent in 1960. At the same time exports to the Bloc countries for those years dropped from 33.7 percent of total exports to 23.1 percent.

Iceland (Contd.):

Icelandic Exports of Fishery Products to Soviet Bloc, 1960										
Product	Country of Destination									
	Czechoslovakia		East Germany		Poland		Rumania		U. S. S. R.	
	Quantity	F.o.b. Value/	Quantity	F.o.b. Value/	Quantity	F.o.b. Value/	Quantity	F.o.b. Value/	Quantity	F.o.b. Value/
Metric Tons	1,000 IKr.	Metric Tons	1,000 IKr.	Metric Tons	1,000 IKr.	Metric Tons	1,000 IKr.	Metric Tons	1,000 IKr.	
Fish, frozen . . .	4,159	47,463	5,654	64,215	-	-	-	-	27,341	314,168
Herring, frozen . .	-	-	2,417	6,868	3,129	8,903	360	1,783	-	-
Herring, salted . .	-	-	1,000	3,435	-	-	536	1,968	4,922	24,079
Stockfish	-	-	10	144	-	-	-	-	-	-
Fish, canned	170	9,625	7	312	-	-	-	-	-	-
Fish meal	738	2,655	-	-	-	-	-	-	-	-
Herring meal	1,436	6,608	-	-	600	1,859	-	-	-	-
Cod-liver oil	1,169	11,050	-	-	400	3,716	-	-	-	-
Total	7,672	77,401	9,088	74,974	4,129	14,478	896	3,751	32,263	338,247

1/Values in terms of US\$ are difficult to determine due to complicated exchange rates in effect between January 1 and February 27, 1960.

Iceland however, closed the year 1960 with an import surplus from the Bloc countries of Icelandic kronur 166 million compared with Icelandic kronur 116 million in 1959. Taking the devaluation into consideration, the import surplus with the Bloc countries was to some extent reduced during 1960. (United States Embassy, Reykjavik, March 23, 1961.)

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WESTMAN ISLANDS FISHING TIE-UP ENDED:

The general fishing tie-up on Iceland's Westman Islands, which had lasted nearly six weeks, came to an end on March 1, 1961, when a settlement was reached with the Women's General Workers Union. Thousands of fishermen and shore workers soon streamed back to this important fishing center--and production began in earnest for the remainder of the main season which ends about May 15. (United States Embassy, Reykjavik, March 13, 1961.)



India

NATIONAL COMMITTEE SET UP FOR OCEANIC RESEARCH:

One of two new National Committees set up in India by the Ministry of Scientific Research and Cultural Affairs is the National Committee for Oceanic Research.

Its functions will be: to draw up a co-ordinated plan for India's participation in the International Indian Ocean Expedition; to advise on allocation of the program be-

two departments of government, research organizations, and university laboratories; to consider and approve a detailed plan for research in the several scientific disciplines related to India's participation and to recommend financial grants; to promote and co-ordinate the research programs; and to advise the government generally on all matters connected with India's participation in the expedition. This committee will also function as the National Committee for all oceanographic work. (United States Embassy, New Delhi, April 10, 1961.)



Italy

CANNERS SEEK INSPECTION AND CLAIMS SYSTEM FOR JAPANESE FROZEN TUNA IMPORTS:

The Japan Export Trade Promotion Agency reports that Italian canned tuna canners, after meeting in Rome to discuss procedures for purchasing Japanese tuna, submitted a proposal to their Government regarding the establishment of a system to inspect Japanese frozen tuna imports. Italian canners hope to establish means of settling claims against green meat tuna, fix rates of conversion for claims against green meat fish, and work out an inspection system.

Consensus is that the canner's proposal will encounter numerous difficulties in actual practice, although it is expected that a system such as that in effect in the United States shall gradually be adopted. (Suisan Keizai, March 30, 1961.)

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Italy (Contd.):

IMPORTS OF JAPANESE FROZEN TUNA ON DUTY-FREE BASIS SET AT 14,000 TONS:

Under a recent GATT (General Agreement on Tariffs and Trade) agreement, Japan can annually export 14,000 tons of frozen tuna to Italy on a duty-free basis. Exports exceeding this quota, which is based on Japanese exports to Italy in 1958, can be admitted free of duty by the Italian Government under the agreement covering special exemptions adopted in Rome in March 1960.

Japan

CANNED TUNA EXPORTS, 1955-59:

Japan's total exports of canned tuna increased each succeeding year from 1955 to 1959. In 1959, Japan exported 3.5 million cases valued at US\$28 million. Steadily rising exports of light meat tuna packed in oil and packed in brine accounted for this increase. Exports of white meat tuna in brine remained somewhat stable, while exports of white meat in oil declined sharply after 1957 due principally to the higher duty status for United States imports of tuna in oil. Exports of white meat

Japan's Exports of Canned Tuna, 1955-59

Item	1959		1958		1957		1956		1955	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
	1,000 Cases ^{1/}	US\$ 1,000								
White Meat:										
In oil	283.3	2,292	271.7	1,915	435.3	2,725	252.7	2,010	183.7	1,301
In brine	1,014.4	10,371	1,339.4	11,428	1,186.5	10,364	1,023.5	9,316	907.9	8,310
In jelly	19.9	132	36.5	247	32.8	208	-	-	-	-
Light Meat:										
In oil	1,158.5	7,092	667.7	4,200	823.3	4,931	650.9	4,255	288.4	1,785
In brine	1,038.6	7,500	813.0	6,055	720.6	5,306	682.7	5,033	588.1	4,389
In jelly	16.0	82	92.9	511	-	-	-	-	-	-
In tomato sauce	13.2	85	27.9	190	-	-	-	-	-	-
Total all types	3,543.9	27,554	3,249.1	24,546	3,198.5	23,532	2,614.8	20,614	1,968.1	15,785

^{1/}Packed 48 7-oz. cans per case.

Note: White meat - albacore only. Light meat - yellowfin, big-eyed, and skipjack tuna.

Both Japan and Italy favored having all frozen tuna exports to Italy admitted free of duty. France and some other nations were opposed. As a result, Japanese frozen tuna exports to Italy exceeding the established duty-free quota of 14,000 tons can be taxed by the Italian Government, if it wishes to do so.

The selection of the 1958 export record as a basis for determining amounts of frozen tuna which can be exported free of duty to Italy means that tuna exports to member nations of the European Common Market, such as France, West Germany, Netherlands, Belgium, Luxembourg, etc., would now very likely be subject to an import duty since frozen tuna was not exported to those countries in 1958. According to available information, Common Market nations are reported to be considering a frozen tuna import tax of 7.5 percent for 1962, which would successively be scaled to go up to 15 percent and 25 percent ad valorem. (Suisan Tsushin, March 30, 1961.)



and light meat packed in jelly, and light meat packed in tomato sauce declined in 1959.

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CANNED TUNA EXPORTS TO UNITED STATES:

The Tokyo Canned Tuna Sales Company late in March 1961 was taking temporary consignments of canned tuna for the first quarter of the new fiscal year (April 1, 1961, to March 31, 1962). Consignments in that month barely totaled 110,000 cases due to a poor winter albacore fishing season. Including the carry-over (primarily B-grade white meat), the total stocks on hand amounted to about 200,000 cases, which were to be sold at the fifth sale of canned tuna scheduled for late April.

Packers indicated that they will seek drastic changes in the sales system, but had not yet submitted any specific proposals. The Sales Company was considering the fifth sale for an agreement between exporters and pack-

Japan (Contd.):

ers on the latter's proposal, which was expected to be submitted soon.

At the canned tuna sales committee of Japan Canned Food Exporters Association held on March 9, it was decided to complete Sale No. 4 to the United States for 200,000 cases of whitemeat canned tuna only, same price as before, for shipment by the end of April. This completed the plan of selling 600,000 cases of canned tuna in the first quarter of 1961 (last quarter of 1960 Japanese fiscal year). A total of 800,000 cases were sold to the United States since Sale No. 1 conducted in December 1960. (Suisan Tsushin, March 25 and other Japanese periodicals of March 10, 1961.)

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FROZEN AND CANNED TUNA EXPORTS, 1947-1959; 1935-1939 AVERAGE:

Japan's exports of frozen and canned tuna have increased steadily since 1947. In 1950, the prewar 1935-1939 average was exceeded for the first time for both canned and frozen.

tuna in oil to Canada for FY 1961 (April 1, 1961 to March 31, 1962). According to MITI, canned tuna for export must be sold at or above established prices.

Japan Canned Foods Exporters Association has set the check price (floor price) for white meat tuna in oil to Canada at \$8.65 per case (48 7-oz. cans) f.o.b. Japan and light meat tuna in oil at \$7.40 per case (48 7-oz cans) f.o.b. Japan. These prices are the same as last year's prices. (Nippon Suisan Shimbun, April 3, 1961.)

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EXPORTERS ASSOCIATIONS ESTABLISH 1961/62 FROZEN TUNA EXPORT QUOTAS TO U. S.:

The Japan Frozen Foods Exporters Association plans to export 95,000 short tons of frozen tuna (consisting of 35,000 tons of albacore and 60,000 tons of yellowfin) to the United States in 1961/62 (April 1, 1961, to March 31, 1962). The albacore quota is to be made up of 30,000 tons of direct shipments from Japan proper and 5,000 tons of transshipments. Half of the yellowfin quota (30,000 tons) is to come from Atlantic Ocean sources.

The total quota of 95,000 tons is to be allocated to Association members on the basis of their 1958-1960 export records.

Table 1 - Japanese Exports of Frozen and Canned Tuna^{1/}, 1947-1959; 1935-1939 Average

	Frozen			Canned	All Exports Converted to Whole Tuna
	Direct Exports from Japan	Shipments to Europe (Metric Tons)	Transhipped to U. S.		
1959	67,035	22,499	16,156	3,543,951	187,892
1958	79,812	10,846	5,474	3,249,139	168,293
1957	70,940	11,483	-	3,198,502	160,155
1956	61,447	-	-	2,614,774	120,316
1955	71,827	-	-	1,968,053	115,909
1954	63,645	-	-	1,749,374	100,566
1953	45,874	-	-	1,788,382	81,784
1952	30,607	-	-	1,274,879	60,864
1951	24,457	-	-	634,432	41,244
1950	13,663	-	-	1,545,820	51,300
1949	2,957	-	-	211,526	8,847
1948	2,350	-	-	72,560	4,745
1947	312	-	-	-	2/
1935-1939 Average	3,861	-	-	435,168	14,925

^{1/}Includes skipjack tuna, which is generally listed separate from other tuna in Japanese statistics.

^{2/}Not available.

Exports of frozen and canned tuna reached their peak in 1959. Shipments to Europe and transshipments to the United States indicate the exploitation of tuna resources in the Atlantic by Japanese tuna vessels (table 1).

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FLOOR PRICES FIXED FOR EXPORTS OF CANNED TUNA IN OIL TO CANADA:

On March 30, the Japanese Ministry of International Trade and Industry (MITI) announced regulations for exports of canned

Each member is to place in the custody of the Association 65/95 of their allotted quota. This totals 65,000 tons, of which 35,000 tons (5,000 tons of albacore, 30,000 tons of yellowfin) are to be set aside for transshipments and 30,000 tons for direct shipments from Japan proper. The Association would release these fish upon receiving requests for their release from its members.

The Association officially adopted the plan at a special general session held on March 17.

The Association also plans to export 40,000 tons of tuna to Europe, as well as 5,500 tons of swordfish and 3,600 tons of tuna loins and discs to the United States, in the fiscal year.

A proposal was made at the March 17 meeting to station JETRO (Japan Export Trade Promotion Agency) personnel

Japan (Contd.):

at Puerto Rico and negotiations are to be conducted for this purpose. (Suisan Tsushin, March 8 & March 18, 1961; Shin Suisan Shimbun Sokuho, March 18, 1961.)

The Export Frozen Tuna Fisheries Association's board of directors met on March 8 in Tokyo and passed the following proposals, which were later ratified at a special general meeting of the Association held on the same day, concerning the distribution of 95,000 tons of frozen tuna to be exported to the United States in 1961.

Shipments made directly from Japan: (1) Albacore export quota to the United States (30,000 tons) shall be allocated to Association members as follows: 26,000 tons to companies on the basis of their performance records; 3,900 tons unassigned (so-called free quota), and 100 tons on reserve. (2) Yellowfin export quota to the United States (30,000 tons) shall be distributed in the following manner: 24,000 tons to firms on the basis of their performance records; 5,900 tons unassigned (free quota), and 100 tons on reserve. (3) Export quota of loins for the United States (3,600 tons) shall be distributed in the following manner: 3,400 tons to firms on the basis of their past records, 185 tons unassigned, and 15 tons on reserve.

Transshipments: (1) Vessel trips for freezer vessels hauling frozen tuna to the United States via intermediate ports shall be restricted to a total of 120 trips (based on a quota of 5,000 tons of albacore and 30,000 tons of yellowfin). (2) Numbers of trips each carrier can make shall depend on its cargo-carrying capacity. Carriers with cargo capacities of less than 150 tons shall be limited to five trips (with special permission from the Association's board of directors required to make up to eight trips); 150- to 250-ton cargo capacity vessels shall be restricted to four trips each; 250- to 550-ton cargo capacity vessels three trips, and vessels with over 550-ton cargo capacity two trips. (Suisan Tsushin, March 9, 1961.)

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FRANCE MAY IMPORT FROZEN TUNA:

France has put out unofficial feelers through a Japanese firm for importing Japanese frozen tuna. France has not specified the amount of tuna she would like to import, except that the import would take place after June. Also, 80 percent of the fish should be made up of dressed fish and the remaining 20 percent transshipments.

France imposes a high import tax of 33 percent on frozen tuna. For this reason a number of feelers put out by France in the past to import Japanese tuna have not materialized. (Shin Suisan Shimbun, April 10, 1961.)

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FROZEN TUNA EXPORT AGREEMENT WITH CZECHOSLOVAKIA SIGNED:

A large Japanese fishing company has signed an agreement with Czechoslovakia to deliver 1,050 metric tons of Atlantic Ocean yellowfin tuna in June 1961. Price to be about \$290 a metric ton c.i.f. Heretofore, Japanese frozen tuna trade with Communist-

bloc nations has been limited to Yugoslavia only, and this is the first sale to Czechoslovakia. (Shin Suisan Shimbun Sokuho, April 18, 1961.)

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PRODUCERS APPLY FOR PERMISSION TO SHIP FROZEN ATLANTIC OCEAN TUNA TO JAPAN:

The Japanese Export Frozen Tuna Producers Association has requested the Fishery Agency to authorize them to transport about 500 metric tons of frozen yellowfin, big-eyed tuna, and black marlin from the Atlantic Ocean to Japan. This request, second of its kind, involves the vessels No. 2 Akitsu Maru (994 gross tons) and Sagami Maru (1,007 gross tons).

The Fishery Agency was expected to approve this request since the objective of this plan is to help stabilize overseas tuna markets by diverting Atlantic Ocean tuna to Japan. Some time ago, the Fishery Agency approved a similar request for the Otsu Maru (8,000 gross tons). The Otsu Maru was due to arrive in Tokyo in late April with 800 tons of Atlantic Ocean tuna.

Akitsu Maru was to depart Las Palmas, Canary Islands, on May 1, and arrive in Japan around June 10. She was to pick up 387 tons of tuna from No. 18 Banshu Maru. Under joint-selling agreement terms, price for yellowfin and big-eyed tuna is \$158 a ton and for black marlin \$250 a ton (for delivery to Akit-su Maru).

Sagami Maru was scheduled to depart Port-of-Spain, Trinidad, in early May and was expected to arrive in Japan around May 30. This vessel was to bring back about 120 tons of frozen tuna. (Suisan Keizai Shimbun, April 18, 1961.)

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BLUEFIN TUNA FISHING IN INDIAN OCEAN:

Bluefin tuna fishing picked up in the Indian Ocean after February 25, with many vessels reporting excellent catches of nearly 10 metric tons a day. About 25 vessels were fishing in the vicinity of 97° E. to 101° E, longitude and 27° S. to 28° S. latitude early in March.

Total fleet landings, however, were not expected to be large, for many vessels left that area when fishing was poor elsewhere.

Japan (Contd.):

Those vessels were reported to have headed for the Arabian Sea and the eastern Pacific Ocean to fish for big-eyed tuna. (Nippon Suisan Shimbun, March 10, 1961.)

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CLAIMS AGAINST FROZEN TUNA DECREASING IN UNITED STATES:

The Japanese Export Frozen Tuna Fisheries Association compiled data on claims made in 1960 against Japanese yellowfin tuna

Product	1960		1959	
	Trans-shipments	Japan Shipments	Trans-shipments	Japan Shipments
Yellowfin:				
Gilled & gutted	3.4	4.5	10.3	4.7
Dressed	10.0	7.1	22.3	6.8
Fillets	15.9	-	34.0	8.3
	(Percent)			

imported by the United States canneries. According to the Association, claims have declined considerably. (Suisan Tsushin, March 13, 1961.)

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DELEGATION STUDIES SITES FOR OVERSEAS TUNA BASES:

The Shizuoka Prefectural Government in Japan is dispatching an observation party of four (composed of prefectural government and tuna industry members) to study the feasibility of establishing overseas tuna fishing bases in the South Pacific Ocean and Indian Ocean. This party was expected to leave Japan on April 25, and visit such places as New Caledonia, Santo Island (off east coast of Australia), Malaya, and Ceylon, and return about May 20.

Shizuoka Prefecture, which has about 200 registered vessels fishing for bonito and tuna-like fishes, is seeking overseas bases for the first time in hopes of stabilizing operations of these vessels. Other prefectures, like Mie and Kanagawa, have established foreign tuna-fishing bases in Malaya and Ceylon. These prefectures are reported to have obtained considerable success in expanding operations of their 100-ton class tuna vessels, although some hold the opinion that these operations are not completely successful due to problems involving fund transfers.

Principal sites to be studied as possible fishing bases are Santo Island on the east

coast of Australia; Penang, Malaya; Colombo, Ceylon; and Cochin on the southwest coast of India. (Suisan Keizai Shimbun, April 12, 1961.)

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EQUATORIAL ATLANTIC OCEAN TUNA FISHING TRENDS:

The Kanagawa Prefecture Fisheries Experimental Station in Japan late in March 1960 released the following report on tuna fishing by Japanese vessels around the equator in the Atlantic Ocean.

Up to 1959, Japanese vessels operating in the area numbered 20-30 a month, but they suddenly increased in 1960 to 54 in June and to 58 in October. After that, the number stabilized at around 55 every month. Seasonally, there are more vessels operating in July-December than in January-June.

The number of tuna vessels that touch at Freetown, Sierra Leone, and Dakar, French Senegal, for refueling has been rapidly increasing. In addition, the vessels have begun to use Las Palmas (Spanish Canary Islands), Zuara (Libya), Montevideo (Uruguay), and Mahdia (Tunisia). Las Palmas seems to be most suited for a supply port. The leading ten ports where the largest number of Japanese tuna vessels docked during 1960 were as follows:

Port-of-Spain (Trinidad), Cristobal (Panama), Freetown (Sierra Leone), Dakar (Senegal), Recife (Brazil), Toulon (France), Trapani (Sicily), Koper (Yugoslavia), Mar del Plata (Argentina), Palermo (Sicily). (Japanese newspaper, March 25, 1961.)

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LARGE FISHERY FIRM TO BUILD TWO LARGE TUNA VESSELS:

The second largest fishing company in Japan is planning to construct two tuna-fishing vessels in the 300-ton class. Each are to be equipped with 550 horsepower main engines. Target date for their completion has tentatively been set for September 1961.

In addition, the same firm is planning to build a 300-ton trawler. (Shin Suisan Shimbun Sokuho, March 9, 1961.)

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Japan (Contd.):

NUMBER OF PORTABLE VESSELS ON TUNA MOTHERSHIPS UNDER STUDY:

The Japanese Fishery Agency is considering proposals to revise regulations on the number of portable fishing vessels which large distant-water tuna mothership fishing vessels can carry. Tuna vessels cannot carry more than two portable vessels under existing regulations, but owners of large distant-water tuna fishing vessels of 1,000 tons or more hope to have this restriction lifted so as to increase operating efficiency.

The Fishery Agency is reported to be considering separate regulations for tuna motherships employing regular catcher vessels and tuna motherships carrying portable vessels. However, owners of small and medium vessels do not want to see present restrictions on numbers of portable vessels lifted since this would mean that large distant-water vessels would be able to increase production, and smaller vessels would likely suffer as a result of this increase in production. (Nippon Suisan Shimibun, April 7, 1961.)

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BERING SEA BOTTOM FISHERY PLANS FOR 1961:

A large Japanese fishery company's fish-meal factoryships Kinyo Maru (9,373 gross tons) and Renshin Maru (14,094 gross tons) were scheduled to depart from Hakodate on May 10-11, 1961, for the bottom fishing grounds in the Bering Sea. These two vessels hope to produce a combined total of 30,000 metric tons of fish meal and over 4,500 metric tons of frozen fish this year. In 1960 Kinyo Maru and Renshin Maru produced a total of 29,000 metric tons of fish meal, 5,400 metric tons of fish solubles, and 4,500 metric tons of frozen fish.

The same fishery firm's mothership Shinyo Maru (5,630 gross tons), which was engaged in herring and king crab operations in Bristol Bay last year, was scheduled to depart for Bristol Bay on May 5. Catcher vessels assigned to that fleet were to leave port three days earlier.

The following vessels, belonging to several fishery firms--Soyo Maru (11,192 gross tons), Tenyo Maru (11,581 gross tons), and Eiyo Maru (2,482 gross tons); factoryships Gyokuei Maru (10,357 gross tons) and Itsukushima Maru (5,889 gross tons); mothership Seifu Maru (8,693 gross tons); and other fleets--were scheduled to depart for the Bering Sea fishing grounds in late April or early May.

The above-mentioned fleets are part of a vast Japanese fleet of druggers and long-line vessels planning to engage in the Bering Sea bottom fishery extending from 170° E. longitude eastwards to Bristol Bay. According to the Japanese Fishing Industry Weekly, 20 motherships (vessels over 3,000 gross tons) and 15 large independent druggers and long-liners, most of them well over 1,000 gross tons, hope to participate in the Bering Sea bottom fishery this year.

The Japanese Fishery Agency has set up an area licensing system according to gear (trawl, long-line, and sunken gill nets) and whether a vessel had previously engaged in the Bering Sea bottom fishery. From all indications, the fleets will be concentrated primarily in two general areas, Bristol Bay and the area between Cape Olyutorskii and Cape Navarin. Catch target for the Japanese fleets is 61,000 metric tons of fish meal and 175,437 metric tons of frozen fish.

As far as bottom fishing operations in the area to the south of the Alaska Peninsula (east of 165° W. longitude and north of 53° N. latitude) are concerned, the Fishery Agency recently announced that commercial operations will not be permitted in that area although experimental fishing had been permitted in the past, due to the great likelihood of catching halibut, which is protected under the international North Pacific fisheries treaty involving Japan, Canada, and the United States. (Suisan Tsushin, March 14; Nippon Suisan Shimibun, March 6; Fishing Industry Weekly, February 24, 1961.)

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BRISTOL BAY FISH MEAL FACTORYSHIP FISHERY TRENDS:

Three of Japan's largest fishery firms, which are sending a total of four fish meal factoryship fleets to the Bristol Bay area this year, plan to produce a total of 61,026 metric tons of fish meal in 1961. Production target for the one firm with two fleets (Kinyo Maru fleet and Renshin Maru fleet) is 30,000 tons of fish meal; the targets of the other two firms with one fleet each are: Soyo Maru fleet 18,176 tons; and Gyokuei Maru fleet 12,850 tons.

Of the total of 61,026 tons, 1,400 tons are to be exported, 10,000 tons utilized by the fishery companies, and about 50,000 tons sold on the Japanese domestic market. It is reported that of the 50,000 tons, animal-feed



Typical Japanese factoryship operating in the Bering Sea. This was accompanied by a fleet of 24 trawlers.

Japan (Contd.):



Washing silt and mud from a deckload of fish on the main deck of a Japanese factoryship in the Bering Sea.

producers have already signed contracts to purchase 16,000 tons.

According to figures submitted to the fish meal factoryship companies by the Animal Feed Producers Association (which reportedly produces 70 percent of all animal feed produced in Japan), 108,597 metric tons of factoryship-produced fish meal can be used by the Association between May and December. Some sources claim that this figure is exaggerated, but it is quite interesting to note that this amount far exceeds the total combined production target of the four fish meal factoryships.

The fish meal factoryship Kinvo Maru, 9,373 gross tons, departed for Bristol Bay on April 11. Renshin Maru, 14,084 gross tons, was to have left for Bristol Bay on the same day but her departure was delayed due to mechanical difficulties. (Suisan Keizai Shimbun, April 11 and 12, 1961.)

Production targets for the two large fishmeal factoryship fleets sent out by one firm are:

	Fish Meal	Fish Solubles	Frozen Fish
	(Metric Tons)		
<u>Renshin Maru</u> . . .	16,000	4,500	6,000
<u>Kinvo Maru</u> . . .	14,000	3,000	1,600

Note: Also each fleet is scheduled to produce some fish oil.

CRAB FISHING IN BRISTOL BAY:

For Japanese crab fishing in Bristol Bay off Alaska this year, the Fisheries Agency decided not to accept an application from a newcomer to participate in that fishery. Consequently, the Tokai Maru fleet jointly operated by three Japanese fishery firms and the Shinyo Maru operated by still another fishery firm are the only fleets fishing crabs in Bristol Bay this season--the

same as in 1960. (Suisan Tsushin, March 24, 1961.)

CANNED SARDINE PACKERS ANNOUNCE PRICES AND TARGETS FOR 1961:

The Japan Export Canned Sardine Fisheries Association announced sardine prices and export targets and outlets for 1961 at a special general meeting held on March 10. The 1961 pack quota was set at 1,005,000 cases.

Table 1 - Japanese Canned Sardine Prices, 1961^{1/}

Size of Can & Case	Price Per Case	Cases
In Tomato Sauce:		
No. 1, 48's (oval)	2,450 yen (US\$6.80)	330,000
No. 3, 96's (oval)	2,900 yen (US\$8.06)	250,000
5-oz. 100's	2,250 yen (US\$6.25)	140,000
No. 4, 48's	2,225 yen (US\$6.18)	16,000
Square No. 8	-	19,000
Natural:		
Quota shall depend on market conditions and will be determined later.		

^{1/}Details given on only the pack of 755,000 cases.

Table 2 - Japanese Export Targets and Destinations for Canned Sardines, 1961

Destination	Cases ^{1/}
Philippine Islands	470,000
West Africa	125,000
Europe	89,000
Burma	16,000
Other countries	55,000
Total	755,000

^{1/}Standard case--48 1-lb. cans; details given on export of only 755,000 cases.

Consignments in 1960 totaled 423,906 cases and sales 448,688 cases; 1959 carryover was approximately 27,000 cases, leaving an unsold balance of approximately 2,000 cases. (Nippon Suisan Shimbun, March 13, 1961.)

SARDINE FISHING IN ONE AREA REPORTED GOOD:

At Onahama and Nakanosaku in Fukushima Prefecture, Japan, on the Pacific, some 500 tons of sardines were being landed every day in February. The season began in November 1960 and by February some 12,000 metric tons had been landed, valued at US\$1,083,333 ex-vessel, highest postwar record. The quantity was nine times as much as in 1955 when 125 tons of sardines and 1,297 tons of anchovies were landed and more than three times as much as in 1960 for the same period.

About 40 pairs of sardine purse seiners were operating, of which only three pairs belonged to Fukushima Prefecture leaving more

Japan (Contd.):

than \$833,333 for vessels coming from Aomori, Iwate, Miyagi, and Ibaragi Prefectures. The fishing ground was off the coast of Fukushima Prefecture and good fishing was expected to continue until the beginning of March. (Fisheries Economics News, March 10, 1961.)

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SARDINE FISHING GOOD IN SEVERAL AREAS:

At Choshi, Chiba Prefecture, on the Pacific coast of Japan, some 1,500 metric tons of pichard, worth about US\$111,111, were landed during five days in the first part of March 1961. This is considered to be an unusual occurrence in view of light landings in that area the past six years.

According to leaders of the local fisheries cooperative, the large-size sardines that had been moving northward for spawning from Kyushu waters were held back by a mass of cold water off Shizuoka, Kanagawa Prefectures the past few years. For this reason sardines have not been seen off Choshi for six years, but they have been caught off the Sanriku area.

The schools of sardines off Choshi this year came from the Goto area (off Nagasaki Prefecture) through the Sea of Japan and the Tsugaru Strait, arriving at waters off the Sanriku area where the Kurile and Black Currents meet, and the schools were carried southward to waters off Choshi, about 20 kilometers off the coast. (Fisheries Economic News, March 28, 1961.)

As of late March, fairly heavy landings of sardines were reported along the Pacific coast centered around Onahama in the Tohoku area since March 10, and local fishermen were encouraged because the area has not seen any significant sardine landings since World War II.

The sardine packers in the Choshi, Chiba Prefecture, area started production with fish from Onahama. Output amounted to some 20,000 cases in ten days--70 percent for domestic consumption and 30 percent for export. (Suisan Tsushin, March 24, 1961.)

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SECOND SALE OF CANNED SALMON TO GREAT BRITAIN:

In mid-March 1961, the Japanese Canned Salmon Sales Company started the second sale of some 190,000 cases (flat No. 2 7 $\frac{3}{4}$ -oz. cans) of canned red salmon for export to Great Britain, of which some 90,000 cases were sold early in March. Since about 50,000 cases were expected to be contracted, a total sale of 150,000 cases was considered to be certain. (Suisan Tsushin, March 20, 1961.)

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CANNED MACKEREL PACKERS ANNOUNCE PRICES AND TARGETS FOR 1961:

The Japan Export Canned Jack Mackerel Fisheries Association announced prices and export targets and outlets for 1961 at a special general meeting held on March 8, 1961, for the first 450,000 cases of canned jack mackerel. The total pack quota for the year is 800,000 cases. (Nippon Suisan Shimbun, March 10, 1961.)

Table 1 - Japanese Canned Jack Mackerel, Type of Pack and Prices for First 450,000 Cases Canned

Size of Can and Case	Price per Case	Cases ^{1/}
Tomato Sauce Pack:		
No. 1, 48's (oval)	2,100 yen (US\$5.83)	90,000
No. 3, 96's (oval)	2,350 yen (US\$6.53)	55,000
5-oz. 100's	1,950 yen (US\$5.42)	60,000
No. 5, 48's	1,950 yen (US\$5.42)	10,000
Natural Pack:		
5-oz. 100's	1,800 yen (US\$5.00)	95,000
No. 4, 48's	1,800 yen (US\$5.00)	140,000
Total		450,000

^{1/}Standard case--48 1-lb. cans.

Table 2 - Japanese Export Targets and Destinations for First 450,000 Cases of Canned Jack Mackerel, 1961

Destination	Tomato Sauce		Natural
	(Std. Cases ^{1/})		
Egypt	-	-	80,000
West Africa	50,000	-	-
Malaya-Singapore	80,000	-	-
New Guinea	20,000	-	45,000
Ceylon	-	-	90,000
Indonesia	10,000	-	-
Borneo	10,000	-	-
Thailand	20,000	-	-
Hong Kong	10,000	-	-
Other countries	15,000	-	20,000
Total	215,000	-	235,000

^{1/}Standard case--48 1-lb. cans.

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FISHERY AGENCY PROPOSAL TO STABILIZE FISH MEAL MARKET:

The Japanese Fishery Agency early this year made public a proposal, "Outline of Measures to Stabilize the Supply, Demand and Prices of Fish Meal for Animal Feed." The gist of the proposal is:

Japan (Contd.):

Livestock Bureau chief shall annually (in March-April) draw up estimates on demand and supply of fish meal, with data on supply to be provided by the Fishery Agency. When fish-meal producers and users meet to negotiate prices, Livestock Bureau chief and Fishery Agency director shall provide necessary guidance to promote smooth settlement.

Price range of fish meal shall be fixed. Upper limit shall be 56,000 yen (US\$155.56) a metric ton for top-grade saury meal, rail delivery Kanto (Tokyo and surrounding areas); lower limit 46,000 yen (\$127.78) a metric ton, delivery at production plant. Both Government agencies shall promote and encourage the sale of domestic fish meal within the framework of the above prices. Should domestic fish-meal prices exceed the established upper price limit for a period of over a month, then the Livestock Bureau, after consulting with Fishery Agency, shall determine the amount of foreign meal to be imported, as well as fix the time and means of importing foreign meal. However, imported foreign meal must not be sold for less than the lower price limit of domestic fish meal.

Differences realized from the sale of imported foreign meal shall be utilized to stabilize prices, production, supply, and demand, or allotted for studies on improving fish-meal quality. Livestock Bureau chief shall determine the final disposition of the funds but shall consult the Fishery Agency director.

Fishery Agency's proposal also covers exports of Japanese fish meal. The proposal states that Livestock Bureau chief shall consult the director of the Fishery Agency and draft necessary export regulations, giving careful consideration to overall market conditions. Export price shall be based on the price of foreign fish meal imports--49,000 yen (\$136.11) a metric ton for fish meal with protein content of over 60 percent, delivery at Japanese port--to which other charges may be added, such as dock storage and handling fees, depending on arrangements.

Concerning the proposal, the Fishery Agency contends that the Feed Supply Stabilization Committee composed of livestock and fishing industry representatives, as well as Government agencies, has not functioned smoothly; that the Agency seeks to promote the full development of the livestock industry and stabilize the fish-meal industry and that its proposal includes appropriate measures to achieve those objectives. (Fishing Industry Weekly, No. 303, March 5, 1961.)

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IMPORT OF ADDITIONAL 10,000 TONS OF PERUVIAN FISH MEAL:

The Japanese Ministry of International Trade and Industry announced early in March that a dollar allocation of \$1,050,000 had been made to import an additional 10,000 metric tons of Peruvian fish meal. Compared to the price of \$98.61 c.&f. per metric ton paid for the earlier purchase of 10,000 tons of Peruvian fish meal, price for this second purchase was expected to be about \$107 c.&f. per metric ton. (Nippon Suisan Shimbun, March 10, 1961.)

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FEED SUPPLY COMMITTEE RECOMMENDS IMPORT OF 32,000 TONS OF FISH MEAL:

The Animal Feed Supply Stabilization Committee in Japan in March 1961 reported to the Ministry of Agriculture and Forestry that it will be necessary to import 32,000 metric tons of fish meal in fiscal year 1961 (April 1, 1961, to March 31, 1962) to meet the Japanese demand. Plans call for importing 15,000 metric tons in April and 17,000 tons in May.

The decision of the committee is not final. The one member of the fishing industry who was asked to attend the committee's meeting boycotted it, and Japanese fish-meal producers are expected to strongly oppose the committee's decision. They contend that imports should be handled in the manner stipulated in the Fishery Agency's proposal, "Outline of Measures to Stabilize the Supply, Demand and Prices of Fish Meal for Animal Feed." (Suisan Tsushin, March 23, 1961.)

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FISH SAUSAGE AND FREEZING PLANTS COMPLETED:

One of the largest Japanese fishing companies has completed the construction of a three-story fish sausage-ham plant and a four-story cold-storage plant (capacity-4,000 metric tons), including a freezing plant capable of freezing 30 metric tons of fish in eight hours, at Kurihama. Facilities include a research laboratory and quarters for company personnel. Total construction cost was one billion yen (US\$2,777,777).

The new fish sausage-ham plant is capable of producing 600,000 pieces of fish sausage and hams. The Japanese plants, one in Sapporo, Hokkaido (daily capacity, 50,000 pieces); one in Ishinomaki, Miyagi Prefecture (daily capacity, 30,000 pieces); another in Hiroshima (daily capacity, 30,000 pieces); and that the daily productive capacity of all four of Nichiro's fish sausage plants now totals about 700,000 pieces. (Suisan Tsushin and Shin Suisan Shimbun Sokuho, March 23, 1961.)

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LARGE COMPANY SETS PROCESSED FISHERY PRODUCTS PRODUCTION TARGET:

The third largest fishing company in Japan has set its production target for fishery products in 1961.

Japan (Contd.):

Product	Unit	1961 Production Target	1960	
			Pro- duction	Value US\$
Canned:				
Salmon	cases	492,728	517,726	20,843,830
Crab	"	139,170	141,786	3,532,322
Tuna	"	55,090	46,868	310,658
Saury- sardine	"	116,150	28,228	183,680
Fresh fish	metric tons	17,324	17,959	3,095,422
Frozen fish	" "	28,591	20,701	5,394,694
Salted fish	" "	5,702	3,832	2,298,567
Fish ham	cases	98,000	48,026	223,875
Fish sausage	"	1,422,850	338,164	3,022,764
Animal feed	metric tons	30,074		

According to the target, the company plans to increase fish sausage production fourfold, and 1961 sales are expected to reach 3,500,000,000 yen (US\$9,725,000). A fourfold increase in canned saury and sardine production is also planned. The target also specifies production of canned Mandarin oranges, fruit juice, ice, eggs, poultry, mink fur, and mayonnaise.

As of the present, the company owns 20 canneries, 15 cold-storage plants, four fish sausage-ham plants, three frozen food plants, one fruit juice plant, one combined plant producing mayonnaise, pan fryers (chicken), and animal feed, a milk farm, and 91 vessels totaling 59,843 tons. (*Shin Suisan Shimbun Sokuho*, March 24; *Suisan Taushin*, March 10, 1961.)

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LARGE FISHERY FIRM PLANS TO INVEST OVER \$5 MILLION IN 1961:

A large Japanese fishery company plans to invest a total of two billion yen (US\$5,555,555) in 1961 for vessel and plant construction. The firm plans to build a 3,300-ton freezer vessel at a cost of 700 million yen (\$1,944,444); three tuna fishing vessels in the 400-ton class for 600 million yen (\$1,666,667); a fish sausage plant with a daily production capacity of 50,000 pieces; a cold-storage plant at Kesenuma in north-eastern Japan, where the company operates a two-line cannery; and a cannery at Shimizu, an important tuna port south of Tokyo. (*Nippon Suisan Shimbun*, March 6, 1961.)

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MARINE-OIL SUPPLY, FOREIGN TRADE, AND CONSUMPTION, 1959-1961:

Japan's production of edible marine oils declined in 1960 as compared with 1959, but this year production is expected to recover to an estimated 171,400 metric tons. Marine-oil production in Japan consists of cod-liver oil, shark-liver oil, fish oil, and whale oil. In 1961, whale oil is expected to account for 75 percent of the total production of 128,000 tons, followed by fish oil with 20 percent or 34,400 tons. Shark-

liver oil production is expected to amount to 3,000 tons in 1961, and cod-liver oil to 6,000 tons. In addition, production of inedible marine oils (all of which is sperm oil), amounted to 37,902 tons in 1959, dropped to 31,564 tons in 1960, and is expected to increase to 35,400 tons in 1961.

Imports of marine oils remain insignificant, but exports have been heavy and are expected to reach an all-time high of 111,000 tons in 1961 (tables 1 and 2).

Year	Production	Imports	Exports	Stocks on hand ³ January 1	
				Fish-Liver & Fish Oil	Whale Oil Total
1961 ¹	171,400	1,000	111,000	8,265	1,476 9,741
1960	134,577	1,046	84,598	17,384	3,976 21,360
1959 ²	156,594	1,545	84,572	9,293	5,728 15,021

¹/Forecast.
²/Revised.
³/Held by oil mills and oil-processing plants.

	1961 ¹	1960	1959 ²
 (Metric Tons)		
Cod-liver oil ³	6,000	5,700	6,618
Shark-liver oil ³	3,000	2,800	3,222
Fish oil	34,400	20,000	37,887
Whale oil	128,000	106,077	108,867
Total	171,400	134,577	156,594

¹/Forecast.
²/Revised.
³/Including medicinal oil.

Commodity	Origin	1960	1959	
		(Metric Tons)		
Edible Oils:				
	Cod-liver oil:	United States	-	-
		Korean Rep.	149	60
		Hong Kong	6	36
		Rep. of China (Taiwan)	-	4
Netherlands		3	-	
Total	158	100		
Shark-liver oil:	United States	57	-	
	Korean Rep.	89	23	
	Hong Kong	3	4	
	Rep. of China	91	115	
	Norway	33	20	
	France	3	-	
Argentina	-	10		
Total	276	172		
Fish-liver oil:	United States	18	34	
	Korean Rep.	123	232	
	Ryukyu Islands	2	1	
	Hong Kong	221	211	
	Rep. of China	16	38	
	Norway	-	5	
	Denmark	-	-	
Portugal	1	1		
Total	381	522		
Whale oil	Ryukyu Islands	233	751	
Total Edible Oils	1,048	1,545		
Inedible Oil:				
	Sperm oil	Ryukyu Islands	127	172
Grand Total	1,175	1,717		

Japan (Contd.):

Commodity	Destination	1959-1960 (Metric Tons)	
		1960	1959
Edible Marine Oils:			
Cod-liver oil:	United States	1,061	1,099
	Ryukyu Islands	1	-
	Hong Kong	6	2
	Thailand	4	4
	Malaya	0	1
	Singapore	2	7
	Norway	-	1
	Sweden	2	39
	United Kingdom	13	5
	Netherlands	-	4
	Belgium	-	30
	France	-	10
	Portugal	18	-
	Canada	9	45
	Mexico	36	114
	Colombia	-	7
	Brazil	2	-
	Others	0	0
	Total	1,154	1,368
Shark-liver oil:	United States	1	1
	Thailand	14	13
	India	5	5
	Lebanon	2	2
	Norway	54	5
	Sweden	-	11
	United Kingdom	-	5
	Netherlands	20	1
	Belgium	21	35
	France	1	22
	Italy	2	-
	Canada	-	4
	Argentina	16	-
	Total	136	104
Fish-liver oil:	United States	818	560
	Ryukyu Islands	2	2
	Hong Kong	1	-
	Rep. of China (Taiwan)	1	-
	Thailand	39	11
	Malaya	2	-
	Singapore	9	-
	Philippines	4	14
	Israel	3	-
	Lebanon	26	76
	Norway	407	56
	Sweden	36	27
	United Kingdom	120	159
	Netherlands	102	45
	Belgium	109	111
	France	212	184
	West Germany	0	1
	Portugal	2	-
	Italy	24	7
	Canada	18	39
	Mexico	7	38
	Colombia	-	1
	Honduras	2	-
	Brazil	2	-
	Peru	-	6
	Argentina	21	-
	South Africa	1	1
	Australia	26	-
	Others	-	0
	Total	1,994	1,328
Fish oil:	United States	7	-
	Ryukyu Islands	1	-
	Republic of China	163	476
	Thailand	-	1
	Philippines	-	1
	Iran	-	4
	Guam	1	-
	Total	172	482

Commodity	Destination	1960-1959 (Metric Tons)	
		1960	1959
Edible Marine Oils (Contd.):			
Whale oil:	Republic of China	10	18
	United Kingdom	21,548	23,985
	Netherlands	30,849	43,644
	Belgium	4,794	8,281
	West Germany	23,943	4,899
	Czechoslovakia	-	453
	Total	81,144	81,280
Total edible marine oils		84,600	84,572
Inedible Marine Oil:			
Sperm oil:	United States	4	0
	Korean Republic	5	-
	Republic of China	65	57
	Philippines	16	10
	Sweden	5,083	-
	United Kingdom	3,733	-
	Netherlands	1,744	15,696
	Belgium	10,364	-
	West Germany	546	3,229
	Total	21,560	18,992
Grand Total		106,160	103,564

Japan's stocks of total marine oils at the beginning of each calendar year increased from 15,021 tons in 1959 to 21,360 tons in 1960, but declined sharply on January 1, 1961, to 9,741 tons. Fish oil and fish-liver oil stocks accounted for 76 percent of the total stocks on hand over the three-year period; whale oil made up the balance (table 1).

Japan imported a total of 1,717 metric tons of edible and inedible marine oils in 1959 and 1,175 tons in 1960. Cod-liver oil (the bulk of which came from the Korean Republic), shark-liver oil (mostly from the Republic of China or Taiwan), fish-liver oil (mainly from Hong Kong and the Korean Republic), and whale oil (from the Ryukyu Islands) comprised 90 percent of the total marine oils imported for both years. Sperm oil from the Ryukyu Islands, the only inedible marine oil imported, accounted for the remaining 10 percent (table 3).

In 1959 and 1960, Japan exported virtually the same amount of edible marine oils, 84,572 tons in 1959 and 84,600 tons in 1960. Sperm-

Item	Consumption			Exports	Total Used & Exported
	Margarine & Other Processed Foods	Non-Food Uses	Total		
	(Metric Tons)				
Whale oil	17,120	2,100	19,220	108,600	127,820
Sperm oil	-	35,400	35,400	1/	35,400
Fish oil	27,590	11,300	38,890	2,900	41,790
Total	44,710	48,800	93,510	1/111,500	205,010

1/There evidently were some exports of sperm oil, but the amount was not shown.

Japan (Contd.):

oil exports, the only inedible marine oil imported, increased from 18,992 tons in 1959 to 21,560 tons in 1960. Total edible and inedible marine oil exports in 1960 were up 2.4 percent from 1959 (table 4).

Japan will use domestically 19,220 tons of whale oil in 1961 and export 108,600 tons. Sperm-oil use will amount to 35,400 tons with no exports. Fish-oil consumption should reach 38,890 tons, with some exports of 2,900 tons. (United States Embassy, Tokyo, April 14, 1961.)

Note: Also see Commercial Fisheries Review, January 1960 p. 74.

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TRADE AGENCY PLANS SECOND
TRADE SHOW IN NEW YORK CITY:

The Japan Export Trade Promotion Agency announced in March that it will again put on a trade exhibit in New York this year. This exhibition, the second of its kind, will be held from October 1961 to March 1962. (Shin Suisan Shimbum Sokuho, March 28, 1961.)



Mexico

ENSENADA FISHERY TRENDS,
FIRST QUARTER 1961:

Landings of spiny lobsters in the Ensenada area of northwest Mexico this season, which ended March 16, 1961, will probably surpass last year's by a slight margin. Spiny lobster landings in January and February were about 464,000 pounds. The season's total as of February 25, 1961, was 1,230,000 pounds, a little better than last year's total at that date.

Landings of sardines at Ensenada in January and February amounted to about 5.5 million pounds. Landings from the waters off Ensenada actually have been poor. The success of this year's fishing is attributed to the landings by larger boats which ranged down the peninsula coast as far as Punta San Juanico, some 500 miles south of Ensenada off the Territory of Baja California.

The abalone season opened on March 15. (United States Consulate in Tijuana, April 3, 1961.)

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MERIDA FISHERY TRENDS,
FIRST QUARTER 1961:

Landings of shrimp for the first quarter of 1961 in the Carmen-Campeche area of Mexico were normal for the time of year, the light landings being more the result of bad weather than the lack of shrimp. As sizes were larger than normal for the season, it is believed that inactivity during part of 1960 prevented the usual large catches of small shrimp and that the stocks are now in good shape. Prices changed very little from the latter part of 1960. Customer resistance, high inventories, economic conditions, and the hard winter in the United States combined to keep prices at the lower levels.

Yucatan's principal fish product has run into trouble in the United States. It is known locally as mero or grouper and has been sold in the United States packaged under the label of "snapper." Reportedly, the U. S. Food and Drug Administration (FDA) claims the practice is misrepresentation. The Mexican shippers claim the mero is a gray snapper, one of the varieties of snapper. The Mexican industry is awaiting a decision by the FDA regarding the name which may be used for the product. The product has been selling freely in Florida, but its sale is prohibited in Louisiana by State law. (United States Consulate, Merida, April 8, 1961.)

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SHRIMP FISHERY TRENDS, APRIL 1961:

During April this year, Mexican west coast shrimp landings at Guaymas and Salina Cruz were reported to be declining, while landings in the Mazatlan area were holding up fairly well. In the Gulf of Mexico area, Tampico landings were reported to be low, as they have been all season. High winds were bothering the Carmen-Campeche shrimp vessels with March landings averaging about 1,000 pounds of heads-off shrimp per trip.

Campeche landings during March this year were about 90 percent pink and 10 percent white. At Carmen they were about 40 percent each white and brown and about 20 percent pink.

Sizes at Campeche were about 80 percent under 30 count per pound for the first half of March and then sizes began to decrease until by the end of the month less than 60 percent of the landings were 30 count and under.

Mexico (Contd.):

Mexican Shrimp Ex-Vessel Prices on April 7, 1961, at Carmen and Campeche and Salina Cruz			
	Carmen & Campeche All Species	Salina Cruz	
		Brown	White
..... (U. S. Cents a Pound)			
10-14	54	-	-
Under 15	-	43	45
15-20	52	40	42
21-25	48	35	37
26-30	43	32	32
31-35	38	-	-
31-40	-	24	24
36-40	33	-	-
41-50	28	20	20
51 and over	-	15	15
51-65	23	-	-
66 and over	18	-	-

Carmen shrimp sizes were fairly uniform--about half 30 and under and half 31 and over per pound.

At Carmen and Campeche ex-vessel prices on April 7, 1961, were one to two cents a pound less than on March 1, 1961. (United States Embassy, Mexico, D. F., April 21, 1961.)

EXPORT DUTIES REVISED FOR SOME FISHERY PRODUCTS:

On March 28, 1961 (published in Diario Oficial, March 27, 1961) the Mexican Government made some slight changes in export duties by lowering those on fresh, iced, or frozen albacore and red snapper and increasing those on fresh, iced, or frozen catfish, stone and other walking crabs. The export duty was decreased on albacore about $\frac{1}{10}$ of a U. S. cent a pound and on red snapper about $\frac{1}{5}$ of a cent. The duty on catfish was raised about $\frac{16}{100}$ of a cent a pound and those on stone and other walking crabs about $\frac{23}{100}$ of a cent a pound. These changes were effected by changes in the official price on which ad valorem duties are based.

Current Mexico export duties, in U. S. cents a pound, are now about: fresh, iced, or frozen albacore 0.46; fresh, iced, or frozen catfish 1.22; fresh, iced, or frozen stone crabs 1.29; fresh, iced, or frozen walking crabs 1.29; and fresh, iced, or frozen snappers 0.75.

It is not anticipated that the changes in duties will have any effect on exports of these products to the United States. For the past several years, owing to ocean temperatures, albacore have not appeared in any

quantity off the Mexican west coast. The crabs have never been an item of great export importance. About 500,000 pounds of catfish and 250,000 pounds of red snapper were exported to the United States in 1959. (United States Embassy, Mexico, D.F., March 28, 1961.)

EXPERIMENTAL FISHING WITH GILL NETS FOR SPANISH MACKEREL:

The Mexican Small Business Bank of the Federal District (Banco del Pequeno Comercio del Distrito Federal) is financing an experimental fishing project for Spanish mackerel in the Gulf of Mexico. The Four Lads, a small mackerel gill-netter from Apalachicola, Fla., arrived in Veracruz in March 1961 and was expected to begin fishing immediately. The project is reported to be a 90-day survey to determine whether Spanish mackerel can be caught successfully along the Mexican coast with gill nets.

The traditional method of catching Spanish mackerel along the Veracruz coast is with beach seines set from row boats or powered skiffs. This method, of course, limits operations to a narrow belt immediately adjacent to the beach. Gill nets, if successful, would extend the fishing area considerably.

Spanish mackerel is a popular medium- to low-priced fish in Mexico. Increased production of this species should help provide fish for local use in a country where the per capita consumption is less than two pounds (probably landed weight) a year. (United States Embassy, Mexico, D.F., March 28, 1961.)



New Guinea

EXPERT CLAIMS GOOD POTENTIAL FOR SHRIMP FISHERY:

Shrimp from New Guinea could meet the challenge of cheap imports from Asia and provide new outlets for Australian investment. This is the opinion of an experienced fisherman and now a fish wholesaler and exporter of South Brisbane, Australia. The former fisherman was commissioned by the Australian Department of Territories to conduct a survey of fisheries resources in southern New Guinea waters.

He said, "In my opinion, there is a terrific potential for shrimp in the area. I am con-

New Guinea (Contd.):

vinced that with its low labour costs, New Guinea could easily compete with shrimp imports from China and other cheap production countries. The waters of southern New Guinea--particularly toward Orangerie Bay and Mullins Harbour, are capable of large-scale exploitation. However, a capital outlay of about £100,000 (US\$223,800) would be needed to establish the industry.

The Australian fisherman went to New Guinea as master of the Fisheries Research vessel Tagula. After fitting up the vessel for shrimp fishing, he made several surveys during his six months' appointment. He found: (1) a large variety of shrimp, chiefly king, greasy backs, banana, and tiger, but no school shrimp; (2) a big bed of scallops about 60 miles northwest of Port Moresby; (3) plenty of spiny lobsters off Yule Island; (4) large quantities of shrimp existed in the Daru area (Gulf of Papua); (5) a prolific fishing ground, chiefly for barramundi, along a 60-mile stretch of sunken reef in the Louisiade Archipelago; and (6) big numbers of dugong (sea cows) from which is extracted oil for the watchmaking and instrument trade.

He said the survey proved that the painted spiny lobster is a vegetarian and cannot be caught in traps. Catching will probably be restricted to hand capture--as at present.

There is a possibility that trawling could be used on the outside shallow edges of reefs or perhaps gill-netting. Shrimp were most prolific after the wet season.

The last month of the contract was spent in a mackerel survey along the Louisiade Archipelago. In the first six days, approximately 8,000 pounds of fish were caught, which showed the great potential development. (Fish Trades Review, February 1961.)



Nicaragua

NEW FISHERIES LAW ESTABLISHED:

A new basic fishing law for Nicaragua was promulgated in Gaceta Decree No. 557 of February 7, 1961. The law is designed to regulate the entire industry, and it establishes the general, and in many cases, the specific, regulations under which the industry is to operate.

The Gulf of Mexico coast of Nicaragua has seen an upsurge of interest in commercial fishing for shellfish that has made some sort of regulatory measure necessary. With the exception of the regulations governing sea-turtle fishing, there are no particular conservation measures in this decree, but provision is made for the promulgation of them at some future date under the present structure. Considering that fishing is a relatively new industry in Nicaragua and has not as yet been completely explored, this seems the best procedure. Also, provision is made for future regulation of the Pacific Coast fishing grounds which are not used at present for large-scale fishing.

Taxes that are set up under the law fall principally upon the vessel owner as opposed to the processing plant, although in at least some cases it may be assumed that the ownership would be identical. The owner of the processing plant is, in fact, given considerably greater inducement for investment in the country than is the vessel owner. The present Director General of Natural Resources has stated that this is to insure the permanency of the investment in the fishing industry and to keep out the gypsy operator, as well as to improve the chances of continued employment for Nicaraguan nationals and to serve as a conservation measure.

The actual extent of Nicaraguan territorial waters is not delineated in the law, although in those sections dealing with sea-turtle fishing there are certain regulations that would extend Nicaraguan jurisdiction to 7 kilometers or 4.4 miles.

Under the terms of the law all existing commercial or exploratory licenses must be reaffirmed to conform to the requirements. As of March 3, 1961, only one renewed license has been published in the Official Register, and although it is expected that most of present companies will be reregistered, it is known that at least one company that has been operating in Nicaraguan waters for the past several years may have some difficulty in obtaining a permit under the new law. (United States Embassy, Managua, March 3, 1961.)



Norway

ANTARCTIC WHALING PRODUCTION UP IN 1960/61 SEASON:

According to press reports, the Norwegian Antarctic whaling expeditions produced a total of 665,883 barrels of whale oil from a catch of 5,194 blue-whale units during the 1960/61 season which ended April 7. The catch was substantially better than last season when only 4,568 blue-whale units were taken, but it was still considerably below the national quota of 5,800 units based on the actual catch in the 1958/59 Antarctic season. The Norwegian expeditions also produced 74,342 barrels of sperm oil this season, about 11,000 barrels more than in 1959/60. The total production, including byproducts, is valued at about 180 million kroner (US\$25.1 million), the United States Embassy in Oslo reported on April 14, 1961.

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FISHING FIRM PLANS TO BUILD RESEARCH LABORATORY:

A fishing company plans to build a research laboratory in Kabelvag to study the Lofoten cod in cooperation with the Ocean Research Institute of Bergen. The cost of the laboratory plus a research vessel will be about Kr. 1.9 million (US\$266,000)--News of Norway, March 30, 1961.

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FISHING LIMITS EXTENDED:

According to a Government decision announced March 24 the Norwegian fishery zone will be extended from 4 to 6 nautical miles on April 1 and from 6 to 12 miles on Sept. 1, 1961. Norwegian trawlers up to 300 gross tons will until further notice be permitted to fish in the zone between 4 and 6 miles. Vessels of more than 300 tons may trawl in this zone until October 1, 1961. Regulations banning holiday fishing will not be affected.

The two-stage extension was approved by the Norwegian Parliament. The controversial question of trawling rights between the 4 and 6 mile limits was the subject of a 7-hour debate. A large majority, which included Representatives of all parties, supported a compromise proposal recommended by the Foreign Affairs Committee and subsequently adopted by the Government.

One of the two rejected minority proposals urged that all trawling inside the 6-mile

limit be banned from July 1, 1961, as demanded by fishermen in North Norway. The other, also turned down, proposed that trawlers above 300 gross tons should be granted unrestricted fishing rights in the 4-6 mile zone, as demanded by trawling and filleting companies. (News of Norway, March 30, 1961.)

Note: Also see Commercial Fisheries Review, May 1961 p. 56.

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WINTER-SPRING HERRING FISHERY WORST IN MANY YEARS:

The winter-spring herring fishery off Norway's west coast that ended March 31, 1961, was the worst in a generation. The total catch of winter and spring herring was less than 72,000 metric tons, nearly 30,000 tons below the figure predicted by the most pessimistic fishery experts. The entire catch was not much larger than a good day's landings in one of the better herring years.

The failure is attributed to a combination of factors. Not only was there far less herring than in former years, but the weather was so stormy during most of the season that for days on end fishing vessels were forced to stay in port.

Yet, the economic consequences appear to be less serious than would have been the case only a few years ago. Main reason is that fishermen, prepared for failure, made cautious investments. (News of Norway, April 20, 1961.)

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FISHERY LANDINGS, 1957-1960:

Norway's total landings of all fishery products amounted to 1.3 million metric tons valued at US\$89.9 million ex-vessel in 1960; 1.4 million tons valued at US\$93.4 million in 1959; 1.2 million tons valued at US\$81.4 million in 1958; and 1.6 million tons valued at US\$87.7 million in 1957. (See table 1.)



Lobster pots used by part-time Norwegian fisherman.

Norway (Contd.):

Table 1 - Norway's Landings of Fishery Products by Principal Species Groups, 1959-1960

Item	1960			1959		
	Quantity	Value		Quantity	Value	
	Metric Tons	Kr. 1,000	US\$ 1,000	Metric Tons	Kr. 1,000	US\$ 1,000
Herring and sprat (brising)	680,336	195,663	27,403	727,500	215,491	30,180
Cod and cod byproducts	225,107	192,837	27,007	267,294	218,524	30,604
Others	401,664	253,205	35,461	365,332	232,573	32,572
Total	1,307,107	641,705	89,871	1,360,426	666,588	93,356

Note: Values converted at rate of one kroner equals US\$0.14005.

Herring and cod continued as the most important species landed, accounting for approximately two-thirds of the total landings. Sand eel (used principally for fish meal) land-

ing is, however, important to note that fisheries others than the herring and cod fisheries have shown steady progress for years already. Interest and repayments of loans

Table 2 - Norway's Landings of Fishery Products, 1957-1960/1

Item	1960/1			1959/1			1958			1957		
	Quantity	Value		Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	Kr. 1,000	US\$ 1,000	Metric Tons	Kr. 1,000	US\$ 1,000	Metric Tons	Kr. 1,000	US\$ 1,000	Metric Tons	Kr. 1,000	US\$ 1,000
Capelin	92,765	10,399	1,456	78,967	8,812	1,234	91,680	7,341	1,027	70,022	6,464	904
Sea trout	1,230	14,000	1,961	1,233	13,766	1,924	1,239	14,205	1,987	1,398	15,153	1,840
Halibut	5,248	18,854	2,641	5,198	18,745	2,345	5,622	16,829	2,354	4,793	15,590	2,180
Halibut, Greenland	6,077	4,441	622	4,307	3,034	425	2,931	1,911	267	4,130	2,456	344
Flounder	1,164	2,099	294	1,163	1,783	250	1,155	1,818	254	1,189	1,598	246
Cusk	20,121	15,975	2,237	15,478	11,074	1,551	15,939	10,745	1,503	11,225	6,773	947
Haddock	35,645	25,803	3,614	37,510	26,945	3,774	41,578	25,404	3,553	41,841	23,118	3,233
Cod: Spawning	75,024	67,403	9,440	89,826	75,576	10,584	70,589	59,313	8,296	59,497	43,648	6,105
Finmark	39,479	30,278	4,240	52,484	41,503	5,812	69,289	50,889	7,061	52,143	36,032	5,036
Bank and Fiord	96,300	85,232	12,077	107,801	90,918	12,733	116,778	92,199	12,895	117,829	86,888	12,569
Pollock	1,842	1,711	240	2,265	2,037	285	2,506	2,163	303	2,486	1,859	260
Saithe	7,274	42,241	5,918	80,698	42,521	5,955	66,472	35,176	4,920	75,864	35,690	4,992
Ling and blue ling	13,304	11,860	2,061	13,948	14,209	1,980	10,932	9,118	1,278	9,816	7,545	1,055
Ling: Spawning and Finmark cod	10,010	4,353	510	12,375	5,366	752	13,818	6,738	942	9,705	5,443	761
Roe: Spawning cod	4,294	3,481	502	4,808	3,949	553	4,030	3,371	471	3,509	2,888	401
Herring: Winter	300,143	89,684	12,566	416,360	115,280	16,148	348,294	880,878	11,312	795,582	183,067	25,603
Fat	61,162	16,119	2,257	45,490	12,340	1,728	53,860	13,540	1,894	45,306	10,565	1,478
Small	215,260	35,708	5,091	179,916	30,342	4,249	146,193	27,175	3,801	129,624	23,356	3,267
Fiord	2,105	1,618	227	1,423	1,035	145	1,239	926	130	1,141	834	117
Trawl	15,999	5,337	775	16,938	5,944	832	8,187	2,688	376	7,651	2,396	335
Iceland	77,644	35,941	5,034	56,536	33,622	4,709	52,904	32,318	4,520	30,962	23,959	3,351
Sprat or herring	8,203	11,955	1,548	11,137	16,928	2,371	5,617	8,103	1,133	9,524	13,461	1,883
Mackerel and young mackerel	19,733	12,298	1,722	17,596	11,541	1,616	14,591	9,573	1,339	11,617	7,352	1,028
Tuna	3,267	5,771	808	2,522	4,324	606	3,004	4,307	602	5,009	8,188	1,145
Sand eel	13,651	3,097	434	7,866	1,988	278	4,817	1,110	155	3,220	721	101
Ocean perch	6,637	3,930	550	3,978	2,702	378	4,212	2,584	361	4,040	2,641	369
Wolffish	2,743	1,192	167	3,304	1,578	221	2,801	1,252	175	2,376	1,083	151
Dogfish	20,594	10,958	1,535	19,108	7,492	1,049	22,412	8,143	1,139	18,074	7,236	1,012
Crab	3,485	2,104	295	3,636	2,387	334	3,920	2,341	327	3,138	1,951	273
Lobster	680	8,783	1,230	683	7,755	1,086	714	7,170	1,003	655	6,750	944
Prawn, deep-water	9,496	29,423	4,121	9,706	30,296	4,243	7,270	22,575	3,157	7,071	20,877	2,920
Squid	100	50	7	1,795	665	93	9,618	2,404	336	73	34	5
Livers, other	13,812	5,800	812	14,295	6,349	889	15,090	6,788	949	15,237	9,149	1,280
Roe, other	613	878	123	519	137	19	1,210	886	124	1,193	739	103
Seaweed, dried	13,000	2,500	322	12,117	2,144	284	15,561	2,863	330	10,018	1,965	281
Others	34,893	17,728	2,413	27,442	13,501	1,891	32,829	8,121	1,136	6,108	8,221	1,150
Total	1,307,107	641,705	89,871	1,360,426	666,588	83,356	1,236,851	582,275	81,437	1,573,892	626,751	87,657

1/1960 preliminary.

1/1959 rounded.

Note: Values converted as follows: 1959-1960: one kroner equals US\$0.14005; 1957-1958: one kroner equals US\$0.13956.

ings steadily increased over this 4-year period, but tuna landings remained relatively insignificant and leveled off near 3,000 tons per year. (Fiskets Gang, December 1960.)

The decline in the Norwegian fisheries since 1956, when nearly 2 million tons were landed, may be ascribed to the failing winter herring fishery which in 1960 yielded only a little more than one fourth of the catch in the record-breaking year of 1956. The total catch of cod, including byproducts, was some 42,000 tons smaller than in 1959.

and advances made by the State Fishery Bank to owners of fishing vessels were paid more readily in 1960 than in 1959. The fishermen have been able to find a way out of their difficulties. Some had good fishing in the Iceland fishery and distant-water fishing also proved profitable.

The loans granted by the State Fishery Bank at present amount to about 230 million kroner (US\$32.2 million). For the year of 1961 the Government presupposes normal loans from the Bank totaling 34 million

Norway (Contd.):

kroner (\$4.8 million) for new construction and modernization of old vessels and another 20 million kroner (\$2.8 million) for modern trawlers.

Even if comparatively few new fishing vessels were built last year for Norwegian owners--quite a number were constructed for Iceland and the Faroe Islands by Norwegian shipbuilding yards--a feature of the situation is the interest in Norway in factory trawlers and stern-trawlers. Norway's first factory trawler has successfully started fishing operations; a couple of small vessels of the stern-trawler type were built in 1960, and in March 1961 the first big stern trawler, built for a fishing company in Northern Norway, was scheduled to be delivered. A few more stern trawlers are going to be built at Norwegian and foreign yards. (Norwegian Fishing News, No. 4, Vol. 7, 1960.)



Peru

EXPORTS OF MARINE PRODUCTS, FOURTH QUARTER 1960 AND YEARS 1959-60:

Exports of principal marine products by Peru in 1960 amounted to 603,995 metric tons (valued at US\$53.0 million). Fish meal exports (507,042 tons) for 1960 were up about 32.7 percent from the 277,600 tons exported in 1959. The average export value of fish meal per metric ton in 1960 was only \$76.32 as compared with \$111.10 in 1959. Exports

of fish oil increased sharply (104 percent) in 1960, but the exports of frozen and canned fish dropped from 43,734 tons in 1959 to 33,897 tons in 1960. (United States Embassy in Lima, April 12, 1961.)

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FRENCH EXPERT STUDIES SITE FOR NEW FISHING PORT:

A representative of a French enterprise (Societe Grenobloise D'Etudes et D'Aplications Hydrauliques), under a 90-day contract with the Peruvian Ministry of Development, has begun a search for a site for the location of a new fishing port. The objective is to remove the problem of air pollution from the urban areas of Lima and Callao by relocating approximately 35 fish meal plants. This is one of the proposals being considered by the industry committee appointed by the Government to find a solution to this problem.

Many reduction plants have installed deodorizing equipment or have taken other measures to reduce or avoid the troublesome odors that sometimes invade the two cities and suburban areas under certain atmospheric conditions, and it is believed that considerable success has been achieved. This method appears to offer the most feasible permanent solution to the problem of odors. (United States Embassy, Lima, April 12, 1961.)



Peruvian Exports of Principal Marine Products, October-December 1960 and Years 1959-60

Marine Products	Oct.-Dec. 1960			Year 1960			Year 1959		
	Qty.		Value 1/	Qty.		Value 2/	Qty.		Value 3/
	Metric Tons	Million Soles	US\$ 1,000	Metric Tons	Million Soles	US\$ 1,000	Metric Tons	Million Soles	US\$ 1,000
Fish meal	123,442	206.2	7,680	507,042	1,056.4	38,696	277,600	860.5	30,842
Fish (frozen, canned, etc.) . . .	9,035	54.6	2,036	33,897	210.2	7,700	43,734	266.6	9,556
Fish oil	11,280	31.3	1,147	35,008	99.2	3,634	17,165	47.7	1,602
Sperm oil	4,011	13.9	518	13,500	46.3	1,696	10,004	33.9	1,215
Fertilizer (guano)	1,824	4.4	164	11,765	28.9	1,059	11,767	28.3	1,014
Whale meal	1,240	2.1	78	2,783	4.7	172	3,917	9.7	348
Total	150,832	312.5	11,623	603,995	1,445.7	52,957	364,187	1,246.7	44,577

1/F.o.b. values, converted at rate of 26.85 soles equal US\$1 for fourth quarter of 1960.

2/F.o.b. values, converted at rate of 27.30 soles equal US\$1 for 1960.

3/F.o.b. values, converted at rate of 27.90 soles equal US\$1 for 1959.

Philippines

TRADING COMPANY OPENS BIDS FOR CANNED SARDINES:

On March 14, 1961, the Philippine trading organization (NAMARCO) held its quarterly bid opening for 165,000 cases of sardines, with 12 firms tendering offers. As trade sources predicted, no foreign suppliers or indentors offered Japanese sardines, and 11 of the bidders offered South African fish.

United States interests were represented in the following way:

- (1) Only one firm obtained United States sardines (probably Maine sardines). The price, however, over US\$10 a case, was \$3 higher than most South African tenders.
- (2) Three Philippine indentors submitted bids from United States firms to supply South African sardines.
- (3) Three local subsidiaries of United States firms participated in the bidding, also offering South African products.

It appears, therefore, the United States interests will get at least a share of the latest NAMARCO sardine business, although probably no United States brand sardines will be supplied due to lack of stocks from the 1960 pack. (United States Embassy, Manila, March 21, 1961.)



Ryukyu Islands

JAPANESE FISHING COMPANY ESTABLISHES JOINT FISHERY COMPANY IN OKINAWA:

A large Japanese fishing company and a Ryukyu whaling company have invested US\$200,000 each in a joint fishery company in Okinawa. This new firm has three whaling vessels and one 350-ton tuna vessel.

The new company expects to catch 140 humpback whales and produce 500 metric tons of tuna a year. The tuna is to be utilized for the production of fish sausages and hams, and plans call for building a plant in the Ryukyus capable of producing 15,000 pieces of fish sausages a day.

Annual consumption of fish sausages in Okinawa totals about four million pieces, of

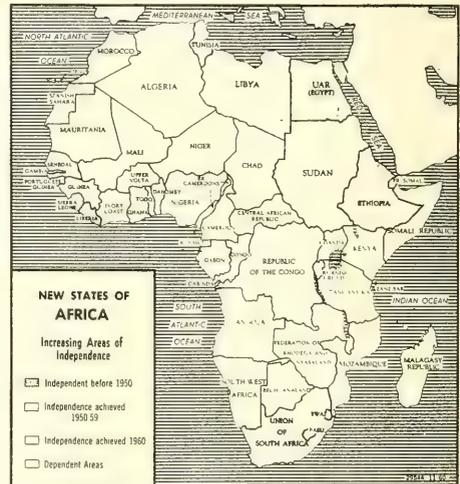
which 90 percent is supplied by the large Japanese fishing company's Shimonoseki plant in southern Japan. The proposed new fish sausage plant, upon its completion, is expected to replace this source of supply. (Nippon Suisan Shimbun, March 27, 1961.)



South-West Africa

SPINY LOBSTER LANDINGS BEST IN SEVEN YEARS:

Spiny or rock lobster processing plants in South-West Africa's port of Luderitz were reported working overtime in March this year to keep up with the biggest spiny lobster catch in seven years. The success of the spiny lob-



ster season is greatly dependent on favorable weather for boat operations; weather conditions this season have been nearly perfect so far. Up to mid-March, the factories at Luderitz had processed 30,000 units of spiny lobster tails (units of 20 pounds), of which three-quarters had been frozen for export to the United States and the rest canned, chiefly for the United Kingdom and Continental markets. (United States Embassy, Pretoria, March 23, 1961.)



Sweden

DATE OF INTERNATIONAL FISHERIES FAIR CHANGED:

The date of the Swedish International Fisheries Fair in Goteborg, which was originally announced as November 9-19, 1961, has been changed to November 2-12.

The exposition will cover a wide range of subjects connected with the fishing industry. Among the items to be displayed are boats, machines, electrical equipment for boats, fishing equipment, processing machines, transport apparatus, work clothes, etc.

The Fair will embrace approximately 10,000 square meters of display space. A total of 5,000 invitations to participate in the Fair have been sent to fishing organizations, companies, etc. both in Sweden and abroad.

Although the exhibition is primarily concerned with commercial fishing, sport fishing is to be included. It is hoped that the Fair will serve to bring about better understanding between sport and commercial fishermen. (United States Consulate, Goteborg, April 18, 1961.)



Togo

FISHING INDUSTRY:

Fishing is an important yet primitive industry in Togo. Salt-water fishing is done by canoes or pirogues which carry about seven men. The catch primarily consists of small sardine-size fish which are dried—most larger fish are salted or smoked. Salt-water fish are of little importance in the interior due to the lack of storage and transportation facilities. Some shrimp and spiny lobsters are also caught. One trawler presently operates from Lome, but a port must be constructed before Togo's fishing industry can develop.

Some fresh-water fishing is done in Lake Togo, the Oti, Mono, and Kara rivers and in stocked basins. (United States Embassy, Lome, November 14, 1960.)



Tonga Islands

ATTEMPT TO ESTABLISH A TUNA FISHERY RESUMED:

Over the period 1958-59, the Government of the Tonga Islands (a group of islands south of American Samoa) employed a New Zealand-built fishing vessel for training purposes in long-line tuna fishing techniques. During 1958 the vessel caught 187,731 pounds of fish of which 29.2 percent were tuna, and in 1959 caught 117,432 pounds of which 29.6 percent were also tuna. Based on these results, it was decided to proceed with the ordering of a vessel specifically designed for long-line tuna fishing and the *Teiko* was obtained from Japan. This ship was lost with all hands on her maiden voyage from Nuku'alofa in March 1960, and this loss was difficult to overcome.

A Japanese expert was subsequently engaged from Japan as Senior Fisheries Officer and arrived in the Kingdom with his family in September 1960. It was necessary to start from scratch in training a new crew in long-line methods. Also, as a considerable quantity of fishing equipment had been transferred from the New Zealand vessel to the *Teiko*, new lines and rigging had to be obtained. The first training voyage was made in early November 1960, and a total of 14 trips had been made up to the end of January 1961, with the following results as regards catches: tuna, 6,120 pounds; marlin, 10,802 pounds; shark, 12,014 pounds; and 498 pounds of miscellaneous species.

In November and December 1960, the average percentage of shark caught was 41 percent as compared to 49.5 percent and 48.8 percent in 1958 and 1959 operations, respectively. In January 1961, the average percentage of shark caught in 4 trips had dropped to 32 percent. These figures give grounds for cautious optimism as the percentage of shark caught in long-line operations is a problem in this type of fishing. It is understood that Japanese fishing concerns will tolerate up to an average shark catch of 62 percent on extended operations. Certain species of shark liver have reasonable commercial value, but the meat is not as good as that of tuna and other fish. All fish landings are made at Nuku'alofa where tuna and other species (except shark) retail for about one Tongan shilling (11.2 U. S. cents) a pound dressed weight. Shark meat sells for about 4 U. S. cents a pound. The question of what form further developments in the establishment of a commer-

Tonga Islands (Contd.):

cial fishing industry will take is at present under consideration. (United States Consulate of Suva, Fiji Islands, March 29, 1961.)



Union of South Africa

1961 PILCHARD SEASON OFF TO GOOD START:

With an expected total of more than 80,000 short tons, the Union of South Africa Cape west coast pelagic shoal fishery started the 1961 pilchard season with a record catch for any January period in the history of the industry. The January 1961 catch was also one of the highest ever landed in any one month of fishing.

After a rather disappointing experiment in the last two months of 1960 when boats went out for maasbanker or jack mackerel and mackerel only and caught less than 30,000 tons, the 1961 season got off to a remarkable start early in the year.

The previous three seasons were good ones for the industry, but the best previous January catch was below 35,000 tons.

This season the boats moved out and found their fish in packed shoals back where they were found some five or six years ago--in the St. Helena Bay area within a short distance of west coast factories. Later in the month, good catches were also made in the False Bay area.

With fish readily available within short distances of factory docks, boats came in with deckload after deckload. Several St. Helena Bay and Saldanha factories had a record or near record monthly intake. Fish were fat, mainly pilchards yielding about 20 gallons of body oil to a ton. The short hauls with good fish also proved good for canning.

With the decision last year to permit fishing for maasbanker and mackerel in November and December, the Cape west coast pelagic shoal-fishing season now extends from the beginning of November to the end of July.

The total catch to the end of December was 28,243 short tons, made up of 23,551 tons of maasbanker and 4,692 tons of mackerel.

In November the maasbanker catch was 8,674 tons and the mackerel catch 2,769 tons for a total of 11,443 tons. This catch yielded 1,682 tons of fish meal, 57,545 gallons of fish-body oil, 1,950,336 pounds of canned maasbanker, and 514,392 pounds of canned mackerel.

In December the maasbanker catch was 14,877 tons and the mackerel catch 1,923 tons for a total of 16,800 tons. This catch yielded 3,312 tons of fish meal, 136,341 gallons of fish-body oil, 2,294,688 pounds of canned maasbanker, and 710,304 pounds of canned mackerel. (The South African Shipping News and Fishing Industry Review, February 1961.)



U. S. S. R.

FACTORYSHIP STERN-TRAWLERS FOR FISHING IN TROPICS:

The first of a series of stern-trawling factoryships designed for fishing in tropical waters is being constructed in East Germany.

Tropik I is specially built for fishing in central and south Atlantic waters. It can carry fuel and supplies for a 60-day trip, and it is expected that it will land 5,100 to 5,800 metric tons of processed fish and fish products annually. The vessel is 260 feet long and its two main motors are 670 hp. Diesels.

The crew of 76 will be housed in state-rooms, all with hot and cold water. All living and working quarters will be air conditioned.

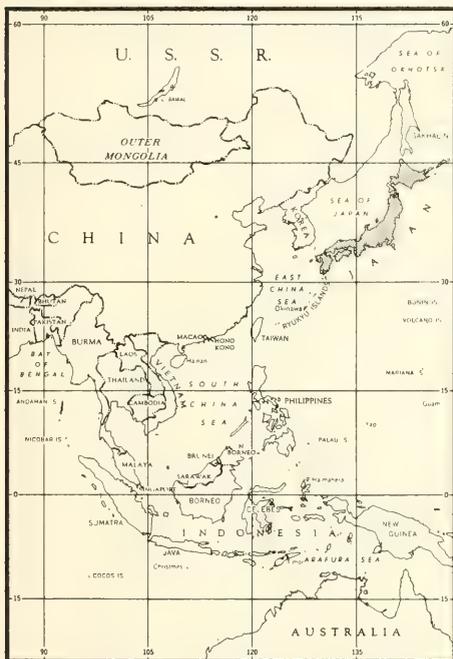
Tropik I differs from other factoryship trawlers in that it does not have a continuous shelter deck. The vessel is designed to fish with bottom and midwater trawls for sardines, herring, and flatfish. In addition, there is gear for catching tuna with pole and line or long lines, a fish pump for sardine fishing, and two dories 29 feet long with 34-hp. motors for purse seining. For trawling and gill-netting the gear will be shot over the stern, but tuna fishing with poles will be done from platforms which fold out from the vessel's sides and stern. Small bait tanks on the platforms are filled from three large bait tanks. The fish pumps are of Soviet manufacture. The electronic equipment includes two radar sets, asdic, and 2 echo-sounders. (Fiskaren, a Norwegian fishery trade publication, March 15, 1961.)

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

**FISHING FOR OCEAN PERCH OFF
NEWFOUNDLAND AND IN SEA
OF JAPAN PLANNED:**

A Lithuanian fishery fleet is preparing to fish for ocean perch off Newfoundland, according to the Russian publication Sovjetskaja Litva in its February 25, 1961, issue. The fleet will consist of 52 middle-size trawlers, of which 2 are for fishery research and exploration; the motherships Sovjetskaja Arktika and Sovjetskaja Litva; the freezer-ships Privolzhik and Ju Janonis; fuel ships Kreking, Altuis, and Sambor; and the salvage vessel Rambinas.



Soviet fishermen have put in operation a successful ocean perch fishery in the Sea of Japan along the Primorcoast, according to the April 5 issue of Ekonomitsjeskaja Gazeta. It was thought earlier that in the Pacific Ocean area this species of fish occurred only in the Bering Sea. (Fiskets Gang, April 13, 1961.)

FISHING IN BERING SEA:

The Japanese fishing vessel Akebono Maru No. 50, independently trawling at a point some 50 kilometers northwest of Nunivak Island in the Bering Sea, early in April this year reported it sighted Soviet fishing fleets comprising 60 trawlers of the 250-300-ton class and the 600-ton class in operation in the same area. (Fisheries Economic News, April 14, 1961.)

FLASHING LIGHTS TO LURE HERRING:

Soviet experts have proposed a method of herring fishing based on the use of flashing lights mounted on the trawls. The experts made their proposals after a trip in the North Atlantic aboard the Severyanka, a submarine fitted out as a scientific laboratory.

A British correspondent writes: "If Russian experts succeed in attracting fish into the track of a trawl by artificial light, it will be a notable triumph. The reaction of sea fish to light has not been extensively studied in this country, though a research ship had an interesting experience a few years ago when engaged in a study of the pilchard fishery.

"A shoal had been located by echo-sounder and when a powerful light was shown over the ship's side, the shoal at once rose. The light was switched off and the shoal immediately returned towards the sea bed."

In the case of herring, in which the Russians have now a considerable interest in Atlantic waters, the fishery is greatly dependent on extensive vertical movements of the fish.

At night they rise to the upper waters and are taken in drift nets. By day they seek the bottom and are taken in trawls. These vertical movements correspond to the diurnal movement of plankton and it may be the response of this herring food to light that governs the mass movement of the fish. (The Fishing News, March 10, 1961.)

**STATEMENT ON FISHERIES
PLANS AND RESEARCH:**

Planned Fishery Catch for 1965: Boris Kulikov, an official in the Soviet Ministry of Fisheries, made a statement about the Soviet fisheries and fishing industry at the meeting of the International North Pacific Fisher-

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

ies Commission meeting in the fall of 1960. Kulikov was one of the two observers sent to the meeting by the U. S. S. R. The Russian observer indicated that in accordance with the seven-year-plan, the Russian fishing industry is supposed to harvest by 1965 4.6 million metric tons of fish and other sea animals as against 3.3 million metric tons planned for 1960; that means that the annual increment should exceed 200,000 metric tons.

This is to be achieved through the expansion of sea fisheries (which are closely correlated with research program), construction of new and modernization of old fishing vessels, and through rebuilding of fish stocks in inland seas and the development of fish-rearing in natural and artificial reservoirs.

The Russian observer further stated:

Fisheries Are International: "In developing our sea fisheries we should bear in mind both the interests of our country and the necessity of maintaining the rational utilization of marine resources with due consideration of the interests of other countries concerned.

"Our fishing industry people have no idea of developing sea fisheries other than in close cooperation with other countries in the field of rational exploitation of marine resources, such cooperation being duly based on the respect for each other's rights and interests.

"Successful expansion of sea fisheries requires much care about the future of the resources in the ocean. The more developed the means of production, the higher is the rate of exploitation of natural resources and, consequently, the more attention should be devoted to the reproduction aspect.

Pacific Salmon Transplanted to Barents Sea: "Our fishery scientists and research institutions tried to acclimatize Pacific salmon in the Southern Barents Sea as far back as in the thirties. Due to different reasons, some of them beyond our control, those experiments were not quite successful.

"In 1956 the experiments were resumed and they have been continued ever since in accordance with fish-rearing programs. Two main salmon species--pink and chum (*Oncorhynchus gorbuscha*, *O. keta*)--were chosen by our scientists as an object of acclimatization simply because of their earlier

descent to sea which almost excludes the problem of food competition between them and Atlantic salmon; as regards the food supply during the sea-life period of transplanted salmon, the availability of food is beyond any doubt.

"Nature has responded to this scientific effort in a very generous way. In the second half of 1960 more than 100 thousand specimens of pink salmon at the age of 1+ were registered in the trap nets off the Kola Peninsula, their size ranging from 46 to 52 cm, and weight amounting to 1.5 kg. It is noteworthy that the fish entered many more rivers other than those into which they had been released. For example, pink runs were observed in the rivers of the Arkhangelsk area. In northern Norway they constituted about 2 percent of the total salmon catch in 1960. According to unofficial reports, young pinks were also observed this year in the rivers of Iceland and Scotland. So you see that the northern pinks have shown a very sociable character and a great interest for travel.

"The task of acclimatization of Pacific salmon could not be fulfilled with any remarkable success without finding the adequate technique of transporting the eggs from the Far East to the Barents Sea area. The methods applied permitted decrease in the percentage of the eggs lost during travel to 0.5 percent for chum and 1.8 percent for pink salmon. New hatcheries were built and a number of old ones reconstructed; rearing technique also underwent some modification.

"While in 1957-58 salmon were released under ice in the rivers Kola and Umba of the Kola Peninsula, mainly in the stage of larvae with yolk sac not completely absorbed, in 1959 all the young were released from hatcheries only after they had attained the weight of 200 to 1,000 mgs. with the yolk sac completely dissolved. The young were released into the rivers Kola and Ura in the north and rivers Umba and Niva in the south, and the latter two rivers flow into the White Sea.

"The young fish were reared in the same ponds they had been placed in after hatching with an average number of 25,000 fish per one square meter.

"The young were fed by the eggs of fish herring, and other different species of fish, redfish larvae, minced frozen capelin, liver, etc.

"The approaches of pink runs to the European coast in 1960 have fully justified

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

the line taken by the scientists in their experimental work.

"No reports were received on the approaches of chum, as yet. However, since the young of chum were released for the first time in 1959, we may not expect them back in our northern rivers before 1962-64, that is when they grow up to 3+ to 5+, provided they retain the length of their sea-life period.

"The results achieved so far have, in our opinion, been quite satisfactory. Now we are confronted with two major problems: first of all, will the pink salmon produce the next generation under the natural conditions of the Barents Sea, and what European rivers will they find most suitable for spawning; secondly, how to safeguard the stocks and not to make them vulnerable to intensive fishing at this early stage of their formation. At present commercial catching of pink salmon is allowed neither in our rivers nor in the open sea.

"We believe that before definite conclusions are made much more research is required at this stage. We hope that the scientists of the countries whose rivers were approached by salmon this summer will help us by reporting the results of their observations. We are inclined to think that the problem of the acclimatization of Far Eastern salmon in the Barents Sea is already now outgrowing the national interests and becoming a matter of international importance.

Salmon Catches: "We hope to be understood correctly if we say that the experiments of acclimatization of salmon in the north were not being undertaken for the sole purpose of making up for the losses in the Far East. These experiments were conducted with a view to increasing the marine resources in accordance with the main principle of our planned economy. The problem of salmon stocks in the northwest Pacific still retains its urgent character. If you look at the matter from the viewpoint of the situation during the last 20 years you will see that the catches of salmon since the last richest odd year of 1949, when 263,000 metric tons were taken, have been gradually decreasing and amounted to only 94,000 metric tons in 1959. A similar picture is observed as regards the catches in even years. Against 177,000 metric tons produced by the richest

year of 1944 and a good catch of 160,000 metric tons in 1956, the 1958 catch decreased to 73,000 metric tons.

"The present year has not brought any consolation either. Judging from the preliminary results, our salmon fishing in the area is unlikely to reach the catch figure planned for 1960, nor shall we reach the level of the actual catch in 1958. The decrease in the run of pink salmon predicted by our scientists is quite noticeable this year. This makes us feel growing concern over the future of this valuable species in the northwest Pacific.

"Salmon constitutes an important item on the list of national resources of our country. On the state of salmon stocks depends something more than the well-being of the people engaged in salmon fisheries. So our interest in the way the other countries try to tackle and solve the problem of rational conduct of salmon fisheries should be quite understandable. We are grateful, therefore, for the invitation to attend the 7th session of the International North Pacific Fisheries Commission and are happy to have an opportunity to observe the discussions of these problems.

Other Fisheries: "The Soviet fishing industry is interested in the development and exploitation of all marine resources of the North Pacific. In the course of the recent research great concentrations of flat fish were found in the area. They now compose the dominant part in our catches, their monthly totals averaging 10,000-11,000 metric tons. Cod fishing is also likely to be expanded. Newly developed techniques of processing have stimulated the production of canned saury."

As to the Soviet crab fishing effort in 1960, the Russian observer stated that they did not attain the crabs-per-net by the Japanese *Tokei Maru*, Russian crab fishing is likely to continue on the same scale in 1967 in the waters adjacent to Bristol Bay.

The Russian observer then stated: "We do not specially fish for halibut in this area and halibut occurs in our catches only as individual specimens and serves as a sort of bonus for fishermen. It is hard, therefore, to calculate exactly how many specimens are caught in the trawl nets of our fishermen. I shall make no attempt, however, to hide our growing interest in this particular fish, or to rule out the possibility of starting experimen-

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

tal fishing for halibut in the near future for exploring the existing situation.

"The Soviet fishing industry is certainly interested in the expansion of fishing in the Pacific Ocean. We cannot separate our interests, however, from those of other countries and are always ready to cooperate."

Note: Also see Commercial Fisheries Review, Jan. 1961 p. 51.



United Kingdom

ELECTRONIC FISH-THAWING UNIT DEVELOPED:

With the development of freezing at sea by distant-water vessels, the need was created for a machine to thaw large quantities of frozen fish rapidly, economically, and in the least possible space. And an electronic fish-thawing unit has been produced by a British firm to meet this requirement.

One great advantage of electronic thawing is the uniformity of heating throughout the whole thickness of the fish. Apart from the shortened operating time, this method avoids the risk of surface deterioration such as drying and thermal damage, arising from the high surface temperatures necessitated by slower conventional thawing procedures using air and water as conducting media. The "waterlogging" characteristic of thawing in water is also avoided.

When the distant-water vessels return with the frozen fish, it is of great importance that a plant is available to thaw the fish in a manner which makes it indistinguishable from freshly-caught fish. Electronic thawing produces fish of consistently higher quality than any other large-scale method.

In the herring industry also, there are particular reasons why electronic thawing can be of great assistance. While small supplies are still available during the winter months, the quality of the fish landed is not entirely satisfactory for kipping out of season because the fat content falls below what is generally recognized to be desirable, for a period of 4 or 5 months during the year. Thus, large quantities are frozen at the height of the season.

Hitherto, a serious deterrent to the more widespread use of frozen herring for kipping has been the slowness of thawing and the consequent risk of the fish spoiling noticeably during the process. This is a hazard peculiar to herring because of the ease with which the fat goes rancid and of enzymic changes. Electronic thawing now enables these difficulties to be overcome completely.

As the seasonal shortage of white fish occurs roughly during the first quarter and that of herring during the second quarter of the year, the electronic thawing plant can be used for thawing white fish when fresh herring are available and vice versa.

Wide differences of temperature exist in different parts of the fish thawed by conventional methods. When fish is thawed by the electronic method the temperature is much more evenly distributed throughout. Thus, it is possible to thaw the fish without raising its temperature more than a few degrees above its freezing point so that no power is wasted in unnecessary heating.

By thawing herring electronically, it is possible to adjust their temperature so they go through a splitting machine at the right degree of firmness to give maximum yield and the minimum of torn meat. Compared with that of normally-thawed herring, the yield of "firsts" is considerably increased and the number of "seconds" is correspondingly decreased.

The advantage of the new method is particularly marked with very fat herring (which are normally so soft that they are often badly torn in passing through the splitting machine) and considerable saving is achieved. (The Fishing News, March 17, 1961.)

* * * * *

VERTICAL PLATE FREEZER FOR NEW STERN TRAWLER:

One of the most modern pieces of equipment scheduled for the new British stern-trawler Lord Nelson, is the vertical plate freezer, experimentally built at Torry Research Station, Aberdeen, but designed on a commercial scale by a British commercial firm.

This freezer, in its experimental stages, was installed in the Grimsby trawler Northern Wave, early in 1956, during her experimental voyages as a part-freezer ship on behalf of the British White Fish Authority and the trawler owners, and units of the design are fitted in the research trawler Sir William Hardy, attached to the Torry Station.

The unit has six stations in two groups of three, each formed by four embossed steel plates suspended vertically from their top edges on special gaslight trunnion connections. These enable the plates to hinge about the center line of the trunnions and they can, therefore, move apart at the bottom to release the frozen fish blocks formed between them.

Refrigerant flows through the channels formed in these embossed plates from the inlet to the outlet trunnion connections.

Each group of four plates is fed in parallel from manifolds into which the trunnions are inserted. The rectangular slots between the plates form the moulds or stations in which the fish blocks are frozen, and the bottoms of the stations are closed during the freezing cycle by bottom doors hinged into a horizontal position, one door for each group of three stations.

Mechanical linkages between the bottom doors and the freezer plates secure the latter in their closed (paralleled) position during the freezing cycle.

At the end of the freezing cycle hot gas is passed through the freezer plates to release the fish from the blocks; at the same time the bottom doors are dropped into their open (vertical) position, and this through the linkages moves the plates apart to release the blocks.

The frozen blocks drop out into the nets, from which they are removed for stowing in the frozen fish hold.

The design of the model in the Lord Nelson is much the same as that in Northern Wave, but special multichannel extruded aluminium plates have replaced the embossed steel ones, and these provide contact of the evaporating refrigerant over nearly the whole surface of the plates.

It is, therefore, possible with these to obtain a much shorter freezing cycle than with the earlier design. This has the advantage of reducing considerably space occupied

United Kingdom (Contd.):

by a freezing plant of any given output, an important consideration in a vessel.

Special designs have been developed for freezing dressed cod after gutting and heading, and experience has shown that for Arctic cod the minimum convenient block thickness which can be used is 4 inches.

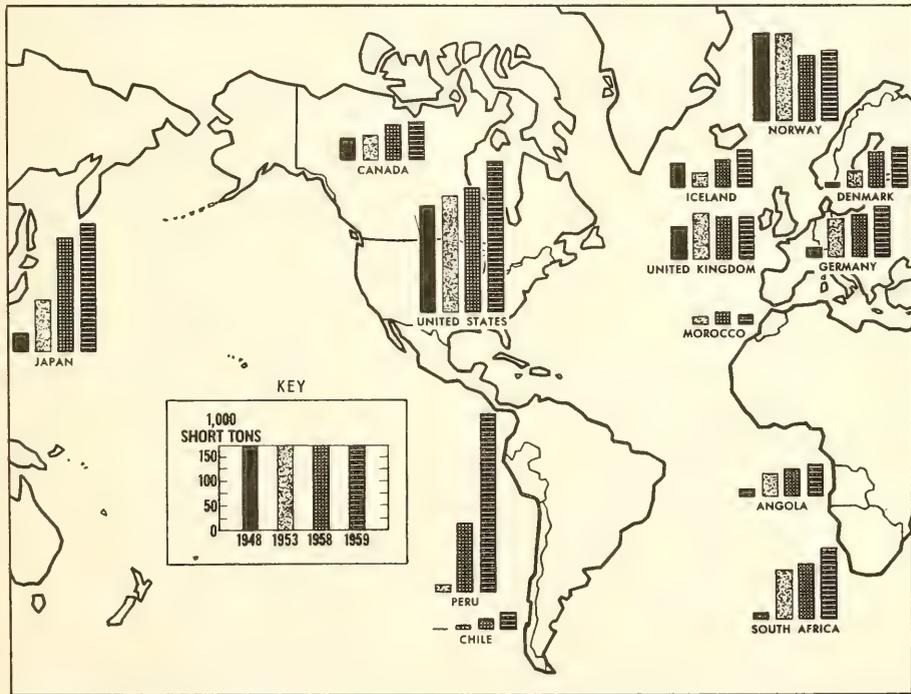
Experience with 4-inch blocks shows that with the correct evaporating temperatures and rates of refrigerant

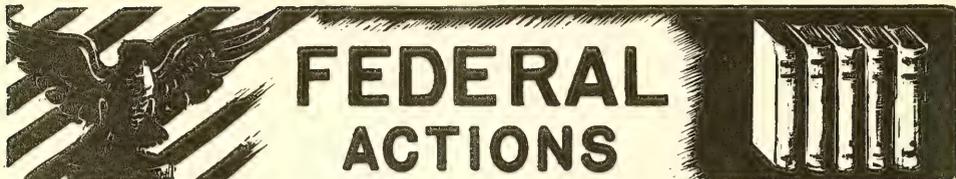
circulation, freezing times as low as three hours are possible, but in general, a freezing cycle time of $3\frac{1}{2}$ to $3\frac{3}{4}$ hours should be allowed at the design stage to compensate for variations in hot gas defrosting, contact between the fish and the freezing plates, etc.; this time includes that required for loading, defrosting, and unloading.

A special defrost cock is available for use in conjunction with each three-station half-freezer to change over from freezing to hot gas defrosting to release the blocks. This also has had the advantage of ensuring that the plates are free from ice at the commencement of each freezing cycle. (The Fishing News, March 17, 1961.)



PRODUCTION OF FISHMEAL, BY MAJOR PRODUCING COUNTRIES, 1948, 1953, 1958, AND 1959



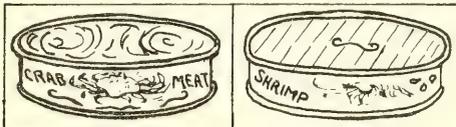


Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

ADDITIVE APPROVED FOR CANNED SHELLFISH:

An order published by the Food and Drug Administration in the April 4, 1961, Federal Register extends, permission for use of calcium disodium ethylene-diamine tetraacetate (calcium disodium EDTA) in canned crab meat and canned shrimp.



In both instances the specified use is to retard struvite crystal formation and promote color retention. The level of use is limited to 275 parts per million for crab meat and 250 parts per million for shrimp.

The order is an extension of Food Additives Regulation 121.1017, issued earlier, which permitted use of this additive in several other items of food.



Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

FISHING VESSEL MORTGAGE INSURANCE CLARIFYING AMENDMENT:

An amendment to regulations governing the Fishing Vessel Mortgage Insurance program was published in the Federal Register of April 7, 1961. The amendment is of a clarifying nature to include a reference to

Public Law 86-577, which gives the Secretary of the Interior the same authority as is possessed by the Secretary of Commerce to borrow from the Treasury when such action is necessary to make payments on defaults of insured mortgages.

The amended regulation as published in the Federal Register follows:

Title 50—WILDLIFE AND FISHERIES

Chapter II—Bureau of Commercial
Fisheries, Fish and Wildlife Service,
Department of the Interior

SUBCHAPTER F—AID TO FISHERIES

PART 255—FISHING VESSEL MORTGAGE INSURANCE PROCEDURES

Inclusion of Reference to Public Law 86-577

Incident to the transfer to the Department of the Interior of all functions of the Maritime Administration, Department of Commerce, which pertain to Federal Ship mortgage insurance of fishing vessels under authority of Title XI of the Merchant Marine Act of 1936, as amended, the act of July 5, 1960 (74 Stat. 314), clarified authority of the Secretary of the Interior under amendments to the Merchant Marine Act of 1936 enacted subsequent to March 22, 1958, citing in particular the amendment enacted July 15, 1958 (72 Stat. 358; 46 U.S.C. 1275). The following amendment is made to 50 CFR 255.1(a) to reflect these provisions.

Since this change is made as the result of act of Congress and is clarifying in nature notice and public procedure

thereon is deemed unnecessary and the amendment shall become effective upon publication in the FEDERAL REGISTER.

As amended paragraph (a) of § 255.1 reads as follows:

§ 255.1 Basis and purpose.

(a) Title XI of the Merchant Marine Act, 1936, as amended (46 U.S.C. 1271-1279), authorizes the Secretary of Commerce to insure certain eligible loans and mortgages on vessels owned by citizens of the United States. As found and determined by the Director of the Bureau of the Budget on March 22, 1958 (23 F.R. 2304), all functions of the Maritime Administration, Department of Commerce, which pertain to Federal Ship mortgage insurance of fishing vessels under authority of Title XI of the Merchant Marine Act of 1936, as amended (46 U.S.C. 1271-1279), were transferred to the Department of the Interior by section 6(a) of the Fish and Wildlife Act of 1956 (16 U.S.C. 742e). The Act of July 5, 1960, Public Law 86-577 (46 U.S.C. 1275—Note), among other things, clarified authority of the Secretary of the Interior under amendments to the Merchant Marine Act of 1936 enacted subsequent to March 22, 1958, citing in particular the amendment enacted July 15, 1958 (72 Stat. 358).

STEWART L. UDALL,
Secretary of the Interior.

APRIL 3, 1961.

REVISED BUDGET INCLUDES FUNDS FOR SALMON AND OCEANOGRAPHY RESEARCH:

The Secretary of the Interior stated on March 20, 1961, that the revised budget estimate for fiscal year 1962 (begins July 1, 1961) which President Kennedy submitted to the Congress is a great step forward in the Administration's programs in conserving and developing our Nation's natural and human resources.

The total increase for the U. S. Bureau of Commercial Fisheries is \$2.5 million. The increase of \$1.5 million for basic research

by the Bureau of Commercial Fisheries is necessary for continuation of an intensified salmon research program. The United States may lose a substantial portion of its North Pacific salmon fisheries in 1963 unless these resources are brought under a complete scientific conservation regime. This concept is the substance of the International Convention for the High Seas Fisheries of the North Pacific Ocean, which is subject to renegotiation in 1953.

The increase of \$1.0 million will allow for basic marine biological research as a part of the national program for oceanography. This is responsive to the President's interest expressed in his State of the Union message to the Congress as well as his statement on natural resources. Significant additional knowledge of the marine biological processes is essential for defense and resource development.

* * * * *

TOP FISHERY POSTS FILLED:

Appointments for the top fishery posts in the U. S. Department of the Interior have now all been completed.

Assistant Secretary for Fish and Wildlife: Frank P. Briggs, newspaper publisher, former U. S. Senator, a member of the Missouri Conservation Commission for many years and four times chairman of that body, is the Assistant Secretary of the Interior for Fish and Wildlife. He was appointed by the President on February 6, 1961.

Briggs filled the unexpired term of Harry S. Truman when Senator Truman became Vice President. He has been owner and editor of the Macon Chronicle-Herald since 1924 and has twice received the University of Missouri School of Journalism award for distinguished service.

He was born in Armstrong, Mo., February 25, 1894, and graduated from the University of Missouri School of Journalism in 1915.



Frank P. Briggs



Clarence F. Pautzke

Commissioner, Fish and Wildlife Service: President John F. Kennedy, following consultation with Secretary of the Interior Stewart L. Udall, announced on March 22 his selection of Clarence F. Pautzke, 53, Deputy Commissioner of the Alaska Department of Fish and Game, as Commissioner of the Fish and Wildlife Service. Pautzke is a native of Auburn, Wash.

Before going to Alaska in May 1960, Pautzke had completed 30 years employment with the State of Washington—three years with the Department of Fisheries, 24 years with game and game fish work in the Department of Game, and three years of other employment.

On three occasions he has been on research duty at the South Pacific Weapons Testing Center at Bikini and Eniwetok as a member of the staff of the Applied Fisheries Laboratory of the University of Washington.

In 1959 he was a member of the American delegation of fishery specialists who spent a month inspecting Russian fishery laboratories and fishery activities on Kamchatka Peninsula and on the nearby mainland. In 1957 he was President of the American Fisheries Society.

As Commissioner of the Fish and Wildlife Service, Pautzke will supervise the activities of the Bureau of Commercial Fisheries and the Bureau of Sport Fisheries and Wildlife.

Aide to Assistant Secretary for Fish and Wildlife: Robert M. Paul of Riverside, Calif., has been selected as special assistant to the Assistant Secretary for Fish and Wildlife Frank P. Briggs. The Secretary of the Interior announced this appointment on March 20. Paul will serve as the principal aide to Assistant Secretary Frank P. Briggs.



Robert M. Paul

Born in Huntington, Ind., on February 1, 1924, Paul has been executive secretary of the Sport Fishing Institute since 1957. He was staff assistant to the Director of California's Department of Fish and Game from 1948 until he joined the Sport Fishing Institute. He was graduated from the University of California in 1948 with a degree in engineering. He is a member of the American Fisheries Society, the Wildlife Society, and other organizations interested in fish and wildlife activities.



Department of the Treasury

COAST GUARD

FISHERIES LAW ENFORCEMENT AIDED:

In order to more fully utilize the available facilities of the U. S. Coast Guard, plans have been made to augment offshore inspections of fishing vessels in the North Atlantic. The personnel of five Coast Guard cutters which are assigned to search and rescue activities in the North Atlantic area have been instructed



in fisheries enforcement procedures by enforcement agents of the U. S. Bureau of Commercial Fisheries and will now inspect nets in connection with all routine boardings.

Bureau scientists have determined that the international net-mesh regulations for the Northwest Atlantic, which have been in effect since 1953, have been beneficial in many ways. Larger net sizes have allowed the escape of small haddock and cod and permitted their growth to a marketable size.



White House

CONVENTIONS ON LAW OF THE SEA SIGNED BY PRESIDENT:

On March 24, 1961, the President of the United States signed the instruments of ratification of the following Conventions formulated at the United Nations Conference on the Law of the Sea, Geneva, February 24 to April 27, 1958:

1. Convention on the Territorial Sea and the Contiguous Zone;
2. Convention on the High Seas;
3. Convention on Fishing and Conservation of the Living Resources of the High Seas; and
4. Convention on the Continental Shelf.

Copies of said instruments of ratification were forwarded to the Secretary General of the United Nations for deposit.

Note: Also see Commercial Fisheries Review, May 1960 p. 40; February 1960 p. 61; November 1959 p. 100; August 1959 p. 40; February 1959 p. 49; January 1959 pp. 54 and 71.

* * * * *

PRESIDENT ASKS INCREASE IN FISCAL YEAR 1962 BUDGET FOR OCEANOGRAPHIC RESEARCH:

Additional funds for the national oceanographic research program are included in the President's March 29 request to Congress to increase the fiscal year 1962 budget of several agencies chiefly to strengthen research programs and to expand programs to promote export trade and travel to the United States. For the national oceanographic program, an estimated budget of \$97,501,000 is indicated for FY 1962 as against an estimated \$55,009,000 for FY 1961, and an actual expenditure of \$45,943,000 for FY 1960. Among the agencies involved are the Departments of Defense, Commerce, Interior, Treasury, and Health, Education & Welfare; also the National Science Foundation and the Atomic Energy Commission. Proposed budget for the Department of the Interior is \$15,472,000

in FY 1962 as compared to \$8,704,000 for FY 1961 and \$6,723,000 for FY 1960.

The President's March 29 letter to the President of the Senate urging the appropriations indicated follow:

"My dear Mr. President:

"The seas around us, as I pointed out in my message to the Congress on February 23, represent one of our most important resources. If vigorously developed, this resource can be a source of great benefit to the Nation and to all mankind.

"But it will require concerted action, purposefully directed, with vision and ingenuity. It will require the combined efforts of our scientists and institutions, both public and private, and the coordinated efforts of many Federal agencies. It will involve substantial investments in the early years for the construction and operation of ship and shore facilities for research and surveys, the development of new instruments for charting the seas and gathering data, and the training of new scientific manpower.

"We are just at the threshold of our knowledge of the oceans. Already their military importance, their potential use for weather predictions, for food and for minerals are evident. Further research will undoubtedly disclose additional uses.

"Knowledge of the oceans is more than a matter of curiosity. Our very survival may hinge upon it. Although understanding of our marine environment and maps of the ocean floor would afford to our military forces a demonstrable advantage, we have thus far neglected oceanography. We do not have adequate charts of more than one or two percent of the oceans.

"The seas also offer a wealth of nutritional resources. They already are a principal source of protein. They can provide many times the current food supply if we but learn how to garner and husband this self-renewing larder. To meet the vast needs of an expanding population, the bounty of the sea must be made more available. Within two decades, our own nation will require over a million more tons of seafood than we now harvest.

"Mineral resources on land will ultimately reach their limits. But the oceans hold untapped sources of such basic minerals as salt, potassium and magnesium in virtually limitless quantities. We will be able to extract additional elements from sea water, such as manganese, nickel, cobalt and other elements known to abound on the ocean floor, as soon as the processes are developed to make it economically feasible.

"To predict, and perhaps some day to control, changes in weather and climate is of the utmost importance to man everywhere. These changes are controlled to a large and yet unknown extent by what happens in the ocean. Ocean and atmosphere work together in a still mysterious way to determine our climate. Additional research is necessary to identify the factors in this interplay.

"These are some of the reasons which compel us to embark upon a national effort in oceanography. I am therefore requesting funds for 1962 which will nearly double our Government's investment over 1961. . . ."

"1. Ship Construction

"The proposed program for 1962 includes \$37 million for ship construction, an increase of \$23 million over 1961. This will provide for 10 oceanographic vessels. Only two will replace existing ships. The others will be used to meet needs that have long existed in Federal agencies and other oceanographic institutions conducting research for the Government.

"The present United States oceanographic fleet is composed of 27 research ships and 17 survey vessels. All but two were constructed prior to the end of World War II; many are over thirty years old. Only two of the ships were designed specifically for research purposes; the remainder has been converted from a variety of ships designed for other uses. Thus

the success of the national oceanographic program will depend heavily on the construction of the new specially designed vessels proposed for 1962.

"2. Shore Facilities and Data Center

"Shore facilities are urgently required to provide laboratory space for analysis and interpretation of data and to train new oceanographers. In oceanographic research about five scientists and technicians are required ashore for each scientist aboard ship.

"For 1962, \$10 million is being requested for laboratories and wharfside facilities. This represents a five-fold increase over 1961. It includes, for example, funds for a new Bureau of Commercial Fisheries laboratory to replace a forty-year old structure and additional laboratory space at universities and other oceanographic institutions.

"An essential part of the shore establishment is the new National Oceanographic Data Center which will begin its first full year of operation in 1962. This Center will make available to the scientific community oceanographic data collected throughout the world.

"3. Basic and Applied Research

"The conduct of research is the central purpose of our whole national effort in oceanography. New ships and shore facilities are essential tools of scientific research, but it is the research itself that will yield new knowledge of the earth's 'inner space,' and new uses of the sea. The proposed program includes \$41 million for basic and applied research in oceanography. This is an increase of \$9 million over the 1961 level.

"Basic research is the cornerstone on which the successful use of the seas must rest. Progress here is largely dependent on the work of scientists at many universities and laboratories throughout the United States and on ships at sea. Their investigations cover all aspects of the marine environment, the motion and composition of ocean waters, the evolution and distribution of marine plants and animals, the shape and composition of the ocean bottom, and many other geophysical and biological problems. Of timely significance is the attempt to penetrate to the earth's mantle to better our understanding of the origin and history of our planet. This undertaking, known as Project MOHOLE, involves the development of new drilling methods that can be used in the deep seas. This project has recently resulted in a spectacular achievement. Samples from nearly a thousand feet beneath the sea floor were obtained by drilling in three thousand feet of water.

"Considerable attention will also be given to applied problems in the marine sciences. Oceanographers will be studying such problems as sound propagation in water, the effects of changes in ocean conditions on the movement of ships, weather forecasting, and fisheries management. Methods of predicting changes in ocean conditions also are being developed. Eventually they lead to maps of 'weather within the sea' much like the atmospheric weather maps of today.

"Many advances are being made in methods of exploring the seas. Oceanographers are now able to descend to the great depths in bathyscaphes. New electronic equipment will allow them to probe the ocean and to 'see' with sound pulses what before has been opaque. Using these new techniques, our scientists already have discovered vast currents below the ocean surface a thousand times larger than the flow of the Mississippi.

"4. Training of Oceanographers

"The most important part of our long-range program in oceanography is the training of young scientists. Scientific manpower of every sort will be needed--technicians, college graduates, and post-graduate researchers--and they must be trained in many scientific disciplines. This training should go hand in hand with the conduct of research at universities

Table 1 - National Oceanographic Program Budget--
Summary by Federal Agency

	Actual FY 1960	Estimated FY 1961	Estimated FY 1962
		(\$1,000)	
Defense	23,003	22,729	32,837
Commerce	6,202	11,389	24,691
Interior	6,723	8,704	15,472
National Science Foundation	7,833	9,148	19,607
Atomic Energy Commission	1,708	2,207	3,619
Health, Education & Welfare	340	698	1,150
Treasury	134	134	134
Totals	45,943	55,009	97,501

and other oceanographic institutions. By their support of these institutions, the programs of the National Science Foundation, the Office of Naval Research, and the Department of Health, Education and Welfare will be of major importance to an expanding program in oceanography; for they can result in the education of new young scientists as well as in the production of new knowledge. In the coming year, these agencies are undertaking to increase the number of fellowship awards and graduate student research contracts, and they also will encourage the development of new university programs in oceanography.

"5. Ocean Surveys

"World-wide surveys of the oceans--their properties, their contents and boundaries--are needed to make charts and maps for use of scientists in their research programs and for a variety of commercial and defense applications. The United States' ocean survey program for FY 1962 is being increased within the limits of ships available for this purpose. I am requesting additional funds to allow the Coast and Geodetic Survey to extend the operating season of its existing ships, thus making the maximum use of limited ship resources. As already mentioned, funds are included for a new survey ship which will increase our deep-sea survey capability.

"6. International Cooperation

"Oceanography is a natural area of opportunity for extensive international cooperation. Indeed, systematic surveys and research in all the oceans of the world represent tasks of such formidable magnitude that international sharing of work is a necessity.

"Our present maps of the oceans are comparable in accuracy and detail to maps of the land areas of the earth in the early part of the 18th century. Precise methods of measuring ocean depths have become available during the last ten years, and these, when combined with new developments in navigation, should make possible for the first time modern maps of the topography of the entire sea floor. An accurate mapping of the oceans will require international cooperation in ship operations and in establishing a world-wide system of navigation. In these endeavors the United States can play a leading part.

Table 2 - National Oceanographic Program Budget--
Summary by Function

	Actual FY 1960	Estimated FY 1961	Estimated FY 1962
		(\$1,000)	
Research	26,577	31,883	40,794
Ship Construction	13,533	13,975	37,050
Surveys	4,168	7,117	8,725
Facilities	1,370	1,768	10,422
Data Center	295	266	510
Totals	45,943	55,009	97,501

"This year an Intergovernmental Oceanographic Commission is being established under UNESCO to provide a means whereby interested countries can cooperate in research and in making surveys and maps of the deep sea floor, the oceanwaters, and their contained organisms. Membership in the Commission is open to all countries of the UN family that desire to

cooperate in oceanography. The United States intends to participate fully in the activities of the Commission.

"The United States also will participate in the International Indian Ocean Expedition. Many nations, including the Soviet Union, are cooperating in this expedition under the non-governmental sponsorship of the International Council of Scientific Unions. Over a quarter of the world's people live in the countries surrounding the Indian Ocean. If more can be learned of the Indian Ocean's extensive food resources, these nations can be helped to develop and expand their fishing industries as part of their general economic development.

"7. The Coast Guard

"At present, the Coast Guard enabling legislation limits the extent to which the Coast Guard can engage in scientific research. Only the International Ice Patrol is authorized to make such studies. I recommend that the statutory limitations restricting the participation by the Coast Guard in oceanographic research be removed. With ocean weather stations, deep-sea thermometers, and other data collection devices, our Coast Guard can make a valuable contribution to the oceanographic program.

"CONCLUSION

"Knowledge and understanding of the oceans promise to assume greater and greater importance in the future. This is not a one-year program--or even a ten-year program. It is the first step in a continuing effort to acquire and apply the information about a part of our world that will ultimately determine conditions of life in the rest of the world. The opportunities are there. A vigorous program will capture those opportunities.

"Sincerely,

"John F. Kennedy

"Honorable Lyndon B. Johnson
President of the United States Senate
Washington, D. C."



Eighty-Seventh Congress (First Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.



CATCH TRANSFER AT SEA: On May 2, the Senate Committee on Commerce, in executive session, ordered favorably reported S. 1222, relating to the documentation and inspection of U. S. vessels. The purpose of this bill is to legalize transferring the catch of one fishing vessel to another on the high seas, and transporting it without charge to a port of the United States.

DEPRESSED AREAS: Area Redevelopment Act (Hearings before Subcommittee No. 2 of the Committee on Banking and Currency, U. S. House of Representatives, Eighty-Seventh Congress, First Session on H.R. 4569, a bill to establish an effective program to alleviate conditions of substantial and persistent unemployment and underemployment in certain economically distressed areas, Feb. 24, 27, 28, Mar. 1-10, and 13, 1961), 911 pp., printed. Contains letter from the President with draft of legislation (H.R. 4569) proposed by him, statements and comments of Government officials, various state officials, industrial associations; comments, letters, and telegrams of various officials; tables and exhibits (14).

On April 20 the conferees, in executive session, agreed to file a conference report (H. Rept. No. 256) on the differences between the Senate- and House-passed versions of S. 1, proposed Area Redevelopment Act of 1961. The Senate adopted the conference report. Motion to reconsider was tabled. The report also was filed in the House.

On April 26 the Senate adopted conference report on S. 1; this cleared the bill for the President's signature.

The Senate on April 27 received message from House stating that the House had agreed to the report of the Committee of Conference on S. 1.

On May 1 the President signed S. 1 (P. L. 87-27).

EXPORT POLICY ACT: S. 1729 (Engle and 5 others), introduced in Senate April 27, a bill to promote the foreign commerce of the United States, and for related purposes; to the Committee on Commerce. Would provide for expanding United States exports. Similar to other bills on the same subject.

FEDERAL BOATING ACT AMENDMENTS: On April 20 the Senate Committee on Commerce reported S. 883, a bill to extend the application of the Federal Boating Act of 1958 to certain possessions of the United States (S. Rept. No. 178), with amendment.

FISH AND WILDLIFE ASSISTANT SECRETARY OF THE INTERIOR: Sundry Nominations--1961 (Hearings before the Committee on Interstate and Foreign Commerce, United States Senate, Eighty-Seventh Congress, First Session, on Nominations for Civil Aeronautics Board, Commerce Department, Federal Trade Commission, Interior Department, Interstate Commerce Commission, United States Coast Guard, March 8, 14, 15, and 22, 1961), 89 pp., printed. Includes nomination of Frank P. Briggs, Assistant Secretary of the Interior for Fish and Wildlife, with statements of the 2 Missouri Senators, the Director of National Wildlife Federation, an official of the National Fisheries Institute, and Frank P. Briggs himself.

FISH HATCHERY: H. R. 6467 (Baker), introduced in House April 19, a bill to provide for the establishment of a new fish hatchery in the eastern part of the State of Tennessee; to the Committee on Merchant Marine and Fisheries. Also S. 1686 (Gore and Kefauver), introduced in Senate on April 20, to Committee on Commerce; and H. R. 6529 (Frazier) introduced in House on same date, to Committee on Merchant Marine and Fisheries.

GAME AND FOOD FISH CONSERVATION IN DAM RESERVOIRS: H. R. 6921 (Olsen), introduced in House May 9, a bill to direct the Secretary of the Interior to

establish a research program in order to determine means of improving the conservation of game fish in dam reservoirs; to the Committee on Merchant Marine and Fisheries.

GULF OF MEXICO OUTER CONTINENTAL SHELF RESTRICTIONS: H. R. 6745 (Aspinall), introduced in House May 2, a bill to provide for the restriction of certain areas in the Outer Continental Shelf for defense purposes, and for other purposes (Matagorda Water Range); to the Committee on Interior and Insular Affairs. The bill would restrict mineral leasing from approximately 1,803,501 acres of Outer Continental Shelf lands located in the Gulf of Mexico off Matagorda Island and the coast of Texas. The restriction would be for a period of three years with an option to renew for three additional years.

The proposed restricted area includes excellent shrimp beds which produce substantial revenues to the commercial fisheries. The area waters also include the production of red snapper and large schools of herring and anchovy-like fishes. The latter two species are largely unexploited at the present time, but constitute a great potential source of industrial fish for use in fish meal and pet food. The restriction as proposed in the bill, however, is limited to mineral leasing and the rights of the commercial fishermen would not be impaired.

On May 12, the Subcommittee on Public Lands of the House Committee on Interior and Insular Affairs held a hearing on H. R. 6745. Testimony was given by Air Force and Interior Department officials, and various public witnesses. Also H. R. 6849 (Rutherford) was introduced in House May 4.

IMPORT COMPETITION ADJUSTMENT: On April 19 the Senate received a resolution of the House of Representatives of the State of Missouri memorializing Congress to adjust the tariff laws of the United States for the protection of our domestic industry from the deleterious competition of foreign-made goods; to Committee on Finance.

S. 1735 (Muskie), introduced in Senate April 27; to the Committee on Finance. Would provide for adjustment of conditions of competition of foreign and domestic industries with respect to level of wages and working conditions in production of imported articles. Similar to other bills on same subject. Also H. R. 6688 (Bray), introduced in House on April 27.

INCOME TAX REVISIONS IN FAVOR OF FISHERMEN: H. R. 6493 (Wilson of California), introduced in House April 19, a bill to extend to fishermen the same treatment accorded farmers in relation to estimated income tax; to Committee on Ways and Means. Identical to H. R. 6413 (King of California).

The House Committee on Ways and Means ordered favorably reported (H. Rept. 346) on April 25 to the House, H. R. 6413.

H. Rept. 346, Declaration of Estimated Income Tax by Fishermen (May 3, 1961, 87th Congress, 1st Session, report of the Committee on Ways and Means, to accompany H. R. 6413), 5 pp., printed. Contains summary of legislation, a general statement, changed in existing law, and excerpts from the Internal Revenue Code of 1954.

H. R. 6413 was brought up in the House and passed by a voice vote on May 10. The bill was sent to the

Senate for action. Provides that a fisherman rather than file a declaration of estimated tax by April 15 of the taxable year and making quarterly payments of the tax, will be permitted to file the declaration of tax and pay the tax in full by January 15 following the taxable year. Fishermen would still have until April 15 to file a final tax return for the year and there would be no penalty for an underestimate of the tax if the estimate was as much as two-thirds of the actual tax due. In addition, if the fisherman files his final return for the year and pays the tax due on his return by February 15--instead of the usual April 15--he would not be subject to any penalty because of his January 15 estimate being too low. Would apply to taxable years beginning after December 31, 1961.

H. R. 6413 on May 11 was referred to the Senate Finance Committee.

INTERIOR DEPARTMENT APPROPRIATIONS FY 1962: On April 18 H. R. 6345, Interior Department Appropriations for fiscal year 1962, was passed by House and referred to Senate Committee on Appropriations.

On May 1-10, 1961, the subcommittee of the Senate Committee on Appropriations held hearings on H. R. 6345, with testimony given by members of both houses of Congress, and various officials from the Department of the Interior. On May 8, on funds for fish and wildlife items, testimony was received from several Senators, the Commissioner of Fish and Wildlife, and the directors of the Bureau of Commercial Fisheries, and the Bureau of Sport Fisheries and Wildlife.

MARINE MAMMAL HIGH SEAS PROTECTION: H. R. 6923 (Olsen), introduced in House May 9, a bill for the protection of marine mammals on the high seas, and for other purposes; to the Committee on Merchant Marine and Fisheries. House Committee on Merchant Marine and Fisheries Subcommittee on Fisheries and Wildlife Conservation held hearings on H. R. 777, May 9-10, 1961, for the protection of marine mammals on the high seas. Witnesses from the Department of the Interior appeared before the Committee.

MINIMUM WAGE LEGISLATION: On April 19 the Senate continued its consideration of H. R. 3935, Fair Labor Standards Amendments of 1961. Several amendments were adopted and some were rejected, none of which pertained directly to the fishing industry.

On April 20 the Senate passed H. R. 3935 as amended by adoption of amended committee amendment (in nature of a substitute), which provides \$1.25 minimum wage to be reached in 28 months by presently-covered workers, and in 40 months by newly-covered workers, the minimum wage in the interim to be \$1.15. Would include seafood processing employees under minimum wage but not for overtime (seafood cannery workers are treated in this way under the present law). This means that the exemption in the present law for onshore processing would be cancelled. The exemption from minimum wage for offshore or vessel processing still applies.

Senate on April 24 insisted on its amendments to H. R. 3935, agreed to hold conference with the House, and appointed conferees. House on April 24 disagreed to Senate amendments to H. R. 3935, requested conference with the Senate, and appointed conferees. Conferees met in executive session on April 25 but did not reach final agreement. For fish processing exemptions, the Senate version, unlike that of the House, eliminated

the minimum wage exemption for shore-based fishery processing operations.

On May 1 conferees in executive session agreed to file a conference report on the differences between the Senate and House-passed versions of H. R. 3935. On May 2, the Committee on Conference filed conference report (H. Rept. 327).

H. Rept. 327 Fair Labor Standards Amendments of 1961 (May 2, 1961, Report of the Committee of Conference, House of Representatives, 87th Congress, 1st Session, to accompany H. R. 3935), 21 pp., printed. Contains text of bill as agreed upon by Conference Committee and a statement of the managers on the part of the House.

On May 3, by 64 yeas to 28 nays, the Senate adopted the Conference Committee report. Also, by a record vote of 230 yeas to 196 nays the House adopted the conference report on the same day. This action cleared the legislation for the President's signature.

With regard to seafood processing, Congressman James Roosevelt, a member of the House-Senate Conference Committee in the May 4, 1961, Congressional Record (page 6924) inserted a statement which was omitted the previous day. The material omitted was to be inserted on page 6716 of the Congressional Record for the House of May 3, 1961. The statement referred to follows:

"I have been asked what the thinking of a majority of the House committee of conference on wage-hour legislation (H. R. 3935) was with respect to language appearing in the Senate committee report dealing with seafood processing.

"The House Conferees accepted the provisions of the Senate bill covering for minimum wage purposes only, such employees, and the inquiry is whether it was not our desire also to approve the explanation dealing with this matter which appeared in the Senate Labor Committee report on its bill. That language is as follows and appears on page 33 of the report:

"An estimated 33,000 persons who are employed in the activities removed from the section 13(a) (5) exemption will have minimum wage protection but will continue to be exempt from the act's overtime requirements under an amended section 13(b) (4). The bill will thus have the effect of placing fish processing and fish canning on the same basis under the act. There is no logical reason for treating them differently and their inclusion within the act's protection is desirable and consistent with its objectives.

"The present exemptions in sections 13(a) (5) and 13(b) (4) have been judicially interpreted to apply to all employees employed in the seafood industry including any employee who participates in activities which are necessary to the conduct of the operations specifically described in the exemptions (McComb v. Consolated Fisheries Company, 174 F. 2d 74, C.A. 3, 1949). These interpretations are consistent with the Congressional purpose of treating all employees of one establishment in the same manner under the act and of avoiding segmentation as between different employees of the same employer engaged in the named operations."

"There are also additional statements in the report explaining other provisions of the bill which we did not feel it necessary to amplify. Since a question had arisen, however, specifically on this point, I feel the record

should be made clear. I believe such language reflects correct legislative intent."

H. R. 3935 was signed by the President on May 5 (P. L. 87-30).

The new law (1) extends minimum wage coverage to approximately 3.6 million workers, (2) establishes the 5-year escalation period to reach the minimum wage of \$1.25 and the 40-hour workweek, and (3) adopts the so-called inflow test, which means that retail and service enterprises would be covered by the bill, only if they met the following test: (a) employer must be engaged in commerce or the production of goods for commerce, (b) employer must receive \$250,000 worth of goods, for resale, which have moved across State lines (so-called "inflow" test), and (c) employer must have an annual gross volume of sales of not less than \$1 million, exclusive of excise taxes at the retail level. The minimum wage provisions become effective on September 3, 1961.

Increases the minimum wage under the act for presently-covered employees to \$1.15 an hour for the first two years after effective date of the act and \$1.25 an hour beginning 2 years after the effective date. Newly covered workers receive \$1 an hour for the first three years of the new act; the fourth year they go to \$1.15; and the fifth year \$1.25. No overtime coverage for first two years of the act; in the third year, 44 hours; the fourth year, 42 hours; and the fifth year, 40 hours.

With regards to onshore or shore-based fishery processing, the bill changes the exemption in the act for processing, marketing, freezing, curing, storing, packing for shipment, or distributing fish and certain other marine products from a minimum wage and overtime exemption to an overtime only exemption. The present complete exemption is retained for offshore processing. The exemption for offshore processing in the bill--Sec. 9 Subsection (a) (5)--now reads: "(5) any employee employed in the catching, taking, propagating, harvesting, cultivating, or farming of any kind of fish, shellfish, crustacea, sponges, seaweeds, or other aquatic forms of animal and vegetable life, or in the first processing, canning or packing such marine products at sea as an incident to, or in conjunction with, such fishing operations, including the going to and returning from work and loading and unloading when performed by any such employee; . . ."

Both cannery and other processors of fishery products ashore are now in the same category--employees of such enterprises are included under the minimum wage but the enterprises continue to retain the year-round exemption from overtime payments. But in practice, however, complete equality between the two segments will not be achieved for five years. On and after September 3, 1961, all shore operations by the fishing industry other than canning will be required to pay wages at these minimum rates: First year after effective date \$1.00 an hour, second year \$1.00 an hour, third year \$1.00 an hour, fourth year \$1.15 an hour, and fifth year after effective date \$1.25 an hour. Since fishery canning operations were already covered under the act before this amendment, employees of those enterprises will receive a minimum wage of \$1.15 an hour for the first two years after the effective date of the act and \$1.25 an hour beginning 2 years after the effective date.

Sec. 3, Section 4 of the Act is amended by adding at the end thereof the following new subsection:

"(e) Whenever the Secretary of Labor has reason to believe that in any industry under this Act the competition of foreign producers in United States markets or in markets abroad, or both, has resulted, or is likely to result, in increased unemployment in the United States, he shall undertake an investigation to gain full information with respect to the matter. If he determines such increased unemployment has in fact resulted, or is in fact likely to result, from such competition, he shall make a full and complete report of his findings and determinations to the President and to the Congress. Provided, That he may also include in such report information on the increased employment resulting from additional exports in any industry under this Act as he may determine to be pertinent to such report."

NATIONAL AQUARIUM IN THE DISTRICT OF COLUMBIA: On April 24, the House Committee on the District of Columbia held public hearings on H. R. 111 and H. R. 5990, identical bills to authorize construction of a National Aquarium in the District of Columbia. The National Capital Parks Planning Commission reported that the most acceptable location probably would be on Hains Point, a federally-owned peninsula jutting out into the Potomac River comparatively near the Jefferson Memorial. A number of representatives of conservation organizations spoke on behalf of the bill.

NATURAL RESOURCES CONSERVATION: On May 16 the Senate received a resolution from the Senate and Assembly of the State of California endorsing proposals made by the President in his message to Congress outlining his program for development of our natural resources, including ocean resources and fish conservation.

NETTING IMPORTS FOR RESEARCH: S. 1814 (Met-calf), introduced in the Senate May 8, a bill to provide for the free importation of monofilament gill nets for use in fish sampling; to the Committee on Finance.

OCEANOGRAPHIC RESEARCH PROGRAM: On May 1 both houses of Congress received a resolution of the House of Representatives of the State of Alaska urging the President and Congress of the United States to give favorable consideration to S. 901, the Marine Sciences and Research Act of 1961, and effect its passage and approval as soon as possible.

Also on May 3, the Senate received a resolution from the port commission of the port of Seattle petitioning the Congress of the United States of America to enact S. 901.

H. R. 6845 (Geo. P. Miller), introduced in House May 4, a bill to amend title 14 of the United States Code to provide for an expansion of the functions of the Coast Guard; to the Committee on Merchant Marine and Fisheries. Provides that the Coast Guard "shall engage in oceanographic research on the high seas and in waters subject to the jurisdiction of the United States." On May 17, H. R. 6845 was reported out of Committee without amendment (H. Rept. 403).

On May 16 the Senate Committee on Commerce in executive session ordered favorably reported S. 1189, authorizing the Coast Guard to carry on certain oceanographic research (amended).

POLLUTION OF SEA CONVENTION: On May 2, the Senate Committee on Foreign Relations, in executive session, ordered favorably reported the International Convention on the Prevention of Pollution of the Sea by Oil (Ex. C. 86th Cong., 2nd Sess.).

International Convention for the Prevention of Pollution of the Seas by Oil--1961 (Hearing before the Committee on Foreign Relations, United States Senate, Eighty-Seventh Congress, First Session, on Ex. C, 86th Congress, 2nd Session, April 25, 1961), 38 pp., printed. Contains statements of officials of the National Audubon Society, Department of State, National Wildlife Federation, and the American Humane Education Society, and an Appendix.

On May 15, the Senate debated treaty Ex. C., the International Convention for the Prevention of Pollution of the Seas by Oil. The Convention was considered as having passed through its parliamentary stages up to and including the resolution of ratification.

On May 16 the Senate by unanimous vote of 92 yeas, ratified the treaty "International Convention for the Prevention of Pollution of the Seas by Oil" (Ex. C. 86th Cong., 2d Sess.). The purpose of this convention is to prevent the pollution of the seas by oil and oily wastes by regulating the discharge thereof by tankers and other ships. The regulations imposed by the convention are directed solely at seagoing ships registered in the territory of a contracting party which are over 500 tons gross tonnage and are not being used as naval auxiliaries, in whaling, or in navigating the Great Lakes and certain tributaries.

RESEARCH AND DEVELOPMENT CONTRACT COSTS: H. R. 6440 (Mrs. Hansen), introduced in the House on April 18, a bill to provide for a method of payment of indirect costs of research and development contracted by the Federal Government at universities, colleges, and other educational institutions; to Committee on Government Operations.

SAFETY OF LIFE AT SEA CONVENTION: Senate on April 27 removed injunction of secrecy from Executive K, 87th Congress, 1st Session, the International Convention for Safety of Life at Sea, 1960. Executive K was transmitted by the President to the Senate on April 27, together with the report of the Secretary of State, a copy of the final act of the Convention held at London from May 17 to June 17, 1960, and a copy of the report of the delegation of the United States to that Conference. The Convention, open for signature from June 17 to July 17, 1960, was signed by the United States on June 17 and by 39 other Governments in that period.

SALTONSTALL-KENNEDY ACT FUNDS REAPPORTIONMENT: H. R. 6489 (Sikes), introduced in House a bill to amend the act of August 11, 1939, relating to domestically-produced fishery products to establish a fund for the advancement of commercial fisheries. H. R. 6554 (Dent), introduced in House April 20 and H. R. 6733 (Mrs. Hansen) introduced in the House May 1; H. R. 6892 (Colmer), introduced in House May 8; all to the Committee on Merchant Marine and Fisheries.

SEAMEN'S PHYSICAL REQUIREMENTS: H. R. 6972 (Bonner), introduced in House on May 10, a bill to encourage and promote safety in the merchant marine by requiring that seamen on vessels of the United States meet certain physical requirements; to the Committee on Merchant Marine and Fisheries. Would direct the Secretary of the Treasury, acting through the commandant of the Coast Guard, to establish physical qualifications for all positions on vessels of the United States.

SHRIMP IMPORT DUTIES: Introduced in House H. R. 6490 (Sikes) on April 19, and H. R. 6631 (Lane) on April 25. H. R. 6878 (Colmer) on May 8, bills to

amend the Tariff Act of 1930 to impose a duty on shrimp and to provide for duty-free entry of unprocessed shrimp annually in an amount equal to imports of shrimp in 1960; to the Committee on Ways and Means; similar to other bills on the same subject. Would make all imported shrimp that is processed in any way beyond the state of being a headless shell-on, vein-in shrimp subject to a duty of 35 percent ad valorem. Headless shell-on, vein-in shrimp imports, up to a quantity equal to 1960 imports, would enter the United States duty-free, but headless imports in excess of the quota would be dutiable at 35 percent. In the case of both processed imports and over-quota headless imports, the bills specifically provide that the duty will be 35 percent, but not less than 35 cents per pound.

The quota would be administered by the Secretary of the Interior, who is to allocate the duty-free quota among the countries supplying imports of shrimps to the United States in the calendar year 1960 in accordance with the volume of imports of shrimps received from each such country in that year. Another proviso is inserted in the bill to the effect that under the duty-free quota imports in any one month during the balance of the calendar year 1961 shall not exceed imports during the same month in the calendar year 1960.

The bills make it clear that products of American Fisheries (shrimp which have not been landed in a foreign country before entry into the United States, or which, if so landed, have been landed solely for transshipment without change in condition) would not be affected by the legislation.

SUBMERGED LANDS ACT AMENDMENTS: H. R. 6605 (Brooks of La.), introduced in the House on April 25, a bill to amend the Submerged Lands Act to establish the seaward boundaries of the States of Alabama, Mississippi, and Louisiana as extending three marine leagues into the Gulf of Mexico and providing for the ownership and use of the submerged lands, improvements, minerals, and natural resources within said boundaries; to the Committee on the Judiciary. Similar to other bills on the same subject.

TARIFF NEGOTIATIONS: Introduced in House: H. Con. Res. 231 (Harvey of Indiana) and H. Con. Res. 232 (Sikes) on May 2, H. Con. Res. 297 (Langden) on May 8, H. Con. Res. 299 (Forrester) and H. Con. Res. 300 (Jones) on May 10, H. Con. Res. 312 (Battin) on May 16, concurrent resolutions expressing the sense of Congress that the United States should not grant further tariff reductions in the present tariff negotiations under the provisions of the Trade Agreements Extension Act of 1958, and for other purposes; to Committee on Ways and Means. Also H. Con. Res. 304 (Bow), H. Con. Res. 305 (Fogarty), and H. Con. Res. 306 (Hiestand), introduced in House May 15.

WATER POLLUTION CONTROL: Committee on Public Works filed its report on April 25 in the House on H. R. 6441, a bill to amend the Federal Water Pollution Control Act to provide for a more effective program of water pollution control; with amendment (H. Rept. 306). Referred to the Committee of the Whole House on the State of the Union.

Federal Water Pollution Control (Hearings before the Committee on Public Works, House of Representatives, Eighty-Seventh Congress, First Session, March 14, 15, 16, and 29, 1961, on H. R. 4036), 354 pp., printed. Contains testimony of members of Congress, various

wildlife and sportfishing institutes, and other public officials and organizations. Also included are 2 appendices of the Michigan Water Resources Commission.

H. Rept. 306 Federal Water Pollution Control Act Amendments of 1961 (April 25, 1961, Report of the Committee of Public Works, House of Representatives, 87th Congress, 1st Session, to accompany H. R. 6441, a bill to amend the Federal Water Pollution Control Act to provide for a more effective program of water pollution control), 44 pp., printed. Contains purpose of bill, general statement, need for legislation, and minority views.

H. R. 6755 (Halpern), introduced in House May 2; to Committee on Public Works. Also, the House Committee on Rules granted an open rule, with 2 hours' debate, on H. R. 6441, on the same day. Four representatives from the House were witnesses testifying on granting of rule.

On May 3, by a record vote of 307 yeas to 110 nays, the House passed H. R. 6441. Prior to passage of bill a recommittal motion was rejected, an amendment pro-

viding for construction of a field laboratory and research facility in the Middle Atlantic area was adopted. In addition to rejecting amendments embodied in the recommittal motion, the House while in the Committee of the Whole rejected an amendment to delete the \$50 million increase in authorization for grants-in-aid in water pollution control.

Subcommittee on Flood Control--Rivers and Harbors of Senate Committee on Public Works on May 8 began hearings on several pending bills relating to the Federal Water Pollution Control Act and heard testimony from several Senators and Public Officials. Hearings were concluded on May 9.

WATER POLLUTION CONTROL RESEARCH LABORATORY: On April 20, a joint memorial was received from the 51st Legislative Assembly of the State of Oregon urging the President and Congress of the United States to pass legislation authorizing the establishment of a Pacific Northwest Pollution Control Laboratory by the U. S. Public Health Service.



AMAZONIAN FISHERMEN CATCH FISH WITH FEET, FINGERS

Ever try catching fish with your fingers? Or by imitating birds? Or by walking around in the mud? Primitive methods all, but they have one thing in common. They work. These and other unusual fishing techniques have been observed by a Food and Agriculture Organization fishery expert who has spent most of 1958-60 in the Amazonas, Brazil.

On the Amazon, Indian fishermen, whose razor-sharp reactions are yet not spoiled by civilization, actually catch fish with their hands. The men wade in the shallow water near the river banks and then thrust their hands into holes in the bank where certain kinds of fish breed. They catch the fish by touch.

The same fishermen utilize the greed of the tucanare, a tropical multi-colored perch, for kingfishers. The tucanare, weighing from 9 to 11 pounds, will eat a small duck or kingfisher, when they can get one. The fishermen imitate the noise of a kingfisher as it dives towards the water and then flick the water with a rod baited with a red rag and a hook on a three-inch line. The tucanare, attracted by the noise, jumps for the red rag and hook, thinking it is a kingfisher.

The Amazonian fisherman will also use his feet for fishing. This time his target is the amuré, a slender eel-shaped fish about a foot long that lives in mud and is used for bait. The fisherman's only equipment is a long pole, a cast net, and a box to collect the fish. He sinks one end of the pole into the mud under water 9 to 12 feet deep and then casts his net on the bottom. Diving down, he walks around the net's rim, the pressure of his feet forcing the fish out of the mud. Using the pole as a center, the fisherman works his way around it. He sells his catch to the bigger fisherman, so he does not need a boat. However, his nets rot within a year and must be replaced at a cost of between \$8 and \$10--a small fortune to the Indian fisherman.

Perhaps the most dangerous of these primitive fishing methods is an ancient ring-net technique, ancestor of today's purse-seining. Here men dive without any swimming apparatus into totally dark and muddy water 65 to 164 feet deep to join together the bottom of a large net. The men may become entangled in the net and drown or have their eardrums burst from the pressure. The divers begin at the age of 15 and if they survive are finished with diving at a maximum age of 25. Before the men dive, a fisherman using a sharpened rib of the Jarina palm frond, feels in the water for a school of fish near the surface. Finding the center of the school, he signals to two boats who cast their nets on either side of the school. The divers then go under and attach lines, closing the bottom of the net.

There is also the bow-and-arrow method or the harpoon. The Indians stand near shallow water and shoot or harpoon the fish.

Not quite in the realm of fishing, but still employed as a means of getting food, is the Indian fisherman's way of catching crocodiles. The fisherman sticks his fingers in the crocodile's eyes, and wraps his arms around the reptile's jaws. He turns the crocodile over so that when the reptile surfaces, it will be belly up and unable to thrash with its tail. Awaiting fishermen then quickly disembowel it.

The primitive methods, although they yield fish, do not begin to tap the Amazon's rich fresh-water fish resources.

FISHERY INDICATORS

CHART I - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

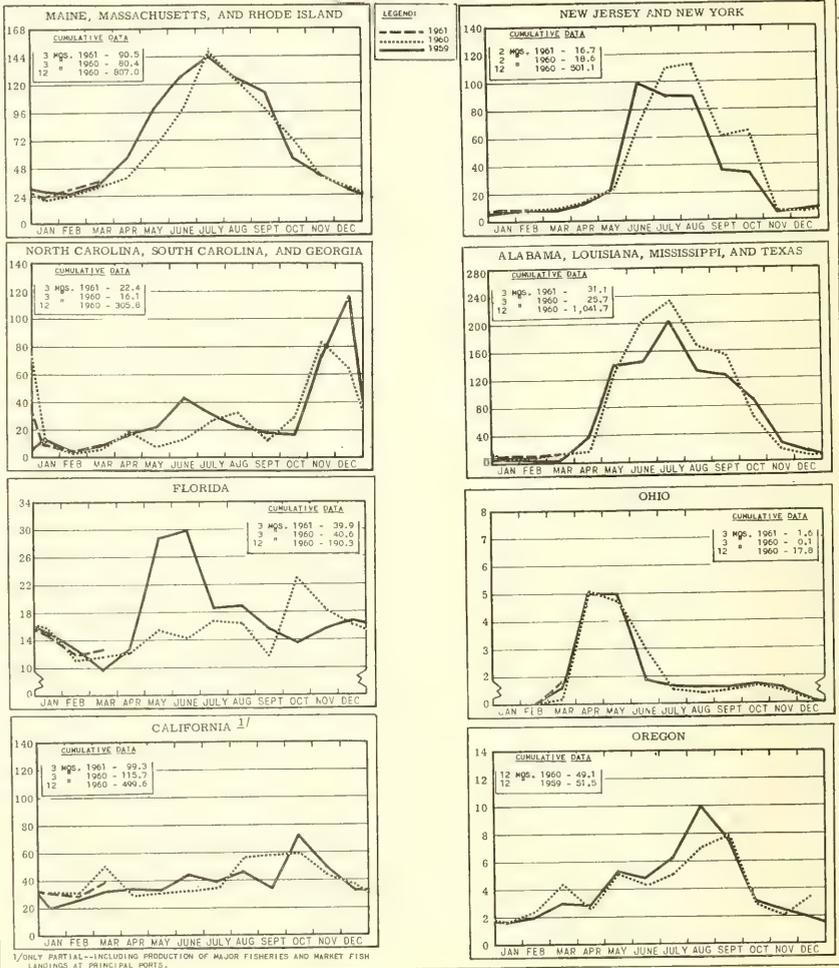
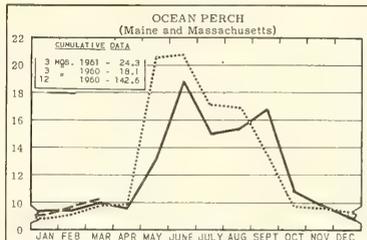
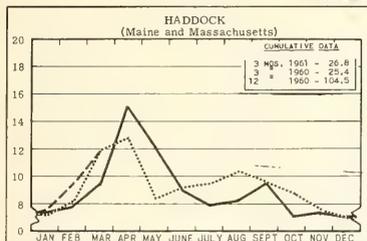
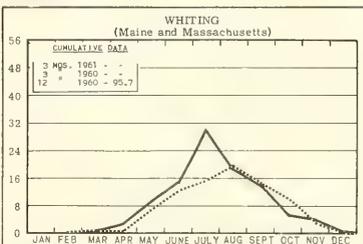
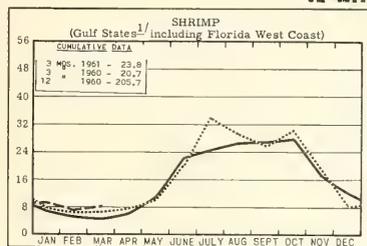


CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

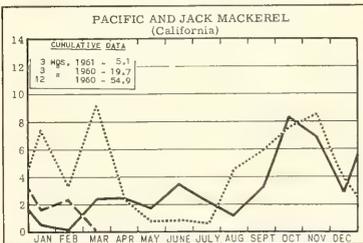
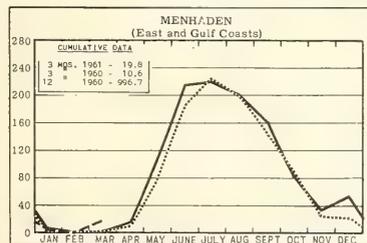


In Millions of Pounds



^{1/}LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

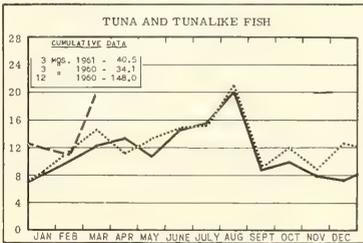
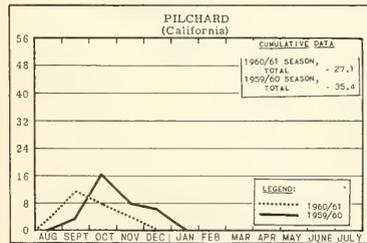
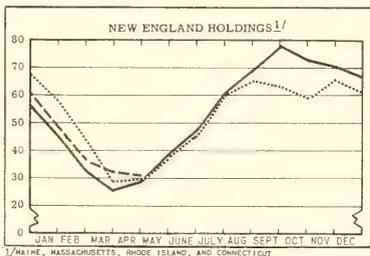
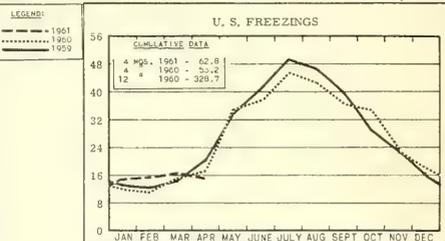
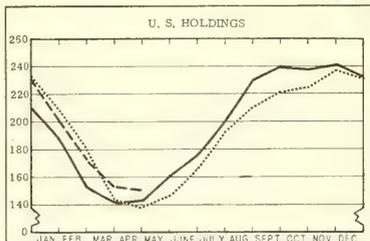
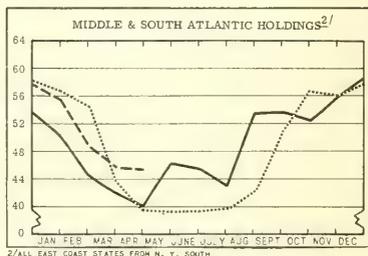


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

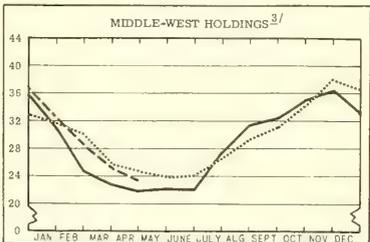
In Millions of Pounds



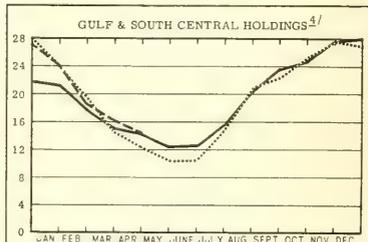
^{1/}MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT



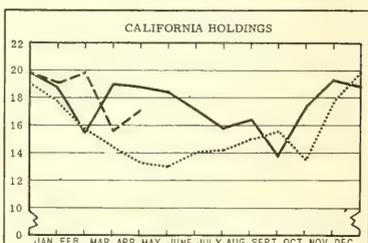
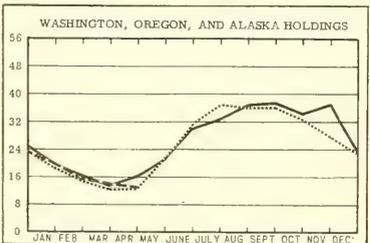
^{2/}ALL EAST COAST STATES FROM N. Y. SOUTH.



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



^{4/}ALA., MISS., LA., TEX., ARK., OK., & TENN.



* Excludes salted, cured, and smoked products.

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

In Millions of Pounds

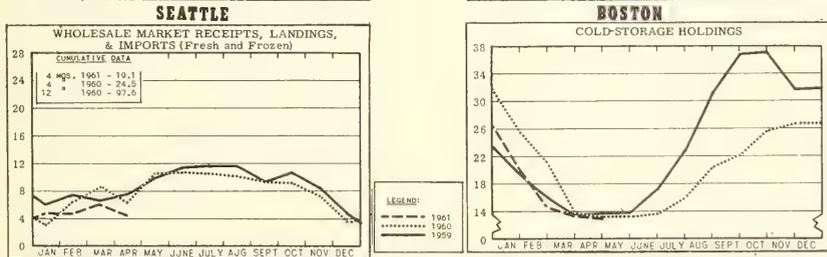
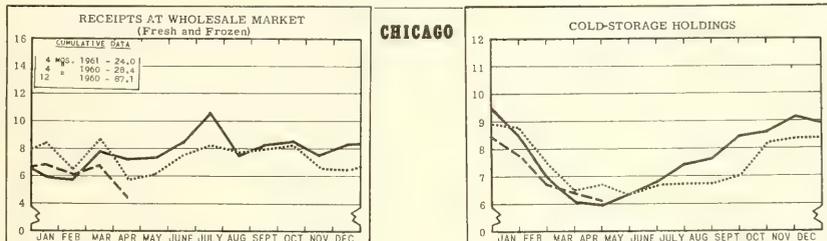
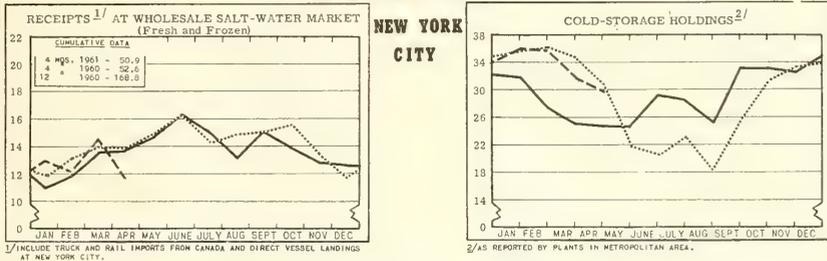


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

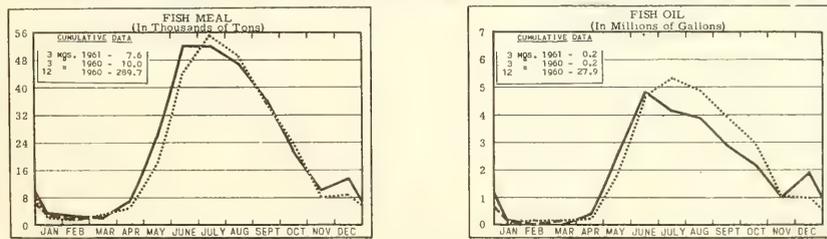
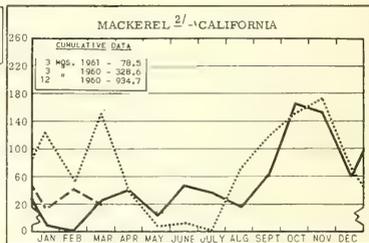
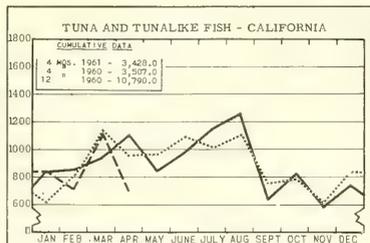
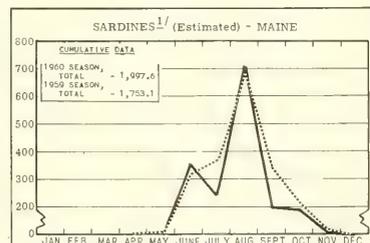
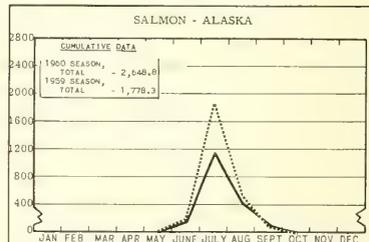
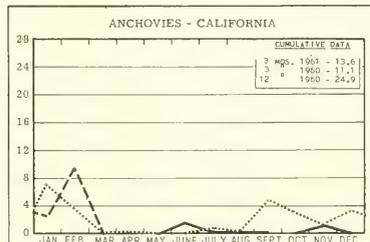


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



^{2/} INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



^{1/} INCLUDING SEA HERRING.

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	¼ drawn	3½ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# ½ tuna	6 & 7 oz.
PILCHARDS..	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES..	48	½-lb.	8 oz.

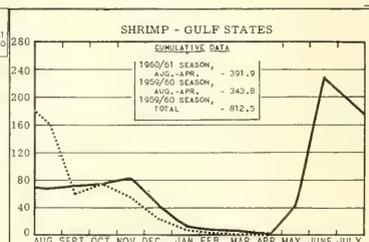
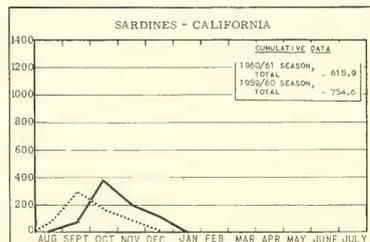
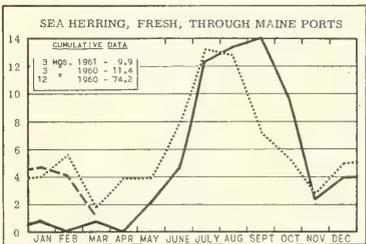
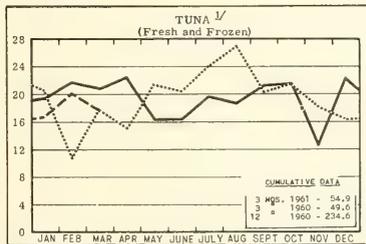
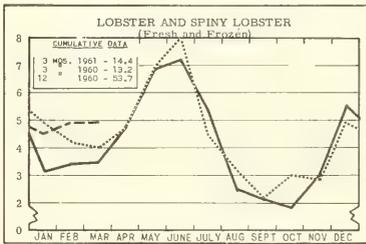
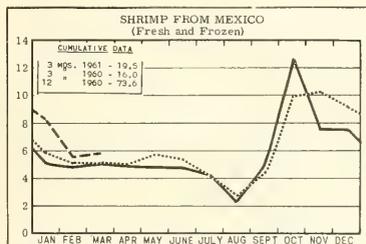
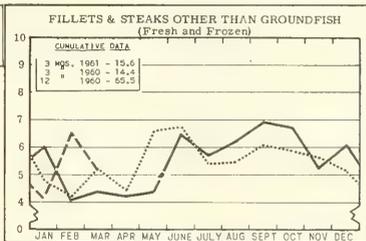
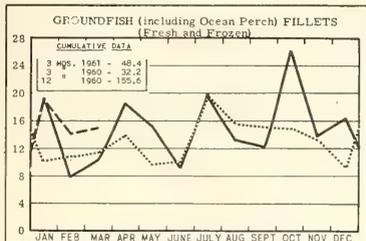


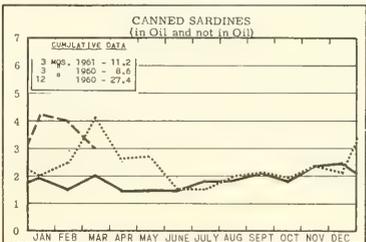
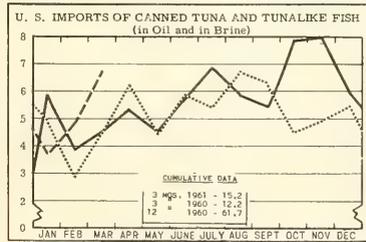
CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

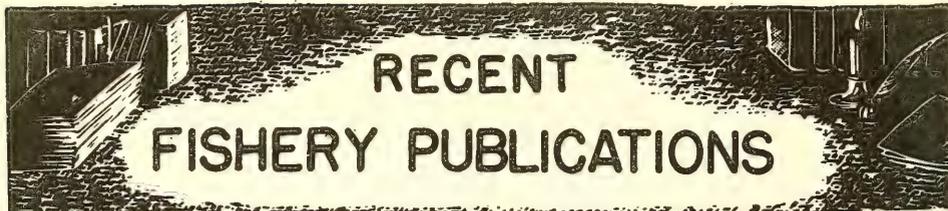
In Millions of Pounds

LEGEND:
 - - - - - 1961
 - - - - - 1960
 - - - - - 1959



1/2 EXCLUDES LOINS AND DISCS.





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.
 FL - FISHERY LEAFLETS.
 MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
 SSR - FISH - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
 SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
CFS-2495	- Frozen Fish, 1960 Annual Summary, 14 pp.
CFS-2514	- Texas Landings, December 1960, 3 pp.
CFS-2520	- New York Landings, 1960 Annual Summary, 9 pp.
CFS-2527	- New Jersey Landings, 1960 Annual Summary, 7 pp.
CFS-2528	- Frozen Fish Report, February 1961, 8 pp.
CFS-2530	- Maine Landings, January 1961, 3 pp.
CFS-2531	- California Landings, November 1960, 5 pp.
CFS-2532	- Virginia Landings, 1960 Annual Summary, 8 pp.
CFS-2533	- Louisiana Landings, November 1960, 2 pp.
CFS-2534	- Washington Landings, 1960 Annual Summary, 2 pp.
CFS-2535	- New Jersey Landings, January 1961, 3 pp.
CFS-2536	- New York Landings, January 1961, 4 pp.
CFS-2540	- Michigan Landings, January 1961, 2 pp.
CFS-2541	- Canned Fish and Byproducts, 1960 Annual Summary, 21 pp.
CFS-2542	- Packaged Fish, 1960 Annual Summary, 5 pp.
CFS-2543	- Minnesota Landings, 1960 Annual Summary, 2 pp.
CFS-2544	- Shrimp Landings, November 1960, 6 pp.
CFS-2546	- North Carolina Landings, February 1961, 4 pp.
CFS-2547	- Louisiana Landings, December 1960, 2 pp.
CFS-2548	- South Carolina Landings, February 1961, 2 pp.
CFS-2550	- Maryland Landings, February 1961, 3 pp.
CFS-2551	- Virginia Landings, January 1961, 3 pp.
CFS-2559	- Florida Landings, February 1961, 8 pp.

FL-501 - Fishery Resources for Animal Food, 22 pp., illus., printed. Presents reprints of ten magazine articles on the use of fish for pet and other animal food in various sections of the country--the Great Lakes area, the Gulf of Mexico, the Pacific Northwest, the Arkansas farm ponds, the New England industrial fishery, and the South Atlantic coast. Also discusses various types and costs of trawling.

FL-504 - The American Shad, by Gerald B. Talbot, 7 pp., illus., February 1961 (Revision of FL-179, March 1946). Covers the life history of the American shad, decline, management, and economics of the fishery, and catch statistics. Formerly a fishery of major importance on the Atlantic Coast, the shad has now declined to a fraction of its former volume and value. The building of dams, pollution of streams, and overfishing are the major causes of this decline.

FL-506 - The Florida Red Tide, by the Staff of the Bureau of Commercial Fisheries Biological Laboratory, Galveston, Texas, 8 pp., illus., 1961. Reviews the outbreaks in recent years of the so-called 'red tide' on Florida's West Coast, research conducted on this phenomenon, and measures used in an attempt to control it. The causative organism has been identified as a microscopic dinoflagellate, Gymnodinium breve. Outbreaks of red tide have caused the death of large numbers of fish. The use of copper sulphate, attempted during the 1959 outbreak, did not prove successful.

FL-509 - A List of the Fishery Bulletins of the United States Fish and Wildlife Service, by Lola T. Dees, 14 pp., March 1961.

SSR-Fish. No. 358 - Biological and Oceanographic Observations in the Central North Pacific July-September 1958, by James W. McGary and Joseph J. Graham, 112 pp., illus., December 1960.

SSR-Fish. No. 370 - Status of Fresh-Water Mussel Stocks in the Tennessee River, by George D. Scroggins, Jr., 44 pp., illus., December 1960.

SSR-Fish. No. 373 - Age and Size Composition of the Menhaden Catch Along the Atlantic Coast of the United States, 1957 (with a Brief Review of the Commercial Fishery), by Fred C. June, 42 pp., illus., January 1961.

Sep. No. 618 - Application of Steaming and Vacuum to Shucking and Cleaning Scallops.

Sep. No. 619 - Red Crab Explorations off the Northeastern Coast of the United States.

Conservation Notes - Our Commercial Fisheries, Circular 55, 6 pp., illus., processed. This pamphlet discusses in laymen's language the work of the U.S.

Bureau of Commercial Fisheries in conservation of our fishery resources. Covers some fishing terms such as "commercial," "sport," and "rough" fish; the knowledge needed to achieve the maximum sustainable yield; the fishery specialists and the tools they use to acquire this knowledge; and the gear and vessels used to land the United States catch.

Index of Fishery Technological Publications of the Fish and Wildlife Service and the Former Bureau of Fisheries, 1918-55, compiled by M. E. Stansby and Rosemary Schaffner, Circular 96, 239 pp., processed. This index lists and classifies, by subject and by author, publications printed during the period 1918 through 1955 that are of interest to persons in the field of fishery technology. Reports appearing in Government publications and in trade and scientific journals are included. In addition to the articles on strictly technological subjects, some articles on subjects in related fields have been listed. Fairly complete coverage has been made of the field of fishing vessels and gear.

The National Aquarium, Circular 93, 6 pp., illus., printed.

Progress in Sport Fishery Research, 1960, Circular 101, 98 pp., illus., processed, 1961. This report of sport fishery research progress for the calendar year 1960 reflects new program responsibilities, completion of many units of research, termination of one investigation, and greatly enhanced intragovernment and interagency cooperation and collaboration. Discusses accomplishments in research on fresh-water fish management, fish diseases, fish nutrition, fish cultural methods, and marine game fish. Also includes a list of publications and special reports issued during the year.

The United States Fish and Wildlife Service, Its Responsibilities and Functions, by Edna N. Sater, Circular 97, 48 pp., illus., processed. This booklet covers the Federal Government's role in wildlife conservation, origin of the U. S. Fish and Wildlife Service, and functions of the Bureau of Commercial Fisheries, the Bureau of Sport Fisheries and Wildlife. The author states that "The goal of the Fish and Wildlife Service is to maintain our fish and wildlife resources at a level that will have the greatest economic, esthetic, and recreational value possible for all our citizens."

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-48	- Pakistan's Fisheries Statistical Report, 1959.
MNL-49	- The National Marketing Corporation (NAMARCO).

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIAL OFFICE MENTIONED:

Annotated Bibliography of Unpublished Estuarine Research in the Gulf of Mexico, 1925-1959, edited by Philip A. Butler, Supplement I, 56 pp., processed, October 1960. (Biological Laboratory, U.S. Bureau of Commercial Fisheries, Gulf Breeze, Fla.)

California Fishery Products Monthly Summary, Part I--Fishery Products Production and Market Data,

February 1961, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish; pack of canned tuna, mackerel, and anchovies; market fish receipts at San Pedro-Santa Monica, and Eureka areas; California imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II--Fishing Information, March 1961, 8 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Discusses the first sonar cruise by two San Diego Biological Laboratory scientists. Also contains sea-surface temperature charts, Eastern Pacific Ocean; and other pertinent data for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, March 1961, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, March 1961, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; and sponge sales; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, March 1961, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, Lower Eastern Shore; and Chincoteague, the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

Imports of Fishery Products at New York, N. Y., 1960, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 38, N. Y.)

New England Fisheries--Annual Summary, 1960, by John J. O'Brien, 50 pp. (Available free from the Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the fish marketing trends and conditions at the principal New England fishery ports, and highlights of fisheries in other nearby areas. Covers food-fish landings by ports and species; industrial-fish landings and ex-vessel prices; fishing vessel news; imports; frozen fishery products; and the fish meal market. Also covers fishery landings and ex-vessel prices by months for ports of Boston, Gloucester, New Bedford, Provincetown, Woods Hole, Portland, Rockland, Point Judith, and Stonington; highlights of the Maine sardine and lobster fisheries; highlights of the fisheries of Canada, Norway, and Peru; and historical data of fisheries at principal New England ports.

New York City's Wholesale Fishery Trade--Monthly Summary for February 1961, 19 pp. (Market News Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, imports entered at New York City, primary wholesaler prices for frozen products, and marketing trends; for the month indicated.

Seattle and Astoria--Landings, Receipts, and Value of Fishery Products, 1960, by Charles M. Reardon, 42 pp. (Available free from the Market News Service, U. S. Fish and Wildlife Service, Pier 42, South, Seattle 4, Wash.) Reviews Pacific Northwest fisheries trends and their effect upon Seattle fishery products receipts for 1960; halibut landings; carload and truckload shipments of fishery products from Seattle by months; imports of canned fishery products at Seattle; receipts of domestic canned fishery products at Seattle; and names, classifications, and approximate standards as used on Seattle wholesale market. The Astoria section presents fisheries trends and products receipts for 1960; and landings and receipts of fishery products, by months, 1960. The report also contains a number of statistical tables on fresh and frozen salmon receipts at Seattle, halibut landings, ex-vessel landings by the otter-trawl fleet, and related data.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, March 1961, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Oreg.) wholesale dealers; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

Companies Curing Fish by Salting or Pickling in the Great Lakes Area, 1 p., processed. (Regional Director, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Ann Arbor, Mich.)

Companies Smoking Fish in the Great Lakes Area, 4 pp., processed. (Regional Director, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Ann Arbor, Mich.)

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE NOT FOR GENERAL DISTRIBUTION BUT ARE AVAILABLE FOR REFERENCE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, P. O. BOX 3630, HONOLULU, HAWAII.

Size Frequency of the Bigeye Tuna Caught in the Equatorial Pacific, by Mori Yukinawa, 7 pp., processed, March 1961. (Translated from Report of the Nankai Regional Fisheries Research Laboratory, no. 8, March 1958, pp. 22-30.)

Studies on the Yellowfin Tuna. I--Seasonal Differences of Size Composition in the Adjacent Waters of the West Carolines, by Yoichi Yabuta and Mori Yukinawa, 7 pp., processed, March 1961. (Translated from Report of the Nankai Regional Fisheries Research Laboratory, no. 5, February 1957, pp. 119-126.)

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

Better Hunting and Fishing on Small Watershed Projects, Circular 100, 8 pp., illus., printed, 1960. Better public hunting and fishing can be achieved on small watershed projects through the use of the Government cost-sharing plan approved by Congress.

This circular explains the types of development which are eligible for Federal cost-sharing. These include enlarging floodwater detention reservoirs for fishing lakes or waterfowl management areas; enlarging reservoirs to permit release of water for downstream benefits to fish or game; construction of reservoirs solely for fish and wildlife purposes as an integral part of the watershed project; modification of structures to permit fish and wildlife management; construction of fish shelters and fish ladders; improvement of stream banks or stream channels for fishery purposes; and construction of water catchments in arid regions to provide water for quail or other wildlife during critical periods.

Embryological Stages in the Sea Lamprey and Effects of Temperature on Development, by George W. Pivius, Fishery Bulletin 182 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 33 pp., illus., printed, 30 cents, 1961.

1960 Annual Report of the Secretary of the Interior (For the Fiscal Year Ended June 30, 1960), by Fred A. Seaton, 394 pp., illus., printed, \$1.50. U. S. Department of the Interior, Washington 25, D. C. The activities of the Department's bureaus and offices, including the United States Fish and Wildlife Service, are summarized in this report. Among others, the accomplishments of the Bureau of Commercial Fisheries are described. Activities discussed in detail are utilization of the commercial fishery resources; research in fishery biology (shellfisheries, anadromous, inland, and marine fisheries; and marine mammals); technological advances; marketing assistance; and foreign trade and economic studies. Also contains information on the Pribilof Islands fur-seal industry; the Columbia River fisheries program; statistical surveys and reports; financial assistance to the fisheries; and market information. A summary of the various activities of the Bureau of Sport Fisheries and Wildlife is also included.

"An Underwater Observation Chamber," by Julius Rockwell, Jr. and Sung Pal Chur, article, Progressive Fish-Culturist, vol. 21, no. 3, 1959, pp. 131-134, processed.

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 ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ADEN COLONY AND PROTECTORATE:
Aden, 1957 and 1958, 142 pp., illus., printed, 7s. 6d. (about US\$1.05). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, 1961. Contains, among others, sections on the fisheries of Aden Colony and Aden Protectorate. Each section discusses briefly methods used in catching fish; organization, finance, and utilization of catches; marketing; events affecting production; and activities of the Fisheries Department. Included are statistical tables showing fish landings during 1957 and 1958.

ALASKA:
1958 Annual Report, Report No. 10, 120 pp., illus., printed, Alaska Department of Fish and Game, Juneau, Alaska. Covers the activities of the Alaska Fish and Game Commission and Department of Fish and Game during the calendar year 1958. Includes,

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among others, sections on accomplishments in biological research and in the commercial fisheries in the four fisheries districts. Fisheries work was concerned principally with management of the salmon stocks but attention was also given to the growing shrimp and king crab industries.

ALGAE:

Ecology and Distribution of Marine Algae Found in Tampa Bay, Boca Ciega Bay and at Tarpon Springs, Florida, by Ronald C. Phillips, 39 pp., illus., printed. (Reprinted from The Quarterly Journal of the Florida Academy of Sciences, vol. 23, no. 3, September 1960, pp. 222-260.) Director, Florida State Board of Conservation, W. V. Knott Bldg., Tallahassee, Fla.

Selected Bibliography on Algae, Number Five, edited by Joann Morris and B. L. Anderson, 223 pp., processed, C\$1. Nova Scotia Research Foundation Library, P. O. Box 1027, Halifax, Nova Scotia, Canada, 1960. This edition continues the series started by the Nova Scotia Research Foundation in 1952 when it issued a short bibliography on the utilization of seaweed to assist the Foundation's research workers and certain industrial organizations interested in this field. Most of the references are made to articles which appeared in 1957-58, but some earlier papers are listed as well.

ANGOLA:

Alguns Elementos para o Estudo da Captura Diferencial de Artes de Pesca em Angola (Some Elements for the Study of Different Methods of Capture in the Fisheries of Angola), by R. Monteiro, Notas Mimeo-grafadas do Centro de Biologia Piscatoria No. 10, 11 pp., illus., processed in Portuguese. Centro de Biologia Piscatoria, Ministerio do Ultramar, Junta de Investigaçoes do Ultramar, Lisbon, Portugal, 1960.

ARGENTINA:

La Pesca Maritima en la Argentina: Pasado, Presente, Porvenir (The Argentine Marine Fishery: Past, Present, Future), by Carlos H. Engelbeen, 213 pp., illus., printed in Spanish. Editorial Sudamericana, S. A., Calle Alsina 500, Buenos Aires, 1955.

ATOMIC ENERGY COMMISSION:

Marine Sciences Research in the AEC, TID-4040, 41 pp., processed, 50 cents. Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. This booklet on marine sciences is one in a series of such publications in preparation to describe the research supported by the Division of Biology and Medicine, U. S. Atomic Energy Commission. Its purpose is to acquaint interested scientists with the biomedical program of the Commission, its objectives, and needs. The report discusses the marine sciences information needed by the Commission to carry out its responsibilities and outlines briefly the 28 marine research contracts being carried out at present.

AUSTRALIA:

Fishing and Whaling, 1959-60, Statistical Bulletin No. 6, 20 pp., illus., processed. Commonwealth Bureau of Census and Statistics, Canberra, Australia, March 7, 1961. This is the sixth of a series of annual bulletins dealing with the fishing and whaling industries in Australia. The statistics, covering quantity and value of catch and related

data, pertain to the year 1959-60 for general fisheries, and to the 1959 season for pearl-shell and trochus-shell fisheries, and to the 1960 season for whaling, with comparative data for the previous 4 years. The bulletin is divided into 4 parts. Part I deals with general fisheries including those for fish, crustaceans, and molluscs (edible products). Part II includes fisheries for pearl-shell and trochus-shell (inedible products). Part III covers the operation of the whaling industry in Australia and Norfolk Island. Part IV shows particulars of overseas trade in fishery and whaling products.

BIOCHEMISTRY:

"Phenol Oxidase in Shrimp and Crab," by M. E. Bailey, E. A. Fieger, and A. F. Novak, Food Research, vol. 25, September-October 1960, pp. 565-572, printed. Food Research, The Garrard Press, 510 No. Hickory St., Champaign, Ill.

BRITISH GUIANA:

Survey of Fisheries Developments in British Guiana, April 3-June 3, 1960, by Charles L. Kaufmann, 34 pp., illus., processed. United States Operations Mission, U. S. Consulate, Georgetown, British Guiana, June 1960.

BYPRODUCTS:

"Chick Growth Response to Fish By-Products and Arsanilic Acid," by E. L. Wisman, article, Poultry Science, vol. 39, September 1960, pp. 1140-1148, printed. Poultry Science, Poultry Science Association, Kansas State College, Manhattan, Kans.

Enzymic Treatment of Autolyzed Fishes or Fish Entrails, by Shunro Takei, Japanese Patent #2840, 1958, printed in Japanese. Tokkyocho, No. 1 San-nencho, Kojimachiku Tokyo, Japan.

Fish Meal and Fish-Processing Water, by Edgar Haase, Helmuth Nolte, and Lothar Reinhardt, German Patent #1,034,005, printed in German. German Patent Office, Bonn, West Germany.

CANADA:

Annual Report of the Fisheries Research Board of Canada, 1959/60 (For the Fiscal Year Ended March 31, 1960), 196 pp., illus., printed in English with additional introduction in French, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, 1961. A comprehensive summary of the work of the Fisheries Research Board of Canada and its field stations during 1959/60. As prescribed by a special Act of Parliament "the Board has charge of all Dominion fishery research stations in Canada, and has the conduct and control of investigations of practical and economic problems connected with marine and fresh-water fisheries, flora and fauna and such other work as may be assigned to it by the Minister." The work of the Board is organized in three closely coordinated fields: biological, technological, and oceanographic. During 1959, the 177-foot trawler-type research vessel A. T. Cameron satisfactorily completed its first full year of operation; a new laboratory was completed in Vancouver, B. C., an extensive new wing on the biological laboratory in St. Andrews, N. B., was opened; and the new 36-foot vessel *Salvelinus* for research in the western Arctic was completed and delivered to the mouth of the Mackenzie River in readiness for the

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next field season. The report also covers activities at the Biological Stations, St. John's, Newfoundland, St. Andrews, New Brunswick, London, Ontario, and Nanaimo, B. C.; the Arctic Unit, Montreal, Quebec; and the Technological Stations, Halifax, Nova Scotia, Grande-Riviere, Quebec, Vancouver, B. C., and London, Ontario. A list of the publications and reports published during the year by the Board is included.

"Canada's Fisheries Markets in 1960," by T. R. Kinsella, article, Foreign Trade, vol. 115, no. 7, April 8, 1961, pp. 2-7, illus., printed. Queen's Printer and Controller of Stationery, Government Printing Bureau, Ottawa, Canada. Discusses the volume and value of the catch in the Atlantic, Pacific, and inland fisheries. Also discusses foreign trade in fishery products; the markets for fresh and frozen, salted, and canned fish, and molluscs and crustaceans; fish meal and oil production and markets; and trade fairs and conferences concerned with the fishery industries.

Fisheries Council of Canada, Annual Review, 1961, 76 pp., illus., printed. Fisheries Council of Canada, Rm. 703, 77 Metcalfe St., Ottawa 4, Canada. Contains, among others, the following articles: "Commercial Fishing in Ontario," by W. H. R. Werner; "Freshwater Fisheries Research," by W. A. Kennedy; "The Significance of Some New Gear Developments," by Brian I. Meagher; "FAO International Fish Meal Meeting," and "Canada's Fisheries in 1960," by W. C. MacKenzie.

CAPE VERDE ISLANDS:

Sobre a Pesca do Atum em Cabo Verde (On the Tuna Fishery in the Cape Verdes), by F. Correia da Costa, Notas Mimeografadas do Centro de Biologia Piscatoria no. 7, 19 pp., illus., processed in Portuguese. Centro de Biologia Piscatoria, Ministerio do Ultramar, Junta de Investigações do Ultramar, Lisbon, Portugal, 1960.

COD:

"Changes in the Actin of Cod Flesh during Storage at -14°," by J. J. Connell, article, Journal of the Science of Food and Agriculture, vol. 11, September 1960, pp. 515-519, printed. Journal of the Science of Food and Agriculture, The Society of Chemical Industry, 14 Belgrave Square, London SW1, England.

Cod Catches in the Bay of Gdansk in 1949-1953 in the Aspect of Hydrographic and Climatic Factors, OTS 60-21520, 20 pp., illus., processed, 50 cents. Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., 1960. (Translated from Prace Morskiego Instytutu Rybackiego, no. 9, 1957, pp. 79-102.)

COMMISSIONS:

(Atlantic States Marine Fisheries Commission) Minutes of the 19th Annual Meeting (September 29, 30, 1960, Charleston, S. C.), 206 pp., processed, limited distribution. Atlantic States Marine Fisheries Commission, 22 W. First St., Mount Vernon, N. Y. Covers the minutes of the 19th annual meeting of the Commission with details of attendance; the first, second, and third general sessions; and section meetings of the North Atlantic, Middle Atlantic, Chesapeake Bay, and South Atlantic Sections. Also

includes accounts of the individual section meetings, resolutions recommended for adoption, and the executive committee meeting. Appendices include, among others, reports on research work accomplished by the Commission and its sponsoring agency, the U. S. Fish and Wildlife Service. Also included in the appendices are reports on status of oyster mortalities in Delaware and Chesapeake Bays; current situation in fisheries of the Atlantic Bight; the continuing threat of pesticides; FAO-sponsored International Conference on Fish in Nutrition; fishery statistical programs; particular biological research on menhaden currently needed by the industry; plans for sport fishery research on the Atlantic Coast; and a prospectus for marine game fish research, Bureau of Sport Fisheries and Wildlife.

(Atlantic States Marine Fisheries Commission) Nineteenth Annual Report (to the Congress of the United States and to the Governors and Legislators of the Fifteen Compacting States), 55 pp., printed. Atlantic States Marine Fisheries Commission, 22 W. First St., Mount Vernon, N. Y., March 1961. Summarizes briefly the many activities of the Atlantic States Marine Fisheries Commission during 1960. Includes condensed reports of the work of the Commission and of the basic committees--legal, technological, biological, and executive. Also contains reports from the North Atlantic Section on the starfish invasion of Long Island Sound, proposed lobster research program, size limit on lobsters, whiting research, shellfish inventory, and need for state mesh regulations in inshore waters. The Middle Atlantic Section reports on pesticides, fresh-water runoff in estuaries, oyster mortalities, criteria for artificial reef construction, scup studies, surf clam exploration, the need to undertake further menhaden studies, and offshore lobster production. The Chesapeake Bay Section discusses blue crab project, oyster mortalities, oyster drill control, and the Potomac River Compact between Maryland and Virginia. The South Atlantic Section reports on the Southeast River Basin study, licensing out-of-state shrimp boats, exploratory fishing along the South Atlantic Coast, and blue crab research. Appendices include State legislation recommended; biological subcommittee reports on striped bass experiment, blue crab, and fisheries of the Atlantic Bight; and resolutions adopted by the Commission.

CRABS:

Marine Crabs of Bombay State, by B. F. Chhappgar, 94 pp., illus., printed. Taraporevala Marine Biological Station, Department of Fisheries, Bombay 2, India, 1957.

CRUSTACEANS:

"Painless Killing of Crabs and Other Large Crustaceans," by Gordon Gunter, article, Science, vol. 133, no. 3449, February 3, 1961, p. 327, printed. Science, 1515 Massachusetts Ave., NW., Washington 5, D. C. Large crustaceans used for food are customarily scalded to death. This is unnecessary torture, according to the author, for it can be avoided easily. It is possible to kill the animals quickly, without pain, by placing them in cool fresh water and raising the temperature steadily to about 40° C. (104° F.).

DOLPHINS:

"On the Identification, Distribution, and Biology of the Dolphins, Coryphaena hippurus and C. equisetis," by

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Robert H. Gibbs, Jr. and Bruce B. Collette, article, Bulletin of Marine Science of the Gulf and Caribbean, vol. 9, no. 2, 1959, pp. 118-152, printed. Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

ENZYMES:

"Physico-Chemical Properties of the Enzymes Involved in Shrimp Melanogenesis," by M. E. Bailey, E. A. Fieger, and A. F. Novak, article, Food Research, vol. 25, September-October 1960, pp. 557-564, printed. Food Research, The Garrard Press, 510 No. Hickory St., Champaign, Ill.

FEEDS:

"Limits to Value of Chemical Analysis in Appraising Feeds," by Joseph Kastelic, article, The Feed Bag, vol. 36, February 1960, pp. 53, 56, printed. The Feed Bag, Editorial Service Company, 1712 W. St. Paul Ave., Milwaukee 3, Wis.

FISH-LIVER OIL:

"Biological and Chemical Estimation of Vitamin D in Shark-Liver Oil," by S. K. Pradhan and N. G. Magar, article, Indian Journal of Medical Research, vol. 45, 1957, pp. 49-53, printed. Indian Journal of Medical Research, Job Press Private Ltd., P. O. Box 124, Cawnpore, India.

FISH LIVERS:

"Fish Liver Paste," by A. Guttman, article, Trade News, vol. 13, no. 8, February 1961, pp. 6-7, processed. Information and Educational Service, Department of Fisheries, Ottawa, Canada. Discusses the work accomplished at the Halifax, N. S., Technological Station of the Fisheries Research Board of Canada on the preparation of fish-liver paste. Its nutritive value is described and a method is outlined for preparation of the paste from cod and haddock livers.

FISH MEAL:

"Chemical and Nutritional Changes in Stored Herring Meal," by C. H. Lea, L. J. Parr, and K. J. Carpenter, article, British Journal of Nutrition, vol. 14, 1960, pp. 91-113, printed. British Journal of Nutrition, Cambridge University Press, 32 E. 57th St., New York 22, N. Y.

"A Comparison of Dried Skim Milk and White-Fish Meal as Supplements for Fattening Pigs. IV--Further Studies with Pigs Fed Unrestricted Amounts of Whey under Commercial Conditions," by R. Braude and others, article, Journal of Dairy Research, vol. 26, 1959, pp. 238-247, printed. Journal of Dairy Research, Cambridge University Press, 200 Euston Rd., London NW1, England.

The Smell Problem in Herring-Meal Factories, by J. A. Lovern and June Olley, 3 pp., illus., printed. (Reprinted from the Journal of the Science of Food and Agriculture, vol. 5, no. 10, October 1954, pp. 466-468.) Journal of the Science of Food and Agriculture, Society of Chemical Industry, 14 Belgrave Square, London SW1, England.

FISH SOLUBLES:

"Ineffectiveness of Antibiotic Combination on Response of Chicks Fed Fish Solubles," by H. Menge

and Robert J. Lillie, article, Poultry Science, vol. 39, September 1960, pp. 1188-1190, printed. Poultry Science, Poultry Science Association, Kansas State College, Manhattan, Kans.

FISHERIES RESEARCH:

Catalog of Publications of the Institute for Fisheries Research, 1934-1957, 24 pp., processed. Institute for Fisheries Research, University Museums Annex, Ann Arbor, Mich. Lists the publications of the Institute for Fisheries Research. The specific problems undertaken by the Institute include further research into the methods and value of stream and lake improvement; inventory of the streams and inland lakes to determine suitable management methods; studies of migration, growth rate, food habits, spawning habits and other relationships of the principal game and forage fish; predator studies; evaluation of fishing regulations; population studies; and determination of fish yield by creel census. Research in fish nutrition and diseases is also being conducted to improve the efficiency of the hatcheries. Also includes a supplementary list of publications of the Institute, 1958-59.

FISHING LIMITS:

"Icelandic Dispute Ends," article, Fish Trades Gazette, no. 4056, March 18, 1961, pp. 9-10, printed. Retail Journals Limited, John Adam House, John Adam St., London WC2, England. The formal exchange of notes between the Icelandic Foreign Minister and the British Ambassador in Reykjavik officially concluded the settlement of the dispute on fishery limits between the two countries. The Icelandic Government announced that all charges against British trawlers for illegal fishing in Icelandic waters were to be withdrawn. This brings to a close 13 years of protracted negotiations between the two countries.

FLORIDA:

(Florida State Board of Conservation) Fourteenth Biennial Report, 1959-1960, 74 pp., illus., printed, Florida State Board of Conservation, Tallahassee, Fla., March 1961. Describes the activities of the Florida State Board of Conservation during 1959-60, summarizing the goals attained and progress achieved in the betterment of salt-water conservation. Includes chapters on conservation, administration of the Conservation Department, research, oyster culture, enforcement, and commercial fisheries statistics. According to the report, the most serious problem facing salt-water conservation in Florida today is the destruction of sanctuaries and nursery areas by the improvident management of shallow water embayments and river mouths. Two types of damage predominate: pollution and dredging and filling. Florida showed a rapidly accelerating increase in oyster production during the biennium. A program of clam research revealed vast potentialities in this field. The discovery of additional offshore sources of the calico scallop indicate future increases in production. Mullet remained a problem as demand and price declined. Increased interest in the creation of offshore fishing reefs prompted the establishment of rules and procedures for such activity.

A Report on the Hydrography, Marine Plants, and Fishes of the Caloosahatchee River Area, Lee County, Florida, by Ronald C. Phillips and Victor G. Springer, Special Scientific Report No. 5, 34 pp., illus., proc-

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essed. Florida State Board of Conservation Marine Laboratory, Maritime Base, Bayboro Harbor, St. Petersburg, Fla., December 1, 1960.

FOOD AND AGRICULTURE ORGANIZATION:

World Fisheries Abstracts, List of Periodicals
Searched as at 31 December 1959, Supplement to vol. II, no. 1, 74 pp., printed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. A list of periodicals which are searched regularly as source material for the World Fisheries Abstracts. The present list contains the address of each periodical and is complete as of December 31, 1959. The periodicals are arranged alphabetically by name. To assist the readers, a trilingual list of the terms commonly used in describing the data in respect of frequency of publication is included.

FOREIGN TRADE:

Comprehensive Export Schedule (and supplementary Current Export Bulletins), processed, \$6, domestic, and \$7.50, foreign, for subscription year April 1, 1961, to March 31, 1962. Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C., April 1, 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A compilation of official regulations and policies governing the export licensing of commercial shipments.

FREEZERSHIP:

"El Atunero Congelador L'Africain" (The Tuna Freezer L'Africain), by Maurice Victor, article, Puntal, vol. 8, no. 8, February 1961, pp. 6-7, illus., printed in Spanish. Puntal, Apartado de Correos 316, Alicante, Spain.

FREEZING:

"Some Economics on Liquid Nitrogen for Tomorrow's Frozen Foods," article, Industrial Refrigeration, October 1960, pp. 15, 25, printed. Industrial Refrigeration, Nickerson & Collins Co., 433-435 N. Waller Ave., Chicago, Ill.

GENERAL:

A Dictionary of Fishes, Second Edition, by Rube Allyn, 111 pp., illus., printed. The Great Outdoors Association, Pier 63, Central Basin, St. Petersburg, Fla., 1951.

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Scottish Fisheries Bulletin, no. 7, July 1957, 15 pp., illus., printed. Her Majesty's Stationery Office, 13A Castle St., Edinburgh 2, Scotland. Discusses the problems of fishery conservation; and the Marine Laboratory's research work on the herring fishery, studies on the environment of herring, demersal fishery investigations, studies of fish parasites, tagging experiments, and skin-diving observations.

_____, no. 8, December 1957, 15 pp., illus., printed. Includes, among others, the following articles: "Herring Trawling--the Swedish Way," by W. Dickson; "A Preliminary Account of the Turbot in Scottish Waters," by B. B. Rae; "Experiments in Herring Rearing," by H. Wood; and "The Norway Lobster or 'Prawn,'" by H. Wood.

_____, no. 9, June 1958, 20 pp., illus., printed. Includes, among others, the following articles: "Scottish Herring Fishery Forecast for 1958;" "The Decline in the Landings of Catfish from the North Sea," by B. B. Rae; "The Salmon, a One-Sided Story," by D. H. Mills and W. M. Shearer; "Tagging Halibut," by A. D. McIntyre; and "Fluctuations in the North Sea Haddock Stocks," by R. Jones.

_____, no. 12, December 1959, 22 pp., illus., printed. Includes, among others, the following articles: "A Comparison of Some Methods Used in Lobster and Crab Fishing," by H. J. Thomas; "Herring Spawning in the Firth of Clyde," by A. Saville; "The Effect of Seals on Scottish Salmon and Marine Fisheries," by Bennet B. Rae; and "How Fast do Fish Swim," by J. H. S. Blaxter and W. Dickson.

_____, no. 13, June 1960, 24 pp., illus., printed. Includes, among others, the following articles: "Results of Scottish Herring Fisheries in 1959 and Prospects for 1960," by B. B. Parrish and I. G. Baxter; "Some Notes about the 'Boxing' Fishery," by John Steele;

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"Holding Lobsters," by H. J. Thomas; "Fluctuations in the North Sea Haddock Stocks. III," by R. Jones; and "German Mid-Water Trawling Experiments," by B. B. Parrish.

, no. 14, March 1961, 24 pp., illus., printed. Includes, among others, the following articles: "The Distribution of Haddock in the North Sea," by Rodney Jones; "Some Recent Scottish Haddock Tagging Experiments," by Rodney Jones; "Dogfish," by Bennet B. Rae; "Tunny Fisheries," by Bennet B. Rae; and "The Capture of a Pacific Salmon in Scottish Waters," by W. M. Shearer.

SEA LIONS:

Studies on Stellar Sea Lion (EUMETOPHIS JUBATA) in Alaska, by Ole A. Mathisen, 11 pp., illus., printed. (Reprinted from Transactions of the Twenty-Fourth North American Wildlife Conference, March 2-4, 1959, pp. 346-356.) Wildlife Management Institute, Wire Bldg., Washington 5, D. C.

SEA TROUT:

Differences in the Estuarine Ecology of Florida Waters and Their Effect on Populations of the Spotted Weakfish, CYNOSCION NEBULOSIS (Cuvier and Valenciennes), by Durbin C. Tabb, Contribution 280, 11 pp., illus., printed. (Reprinted from Transactions of the Twenty-Third North American Wildlife Conference, March 3-5, 1958, pp. 392-401.) The Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

The Spotted Seatrout Fishery of the Indian River Area, Florida, by Durbin C. Tabb, Technical Series No. 33, 16 pp., illus., printed. Director Florida State Board of Conservation, W. V. Knott Bldg., Tallahassee, Fla., October 1960.

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"Drying of Seaweeds and Other Plants. II--Through-Circulation Drying of Laminaria longicruris," by J. H. Merritt, article, Journal of the Science of Food and Agriculture, vol. 11, October 1960, pp. 600-603, printed. Journal of the Science of Food and Agriculture, The Society of Chemical Industry, 14 Belgrave Square, London SW1, England.

SHRIMP:

On the Grading and Identification of Domestic Commercial Shrimps (Family Penaeidae) with a Tentative World List of Commercial Penaeids, by Bonnie Eldred and Robert F. Hutton, Contribution No. 46, 30 pp., illus., printed. (Reprinted from Quarterly Journal of the Florida Academy of Sciences, vol. 23, no. 2, June 1960, pp. 89-118.) The Florida State Board of Conservation Marine Laboratory, Maritime Base, Bayboro Harbor, St. Petersburg, Fla.

A Note on the Occurrence of the Shrimp, PENAUS BRASILIENSIS Latreille, in Biscayne Bay, Florida, by Bonnie Eldred, Contribution No. 47, 2 pp., printed. (Reprinted from The Quarterly Journal of the Florida State Academy of Sciences, vol. 23, no. 2, 1960, pp. 164-165.) Florida State Board of Conservation Marine Laboratory, Maritime Base, Bayboro Harbor, St. Petersburg, Fla.

Shrimp (Report on Investigation No. 332-40, under Section 332, of the Tariff Act of 1930, Pursuant to

a Resolution of the Committee on Finance of the United States Senate Adopted in August 1960), 175 pp., processed. U. S. Tariff Commission, 8th and E. Sts., NW., Washington 25, D. C. Describes the domestic shrimp fishery and the processing of shrimp in the United States; discusses domestic production, exports, imports, and consumption of raw shrimp and shrimp products; and gives data on prices, cold-storage holdings, and wage rates in the United States. Also provides data on the shrimp fisheries of foreign countries; considers the interests of domestic producers, processors, and consumers of shrimp; and discusses the probable results of the imposition of the import restrictions set forth in the resolution.

SMALL BUSINESS MANAGEMENT:

Cash Management in Small Plants, by Theodore E. Boros, Management Aids for Small Manufacturers No. 124, 4 pp., processed. Small Business Administration, Washington 25, D. C., April 1961. This leaflet is designed to inform owner-managers of small plants about the importance of managing their cash. Management of cash is just as important as the management of sales, production, or merchandising. Policing is the first and very important part of cash management. This action protects cash from loss due to thievery or carelessness. It is done by using effective internal control. The second, and an equally important, aspect of cash management is that of maintaining adequate funds to meet the needs of the business. This can be done by using the techniques of cash planning.

Cost Cutting Through Work Measurement, by Elmer V. Grillo, Small Marketers Aids No. 64, April 1961, 4 pp., processed. Small Business Administration, Washington 25, D. C. Businessmen are increasingly concerned over the growing volume of clerical work, and wondering how to handle the problem. Many are finding that if paper work and office costs are to be controlled, there should be some way of determining whether the work is necessary, how long it should take, and how much it should cost. Work measurement can help answer these questions. Three simple techniques can be employed--the use of past records, current time records or logs, and work sampling. This leaflet describes these techniques and how to use them.

Getting the Most from Your Purchasing Dollar, by G. W. Howard Ahl, Management Aids for Small Manufacturers No. 123, 4 pp., processed. Small Business Administration, Washington 25, D. C., March 1961. This pamphlet tells how the small businessman can check his purchasing policies and procedures. It discusses the duties of the purchasing agent and his qualifications. It also suggests ways to improve the detailed aspects of purchasing, such as delivery, small orders, and discounts.

SMELT:

The Smelt, OSMERUS MORDAX (Mitchill), by John Van Oosten, Fish Division Pamphlet No. 8, March 1953, 4 pp., processed. Fish Division, Michigan Department of Conservation, Lansing, 13, Mich.

Smelt Recipes, Fish Division Pamphlet No. 3, February 1956, 6 pp., processed. Fish Division, Michigan Department of Conservation, Lansing 26, Mich.

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

SMOKED FISH:

Histological and Histochemical Investigation of Tissues of Smoked Fish, by A.I. Yuditskaya, PST Cat. No. 158, 8 pp., illus., printed, 50 cents. (Translated from *Rybnoe Khoziaistvo*, vol. 35, no. 2, 1959, pp. 65-69.) The Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

SOLE:

"The Larval Development of the Sand Sole (*Psettichthys Melanostictus*)," by Cleveland P. Hickman, Jr., article, *Fisheries Research Papers*, vol. 2, no. 2, 1959, pp. 38-47, printed. Washington State Department of Fisheries, 4015 20th Ave. W., Seattle 99, Wash.

SQUID:

"Histological and Histochemical Study on Processing the Squid Meat. I--Histological Properties of the Squid Meat," by Takeo Tanaka, article, *Bulletin of the Tokai Regional Fisheries Research Laboratory* No. 20, May 1958, pp. 88-89, printed. Tokai Regional Fisheries Research Laboratory, Tsukishima, Chuo-ku, Tokyo, Japan.

STORAGE LIFE:

"An Accelerated Oxidation Method for the Estimation of the Storage Life of Frozen Seafoods," by Robert E. Palmateer, T. C. Yu, and Russell O. Sinnhuber, article, *Food Technology*, vol. 14, October 1960, pp. 528-532, printed. Food Technology, The Garrard Press, 510 No. Hickory St., Champaign, Ill.

SWORDFISH:

"On the Periodical Change of Fishing Conditions and the Body Length of a Whole Year and the Distribution and Migration of Swordfish of the Northwestern Part of the Pacific Ocean," by J. Nakogome, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 24, no. 5, 1958, pp. 322-325, printed in Japanese with English summary. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

TARIFFS:

Import Tariff System of Sierra Leone, WTIS Part 2, Operations Report No. 60-65, 2 pp., printed, single copy 10 cents. Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C., November 1960. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

Singapore, WTIS Part 2, Operations Report No. 60-67, 2 pp., printed, 10 cents, December 1960.

Viet-Nam, WTIS Part 2, Operations Report No. 60-69, 2 pp., printed, 10 cents, December 1960.

Sweden, WTIS Part 2, Operations Report No. 60-70, 2 pp., printed, 10 cents, December 1960.

Dominican Republic, WTIS Part 2, Operations Report No. 60-71, 2 pp., printed, 10 cents, December 1960.

Thailand, WTIS Part 2, Operations Report No. 61-1, 2 pp., printed, 10 cents, January 1961.

Taiwan (Formosa), WTIS Part 2, Operations Report No. 61-2, 2 pp., printed, 10 cents, January 1961.

Republic of Korea, WTIS Part 2, Operations Report No. 61-3, 2 pp., printed, 10 cents, January 1961.

THAILAND:

Basic Data on the Economy of Thailand, WTIS Part 1, Economic Report No. 60-45, 16 pp., illus., printed, single copy 10 cents. Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A survey of the economy of Thailand, including, among others, a short section on fisheries, covering annual landings, the fishing fleet, Government aid to fisheries, and exports of fishery products.

TIDES:

Tide Tables--West Coast, North and South America (including the Hawaiian Islands), 1962, 224 pp., printed, \$1. Coast and Geodetic Survey, U. S. Department of Commerce, Washington 25, D. C., 1961. High and low water predictions.

TOXICITY:

"The Toxicity of Chemicals on Fish. II--The Estimation of the Effectiveness of Insecticides on the Young Carp, *Cyprinus carpio* Linne," article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 22, no. 10, 1957, pp. 641-644, printed. Japanese Society of Scientific Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

"The Toxicity of Synthetic Detergents and Soaps to Fish," by C. Henderson, Q. H. Pickering, and J. M. Cohen, article, *Sewage and Industrial Wastes*, vol. 31, 1959, pp. 295-306, printed. Federation of Sewage and Industrial Wastes Associations, 4435 Wisconsin Ave. NW., Washington 16, D. C.

TRADE LIST:

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Canneries and Frozen Foods--Producers and Exporters--Tunisia, 4 pp. (March 1961). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes firms dealing in canned sardines and tuna.

TROUT:

"Trout and Trout Hatcheries of the Future," by Keen Buss, article, *Transactions of the American Fisheries Society*, vol. 88, no. 2, 1959, pp. 75-80, printed. Transactions of the American Fisheries Society, Librarian, Colorado A & M College, Fort Collins, Colo.

TUNA:

Biología Pesquera del Bonito (KATSUWONUS PELAMIS) y la Albacora (THUNNUS ATLANTICUS) en

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

Cuba. I (Fishery Biology of Skipjack (*Katsuwonus pelamis*) and Atlantic Blackfin (*Thunnus atlanticus*) in Cuba. I), by Jose A. Suarez Cabro and Pedro Pablo Duarte Bello, Serie de Estudios sobre Trabajos de Investigacion No. 15, 147 pp., illus., printed in Spanish. Instituto Cubano de Investigaciones Tecnologicas, Via Blanca y Carretera Central, Havana, Cuba, February 1961.

"Morphometric Comparison of the Yellowfin Tuna from Six Grounds in the Indian Ocean," by K. Kurogane and Y. Hiyama, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 6/7, 1958, pp. 487-494, printed in Japanese. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

"Morphometric Comparison of Yellowfin Tuna of Southwestern Great Sunda Islands and of the Pacific Water," by Saburo Tsuruta, article, Journal of Shimonoseki College of Fisheries, vol. 4, no. 3, 1955, pp. 311-319, printed in Japanese with English abstract. Ministry of Agriculture and Forestry, Marine Products Training Center, Shimonoseki, Japan.

"Morphometric Comparison of Yellowfin Tuna Taken from the Equatorial Pacific," by K. Kurogane and Y. Hiyama, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 7/8, 1957, pp. 388-393, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

"La Paradoja del Atun Tropical Espanol" (The Paradox of the Tropical Spanish Tuna), by Mareiro, article, Industria Conservera, vol. 27, no. 259, January 1961, pp. 3-4, printed in Spanish. Industria Conservera Calle Marques de Valladares, 41, Vigo, Spain.

"Relation between Seasonal Variation of Swimming Layer of Yellowfin Tuna and Big-Eyed Tuna and Vertical Distribution of Chlorinity," by J. Nakagome, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 9, 1958, pp. 523-524, printed in Japanese with English summary. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

"On the School of Yellow-Fin Tuna, *Neothunnus rarus* (K.), Deduced from the Distribution of Catch on Tuna Long Line," by N. Hirayama, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 7/8, 1957, pp. 373-385, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

"On the Seasonal Variation of Swimming Layers of Yellowfin Tuna, Big-Eyed Tuna and Black Marlin in the Area of Caroline and Marshall Islands. 1--On the Seasonal Variation of Swimming Layer," by J. Nakagome, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 9, 1958, pp. 518-522, printed in Japanese with English summary. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

"Studies on Movements of Albacore Fishing Grounds in the Northwest Pacific Ocean. 1--Adaptability of

Water Temperatures for Albacores in the Winter Season from Observations of Records on Catches and Optimum Water Temperatures by Fishing Boats," by M. Inoue, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 11, 1958, pp. 673-679, printed in Japanese with English summary. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

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UNION OF SOUTH AFRICA:

Department of Nature Conservation, Report No. 16, 1959, 128 pp., illus., printed. Department of Nature Conservation, Provincial Administration of the Cape of Good Hope, Cape Town, Union of South Africa. This report covers the activities of the Department of Nature Conservation for 1959. It includes, among others, a section of the Division of Inland Fisheries which discusses the two Government hatcheries, the stocking of public waters, fertilization of fish ponds, tidal waters of the Cape, experiments in fish production, and angling licenses.

Sixteenth Annual Report, Fisheries Development Corporation of South Africa Limited (Covering Period 1st October, 1959 to 30th September, 1960), 16 pp., printed in English and Afrikaans. Fisheries Development Corporation of South Africa Limited, Seafare House, 68 Orange St., Cape Town, Union of South Africa, March 7, 1961. Presents brief reports on the state of the pilchard, maasbanker, mackerel, and spiny or rock lobster fisheries. Also covers activities of the Corporation--investments, loans to fishermen, and a fisheries cooperative; participation of the Union of South Africa in international conferences; and financial situation of the Corporation.

VIRGIN ISLANDS:

Addendum to Sport and Commercial Fisheries Potential of St. John, Virgin Islands, by C. P. Idyll and John E. Randall, 2 pp., processed. The Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla., 1960.

WASTE DISPOSAL:

Waste Disposal in the Marine Environment: Proceedings of the First International Conference, edited by E. A. Pearson, 369 pp., illus., printed, \$12.50. Pergamon Press, 122 E. 57th St., New York 22, N. Y., 1961.

WESTERN SAMOA:

"SPC Fisheries Investigation in Western Samoa," by H. van Pel, article, South Pacific Bulletin, vol. 11, no. 1, January 1961, pp. 20-22, illus., printed. South Pacific Commission, Box 5254, G. P. O., Sydney, Australia. A report on the observations of the South Pacific Commission's fisheries officer made during a recent three weeks visit to Western Samoa. He found that, although fishing is generally a part-time activity rather than the principal means of livelihood, nearly the entire population takes part in some way. Every type of sea creature which can be taken is considered worth eating. Many different types of

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gear, both primitive and modern, are utilized, and the fishermen are constantly striving to improve their methods of fishing. Sport fishing is practiced in this area. Many inland ponds have been stocked with tilapia, which have thrived and will soon be ready for harvesting.

WHALES:

The Scientific Reports of the Whales Research Institute, no. 15, November 1960, 173 pp., illus., printed. The Whales Research Institute, Tokyo, Japan. Includes, among others, the following articles: "Ry-

ukyuan Humpback Whaling in 1960," by M. Nishiwaki; "Relative Growth of the Fin Whale, *Balaenoptera physalus* (Linn)," by S. Ohsumi; and "Immunogenetic and Marking Approaches to Identifying Subpopulations of the North Pacific Whales," by K. Fujino.

WHALING:

Australian Catches of Humpback Whales, 1959, by R. G. Chittleborough, Report 29, 48 pp., illus., processed. Commonwealth Scientific and Industrial Research Organization, Marine Biological Laboratory, P. O. Box 21, Cronulla, Australia, 1960.



MENHADEN

THE MENHADEN, in a sense, is the Atlantic counterpart of the Pacific sardine. It, too, is a member of the herring family, and though its population is very much smaller than that of its Pacific coast relative, it is nevertheless a large one. Unlike the Pacific sardine, the menhaden is used almost exclusively in the manufacture of meal and oil; only small quantities are canned.

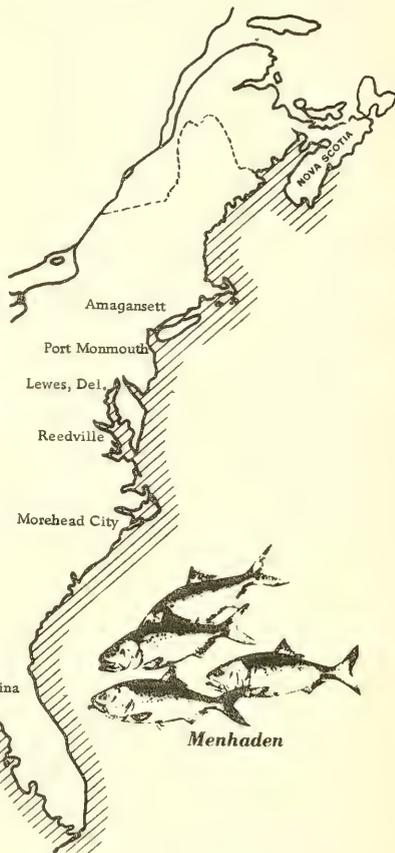
The menhaden fishery started in New England, eventually spread southward, and is now centered in the Middle Atlantic States, especially in Chesapeake Bay. The annual catch has fluctuated widely, between 150 million pounds in 1892 and 900 million pounds in 1946. In recent years it has averaged near to 600 million pounds. The purse seine is the most important gear used for catching menhaden; pound nets are also used, but are very much less important.

The meal manufactured from menhaden was formerly used only for fertilizer and the oil only for industrial purposes, but research by the U. S. Fish and Wildlife Service resulted in improvement of both products so that they may now be used in animal and poultry feeds. Menhaden roe is saved out and prepared as a frozen, salted, or canned product.

AT LEAST THREE SPECIES OF MENHADEN INHABIT THE ATLANTIC COAST; all are utilized without differentiation by the fishery. They are pelagic, migratory fish which characteristically travel in schools. Their seasonal migrations control the operations of the fishery. In the spring large schools appear in coastal waters and even in the brackish waters of the bays, sounds, and larger rivers, where conditions are favorable for their feeding and growth. The young fish, about an inch long upon their arrival, attain an average size during the first year of 5 to 6 inches and a weight of 1 to 1.5 ounces. During the second year they grow to a length of 8 to 10 inches, weigh approximately 7 ounces, and yield variable quantities of oil, depending on latitude (more oil northward than southward) and on variable oceanographic conditions. They are believed to mature during the third or fourth year. They increase in oil content, therefore in value, with age and size.

The mature fish are captured chiefly in the fall during their southward migrations to unknown ocean spawning grounds, where they remain until the following spring. Their food consists almost wholly of microscopic plants, chiefly diatoms, and small crustaceans, which swarm at the surface of the sea. These the menhaden strains from the water that passes through its sieve-like gill structures.

LITTLE IS KNOWN ABOUT THE BIOLOGY OF THIS FISH. In view of the increased intensity of fishing and expansion of the fishery, more complete information is needed concerning the biology of menhaden, including (1) the routes followed by the three different species and various "races" of menhaden in their annual migrations; (2) the location of the ocean spawning and nursery areas; (3) the parasite which is said to cause sterilization of male menhaden; (4) the food of menhaden and its relation to growth, oil content, and availability; (5) the relation of the oceanic climate, and of the fishing intensity to production and survival of the young and to maintenance of an adequate brood stock.

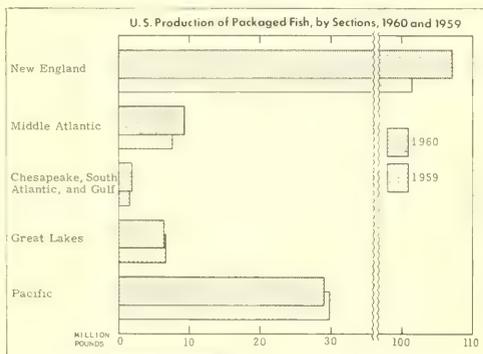




U. S. PRODUCTION OF PACKAGED FISH, 1960

C. F. S. No. 2542, Packaged Fish - 1960 (An Annual Summary), shows the United States production of fresh and frozen packaged fish by species, sections, and by methods of preparation, together with comparative data. It also gives data on the production of fish sticks and fish portions, as well as production of consumer packages of certain seafoods for the years 1957-60.

The production of fresh and frozen packaged fish fillets and steaks during 1960 amounted to 152.6 million pounds valued at \$48.3 million to the processors. Compared with 1959, this was an increase of 5.3 million pounds in quantity and \$2.1 million in value. It was estimated that 451 million pounds of round fish were required to produce the 1960 production.



Fillets of Atlantic ocean perch (43.6 million pounds) and haddock (33.3 million pounds) accounted for 50 percent of the total volume and 44 percent of the value of the 1960 production. Fillets of flounders, cod, pollock, and halibut steaks were produced in sizable quantities.

The 1960 production of fish sticks totaled 65.1 million pounds valued at \$28.7 million. Compared with 1959, this was an increase of nearly 5 million pounds but the value was only slightly more than in 1959. The 1960 increase was confined entirely to cooked fish sticks; the production of raw fish sticks was the same as in 1959.

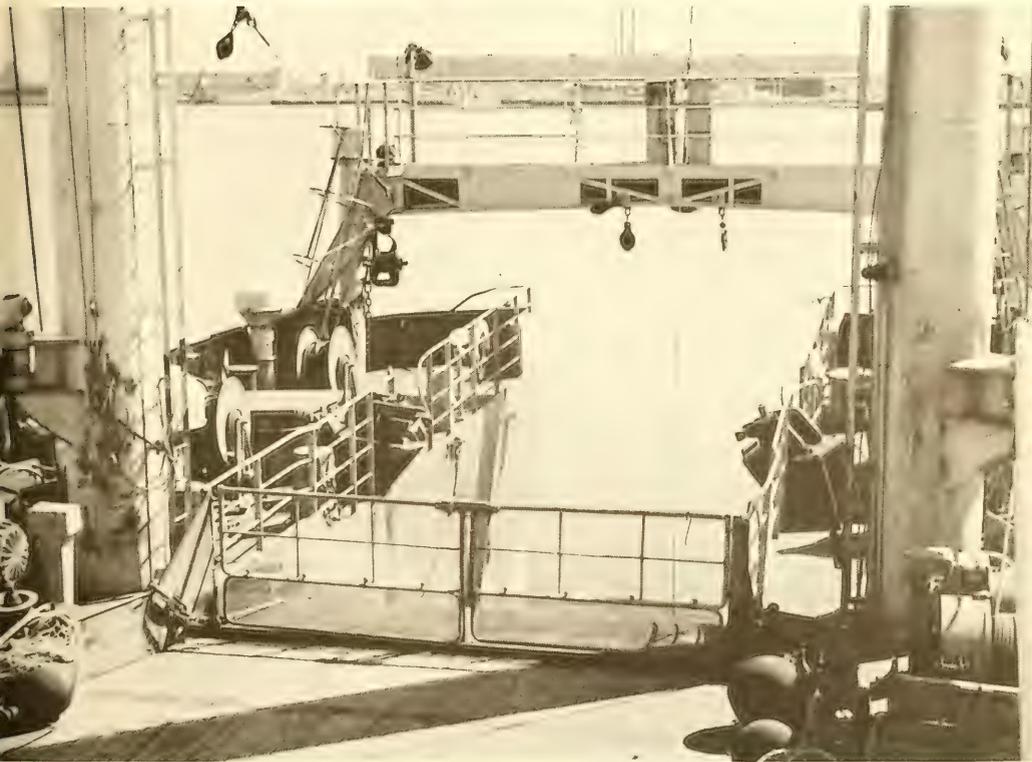
Fish portions production continued to increase in 1960 (48.3 million pounds) valued at \$17.2 million. Compared with 1959 this was an increase of more than 11 million pounds, and 26.5 million pounds above the 1958 production. The 1960 output of both cooked and raw breaded fish portions increased substantially. Raw breaded fish portions production topped 1959 by nearly 9 million pounds; production of cooked fish portions in 1960 was up nearly 3 million pounds from the previous years.

Copies of C. F. S. No. 2542 are available free from the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

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ROBERT H GIBBS JR

COMMERCIAL FISHERIES REVIEW



VOL. 23, NO. 7

JULY 1961

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 BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
H. M. Bearse, Assistant Editor

Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, May 10, 1960.

5/31/63

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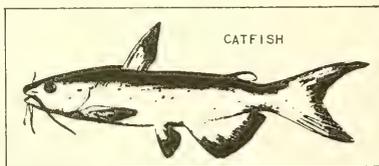
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TILAPIA EASILY GROWN IN PONDS

Pond experiments in Alabama showed that close to 2,000 pounds per acre of tilapia could be produced with fertilization and pellet feeding. As a result of the same techniques, 1,200 pounds per acre of channel catfish were caught by anglers.



Editorial Assistant--Ruth V. Keefe

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* * * * *

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PROCESSING AND QUALITY STUDIES OF SHRIMP HELD IN REFRIGERATED SEA WATER AND ICE

Part 5 - Interchange of Components in a Shrimp-Ice System

By Jeff Collins*

ABSTRACT

Pink shrimp were held for various periods in ice. Data are given showing the effect of holding time on the weight of the peeled meats and precooked meats. Changes in water, ash, salt, and solids contents of the meats are also given.

BACKGROUND

In the previous paper in this series, the material balance of a system of shrimp and refrigerated sea water was reported (Collins 1960). Changes in water, salt, ash, and solids contents of the components of the system were observed to be a function of the holding time. Significantly, it was found that as a function of holding time, both the raw meats and the precooked meats lost considerable solids.

The purpose of the experiment reported here was to determine if pink shrimp held in ice undergo similar changes.

EXPERIMENTAL

The general experimental approach was to hold whole pink shrimp in ice under ideal conditions and then, as a function of holding time, to determine any changes in weight in the moisture, salt, ash, and solids contents of the raw and precooked meats.

MATERIAL: Whole, fresh, pink shrimp (*Pandalus* sp.) were iced overnight in Petersburg, Alaska. Upon being received at the Ketchikan Laboratory on the following morning, they were briefly rinsed in cold fresh water and were allowed to drain for 15 minutes in a wire basket.

HOLDING METHOD: The drained shrimp (1,350 grams for each of five samples) were placed on a single layer of cheese cloth and were mixed with four times their weight of ice. The cloth was folded over the mixture of ice and shrimp and was placed on top of a layer of ice 1-foot deep in an insulated ice chest. The samples were covered with 6 inches of ice and were top-iced every other day.

SAMPLING TECHNIQUE: 1. At various intervals during a total holding period of 9 days samples were removed from the ice chest (fig. 1), and the shrimp were separated from the ice by hand and were allowed to drain on a wire screen for 5 minutes.

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Fig. 1 - Removing a sample of shrimp stored in ice for analysis.

and precooked meats have been adjusted so that each value is independent of the removal of prior samples. The values given for ash are termed "corrected ash" and were obtained by subtracting the salt from the total ash. The solids values do not include ash or salt. The solids therefore consist essentially of the nitrogenous components of shrimp along with a small amount of oil and other minor constituents.

GROSS WEIGHT CHANGES: Data from tables 1 and 2 indicated that there is an over-all gain in weight in both the whole shrimp and the peeled meats. Since this gain is caused, for the most part, by uptake of water that is later lost during the precook, it was thought that any consideration of yield would be quite meaningless if based on these two components of the system. Consequently, the solids data of the precooked meats were used as a base for yield.

PEELED MEATS: The raw meats gained in weight rapidly, owing to the absorption of water. This over-all increase in weight was accompanied by a loss of salt and solids. Corrected ash values were unchanged.

2. The whole shrimp were carefully peeled by hand so that all meats were separated from the waste.

3. The meats were weighed, and a portion was saved for subsequent analysis.

4. The remaining meats were reweighed and precooked as described in the previous paper (Collins 1960); that is, they were cooked exactly 2 minutes under a slightly positive steam pressure, followed by cooling for 5 minutes on a cloth towel. The samples were then reweighed and saved for subsequent analysis.

ANALYTICAL METHODS: The analyses for moisture, total chloride, and ash were carried out as previously described (Collins, Seagrān, and Iverson 1960).

RESULTS AND DISCUSSION

The weights of the peeled and precooked meats and their contents of water, ash, salt, and solids for each period of holding are given in tables 1 and 2. The data for the raw

Holding Time	Total Weight of Peeled Meats After Various Holding Periods of Time	Total Weight of the Components of Peeled Meats After Holding 1,350 g. Whole Shrimp in Ice for Various Time Periods			
		Water	Chloride	Corrected Ash (ash-NaCl)	Solids ¹ / _{Grams}
Days	Grams	Grams	As g. NaCl	Grams	Grams
0	444	365	3.6	2.7	73
1	499	417	3.5	2.7	76
3	495	423	2.5	3.9	66
5	508	439	1.8	2.7	64
7	499	432	1.8	2.8	62
9	501	440	1.1	2.6	58

¹/Solids: The total weight of solids, other than ash and NaCl. This solids value is essentially the nitrogenous components plus certain minor constituents. The solids value is obtained by subtracting the water, NaCl, and corrected ash from the total weight for each holding period.

PRECOOKED MEATS: The water content of the precooked meats increased during the first day of holding and then slowly decreased. Longer holding periods resulted in lower salt, ash, and solids contents.

Table 2 - Precooked Meats: Change in Weight of the Precooked Meats and of Their Component Parts With Time of Holding in Ice

Holding Time	Total Weight of Precooked Meats After Various Holding Periods of Time	Total Weight of the Components of Precooked Meats After Holding 1,350 g. Whole Shrimp in Ice for Various Periods of Time			
		Water	Chloride	Corrected ash (ash-NaCl)	Solids
Days	Grams	Grams	As g. NaCl	Grams	Grams
0	273	207	2.2	2.7	61
1	305	237	2.0	2.9	63
3	280	221	1.9	2.4	55
5	274	217	1.2	2.2	54
7	267	211	1.0	2.4	52
9	253	202	0.6	2.3	49

1/See footnote table 1.

ICE VERSUS BRINE HOLDING: Since the shrimp used in the experiment reported here were caught 5 months later than those used in the previous experiment on brine holding (Collins 1960), direct comparisons cannot be made between the two lots of shrimp held in ice and brine. However, the general trend for the two systems can be compared. Even though solids were lost in solution, holding whole shrimp in either ice or refrigerated sea water resulted in a substantial increase in gross weight, primarily caused by an uptake of water. The raw peeled meats subsequently obtained from shrimp held in either ice or refrigerated sea water also gained in gross weight because of water uptake and despite the lost solids. The precooked meats from these two systems of holding went through similar changes except that the water content increased only slightly the first several days of holding, then gradually decreased.

Thus, the processor of canned shrimp will suffer a significant loss in yield as a function of holding time by use of either system. At present, it seems that the best way to minimize loss of yield is to process the shrimp as quickly as possible after they are captured.

SUMMARY

It was reported in the previous paper in this series that definite changes occur in the water, salt, ash, and solids contents of the various components of a system of shrimp and refrigerated sea water. The purpose of the work reported here was to determine if similar changes occur in shrimp held in ice. Accordingly, whole, raw, pink shrimp were held in ice up to 9 days. The raw meats and subsequently prepared precooked meats were analyzed for water, ash, salt, and solids contents; and the general trends were compared with those obtained in the experiment employing refrigerated sea water. As a consequence of holding in ice, both the whole shrimp and the raw peeled meats gained in weight and lost solids and salt. Except for the first day, when the water content increased, the water, ash, salt, and solids contents of the precooked meats all decreased with holding time.

A comparison in the general trend of the data between the two systems of holding indicate that there is a considerable loss in yield as a function of time of holding in either system.

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A \$700 MILLION FOOD BUYER OFFERS SPECIAL OPPORTUNITIES TO SMALL BUSINESS FIRMS

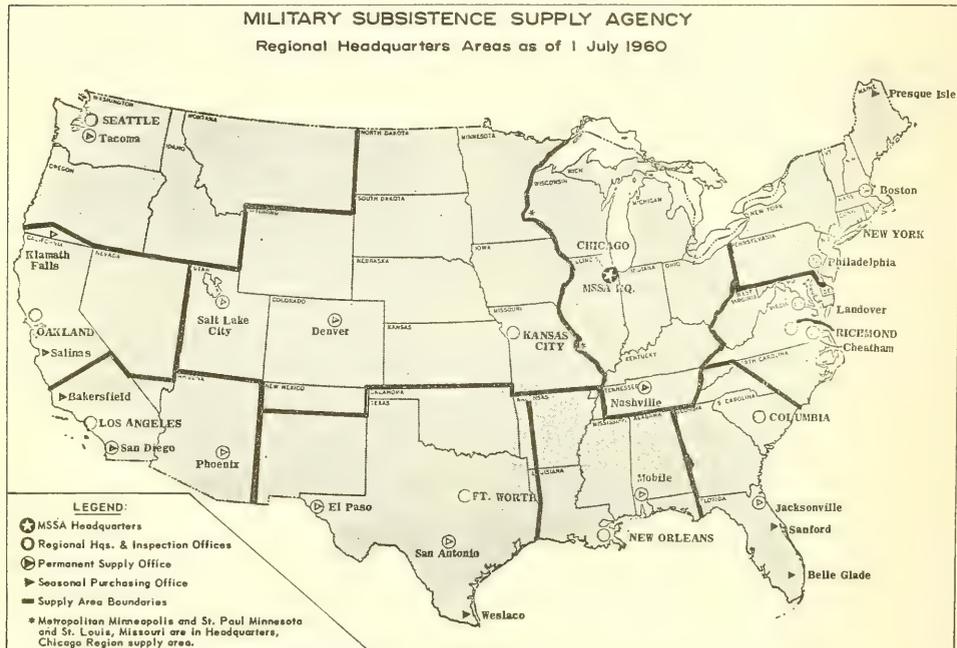
By Walter R. Jeffrey*

Selling food to the Armed Forces by small business firms is neither difficult nor round-about. The way is straightforward. It also runs two ways.

What is a "small business?" And who is the Armed Forces' buying organization putting up sign posts pointing to more business and, presumably, to more profits for small business concerns? What does it do for the small business supplier and how does it do it?

MILITARY SUBSISTENCE SUPPLY AGENCY

Regional Headquarters Areas as of 1 July 1960



First of all, let us be clear on the definition of small business as the term applies to the sale of food to the Armed Forces. As defined in the Congressional small business program carried out by the U. S. Department of Defense, a small business concern is one that is:

1. Independently owned and operated.
2. Is not dominant in its field of operation.
3. With its affiliates employs fewer than 500 employees, or is certified as a small business concern by the Small Business Administration.

*Business Advisor, Military Subsistence Supply Agency.

U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
SEP. NO. 623

4. Additionally, the concern has not previously been denied small business status by the Small Business Administration.

5. The concern is a manufacturer or regular dealer, which submits bids or offers in its own name, but which proposes to furnish a product or end items which are:

- a. Manufactured or produced by itself.
- b. Not manufactured or produced by itself but which agrees to furnish, in the performance of any contract awarded it, a product or end item manufactured or produced in the United States, its possessions, or Puerto Rico, by a small business concern.

There is a regulatory definition or formula for clarification of each of the above terms to be found in the Armed Services Procurement Regulations and about which information may be obtained from MSSA or the SBA. How to compute the fewer than 500 employees for the concern with its affiliates is important.

However, you should be aware that if you do not meet one or more and have not been certified you will not be entitled to regulatory preferential treatment nor to participation in set-asides. In the matter of definitive prerequisite, your concern can be a small business for one transaction and be treated as a large business for another transaction according to whether the end item you offer was manufactured, produced, or processed by a small business concern or a large business concern.

There are differences between procurement of perishable and nonperishable subsistence and nonsubsistence items. You will become acquainted with applicable procedures that affect your offers through specific information given you at each time.

If you meet these five prerequisites or have been certified, you are entitled to the special procurement privileges offered for small business benefits.

Answering the second question: the Armed Forces' food buyer is the MILITARY SUBSISTENCE SUPPLY AGENCY. It is a Department of Defense organization operated by the U. S. Army Quartermaster Corps. MSSA--as it is called--is the wholesale food buyer for the Army, Navy, Air Force, and Marine Corps in the United States and overseas.

Its headquarters is in Chicago. It has regional buying offices in ten principal cities of the country: Chicago, Columbia (S. C.), Ft. Worth, Kansas City, Los Angeles, New Orleans, New York, Oakland, Richmond, and Seattle.

Because of their proximity to central supply sources, some offices are national procurement centers for certain items for the entire Armed Forces. All of them make local purchases--chiefly fresh foods in less-than-carload lots--for military installations in their region. Offices in port cities have the additional job of dispatching food supplies to the United States fleet and to U. S. military bases overseas.

MILITARY SUBSISTENCE SUPPLY AGENCY

Address National Headquarters:
Commanding General
Military Subsistence Supply Agency
226 W. Jackson Boulevard
Chicago 6, Illinois

Addresses of Regional Headquarters

Commanding Officer Hq., Chicago Region, MSSA 226 West Jackson Boulevard Chicago 6, Illinois	Commanding Officer Hq., New Orleans Region, MSSA 4400 Dauphine Street New Orleans 40, Louisiana
Commanding Officer Hq., Columbia Region, MSSA 1321 Pendleton Street Columbia, South Carolina	Commanding Officer Hq., New York Region, MSSA 3rd. Avenue and 29th Street Brooklyn 32, New York
Commanding Officer Hq., Fort Worth Region, MSSA Felix at Hemphill Streets Fort Wprth, Texas	Commanding Officer Hq., Oakland Region, MSSA 2155 Webster Street Alameda, California
Commanding Officer Hq., Kansas City Region, MSSA 623 Hardesty Avenue Kansas City 24, Missouri	Commanding Officer Hq., Richmond Region, MSSA 1722 Arlington Road Richmond 30, Virginia
Commanding Officer Hq., Los Angeles Region, MSSA 929 South Broadway Los Angeles 15, California	Commanding Officer Hq., Seattle Region, MSSA Pier 91 Seattle 99, Washington

The Military Subsistence Supply Agency also is one of the several "single manager" establishments of the Defense Department. This means that it has wholesale supply responsibility for procurement, inspection, storage, and distribution of food for all the military services. There are similar single-manager agencies for clothing and textiles, for general and industrial supplies, for medicines, and for other common supply categories.

The responsibilities for military food supply are assigned to the Secretary of the Army by the Secretary of Defense. MSSA gets the working task from the Army Secretary through the Quartermaster General.

So much for MSSA. More interesting to a small business firm is how much business is available from MSSA? How can it obtain a share?

In the first place, realize that the over-all food procurement program for the Army, Navy, Air Force, and Marine Corps aggregates each year about one and one-quarter billion dollars. About 60 percent of that total, nearly \$700 million, is purchased by MSSA. The remainder is spent locally--principally for perishable foods--by individual military installations in the United States and by U. S. military commands outside the country.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Supply Agency, 1956-60

1960		1959		1958		1957		1956	
Quantity	Value								
1,000 Lbs.	\$1,000								
22,917	11,839	22,651	11,624	22,511	12,850	23,452	12,080	26,610	13,413

Note: Actual total purchases are higher than indicated because local purchases are not obtainable.

Don't be apprehensive of doing business with MSSA because of the apparent size of its purchases. Remember that the figure cited is an aggregate or total one. As a matter of fact, in the fiscal year just passed, MSSA wrote over 173,000 contracts. In the year's procurement, that averaged out at about \$4,000 a contract.

For example, the Agency bought \$2,455 of "assorted items" and divided the business among five firms. This was typical of small purchases.

If smallness disinterests you, an example of an award to a small business concern in the other direction is a single contract for 20 million pounds of soybeans. Another contract was for \$109,000 of roasted-and-ground coffee.

These examples describe the range of MSSA's business. They indicate that there is something for every small business firm. And there is, provided he is interested in going after and competing for it.

The key word in the last sentence is competing. Full competition is an overriding requirement in the Agency's procurement. All of MSSA's purchases are fully publicized and fully competitive. This is good for the taxpayers because fair and reasonable prices are obtained. This is also good for U. S. business because MSSA is a wholesale buyer operating like any other big-scale wholesaler. This means large quantity purchases. It calls for central warehousing. And it calls for a national distribution system to supply retail outlets. The net result is maximum effectiveness, efficiency, and economy. MSSA's "retailers" are the country's military installations, both here and overseas.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Supply Agency, 1956-60

Product	1960		1959		1958 ^{1/}	1957 ^{1/}	1956 ^{1/}
	Quantity	Value	Quantity	Value	Quantity		
	1,000 Lbs.	\$1,000	1,000 Lbs.	\$1,000	.....(1,000 Lbs.).....		
Tuna	3,610	1,613	3,698	1,672	5,884	2,711	3,334
Salmon	3,593	2,436	1,085	737	3,336	3,111	2,798
Sardines	147	61	1,051	177	253	215	236
Total	7,350	4,110	5,834	2,586	9,473	6,037	6,368

^{1/}Value unavailable.

Note: Actual total purchases are higher than indicated because local purchases are not obtainable.

About the product. Food items bought by MSSA for the Services are comparable in variety and quality to those appearing on a typical American table. Generally speaking, the table-type items are called "issue" items. They are supplied to the Services for use in mess halls, dining halls, and galleys. A portion of issue products purchased also is resold to military personnel for consumption at home by their families. The Services also need many food items with special military characteristics for operational uses. Meeting this last need is most important to United States industry and to small businesses throughout our country.

This is the general background of MSSA. Its activities are similar to chain-store-type operations. Now, where is the so-called privileges for small business firms heretofore mentioned?

Underlying the privileges are the laws passed by Congress to aid small business firms. In carrying them out, the Department of Defense "sets aside" designated portions of its procurements for exclusive participation by small business concerns. MSSA applies the desire of the Congress to the military food procurement program in this manner.

How is this done? Let us illustrate.

MSSA, let us say, gets an order from the Army, Navy, Air Force, or Marine Corps for 100,000 cases of tuna. It announces to all interested U. S. suppliers that at a certain date it will make this purchase. To advance the small business interest, procurement may follow one of two courses: (1) it may be "totally set aside" for small business or (2) a portion may be "partially set aside" for exclusive participation by small business concerns. An obvious third method is to "open" the entire purchase to all businesses, large and small.

Total set asides are made when procurement officers are convinced that small business firms can supply the full requirement at fair and reasonable prices. Open procurement is utilized when the complete range of suppliers, small and large, is needed to fulfill Armed Forces' requirements.

If the bids received from small business concerns under the total set-aside plan are not fair and reasonable in relation to the prevailing market, the procurement is withdrawn and the item re-solicited from small and large business firms. In partial set-asides, awards to small business firms are made at the best award price obtained for the "unrestricted" portion of the procurement (obviously, this is made first). MSSA offers the set-aside portion only to the small business concerns (in priority of their original price offer) who offered on the unrestricted portion and whose offers were within 120 percent of the "unrestricted" award price. If MSSA's offer is not accepted by them, the partial set-aside preference is dissolved and the procurement reopened to all concerns.

It should be evident that the small business "privilege" is then, one of opportunity. It permits the small concern to participate in public business and to receive awards if its prices are fair and reasonable. Although designed to help small business firms, the privilege does not conflict with the best interests of the public.

Partial set-asides are effective when (1) awards on the open (unrestricted) portion of a procurement have been based on normal prices related to the current competitive market and (2) no small business firm has submitted a "token" opening offer to achieve subsequently an unfair advantage over other small business competitors eligible for set-aside awards. Failure by small business firms to accept awards at the highest prices paid on the unrestricted portion results in the purchase being opened to all bidders.

To keep pace with the dynamic, fast-moving American food business, MSSA has long followed most of the commercial day-to-day procurement practices. The Agency is not bound by the slower procedure of formal bid-openings. In line with practice in the food industry to obtain perishable foods (1) it uses the telephone, (2) its buyers operate in terminal markets with the same on-the-spot facility and responsibility vested with commercial purchasing agents, or (3) its buyers enter the fields during harvest seasons and there contract for portions or even entire crops. The desire to contact all qualified vendors who wish to sell to MSSA is common to all methods.

On-the-spot or sight-buying activities by MSSA usually involve less-than-carlot quantities. When carlots are required, MSSA sends a written "Notice of Intent to Purchase," called a NIP, to a nationwide mailing list. Offers from business firms first go to a MSSA regional headquarters for initial evaluation. There the low and responsive bids received are sent to a national desk where final evaluation against low and responsive bids from all regional offices is made to determine the award winner on the basis of full and free nationwide competition.

In every case of local or national buying, suppliers are made fully aware of MSSA's intent to buy. As stated, competition is full and free. There is no "selected" or preferential list of suppliers. Contracts are awarded on the basis of the lowest price from responsive and responsible bidders.

Some small business firms have felt that there has been too little profit in doing business with MSSA. This is regrettable but, of course, MSSA cannot guarantee profits. Nevertheless, the Agency takes every measure and means to assure that each business firm gets fair and equitable consideration when contracts are awarded.

It is emphasized again the MSSA cannot choose or select its suppliers. Awards must be made to the responsive and responsible bidder whose offer is the low one. MSSA finds that the best interests of the offeror usually coincide with those of the U. S. Government. As indicated at the start, integrity is a two-way proposition.

There should be no misunderstanding about the competitive nature of the set-aside privilege. It is not a "this-is-for-us" small business subsidy. Set asides are made on the basis and in the belief that there are a sufficient number of small business competitors who have both capacity and experience to fulfill MSSA's contracts under full competition and at fair and reasonable prices.

One of the pitfalls most encountered by small concerns is failure to recognize that offers are evaluated by MSSA on (1) the bid price f.o.b. origin and (2) the cost of delivering the product from origin (i.e., the manufacturer's plant) to first destination. Transportation is an out-of-pocket cost to the taxpayer and must be computed in evaluating prices. This means that distant plants ordinarily have less chance to win the award than firms nearer to the designated site of delivery. Failure to realize this additional cost factor has caused some disappointment without comprehension of the reason.

Another complaint that MSSA hears from unsuccessful offerors is that they are unable to find out who won the award and the price at which it went. This information is available to those who submit offers or affirmatively indicate an interest. Awards for the larger contracts appear in the daily "Synopsis of U. S. Government Proposed Procurement, Sales and Contract Awards" published by the Department of Commerce. Information on smaller contracts is posted weekly at MSSA's regional offices. Furthermore, competing firms may call MSSA offices for information.

Note, however, that MSSA does not give out information concerning unsuccessful offerors and bids.

Historically, more than 50 percent of MSSA's business, in contracts and in dollars, has gone to small business. Yet, the Agency feels that there are still too few small business concerns supplying food to the Armed Forces. MSSA seeks continually to expand its procurement base by asking more firms to compete for the privilege, and the profit, of supplying food items to the Armed Forces.

To get started, the new applicant for military food business should apply to the regional MSSA headquarters nearest to him for a "bidders mailing list" application. It will be sent to him along with a check list of the items that MSSA buys. The prospective bidder may indicate on the list the items he wants to sell. The check list, along with the filled out application, should be returned to the office that sent it.

This action usually results in getting on a MSSA mailing list. Thereafter, and so long as it is interested, the concern will receive each pertinent Notice of Intent to Purchase sent out by MSSA. The NIP will tell him what MSSA is going to buy, when it will buy it, where, and how much. It also will contain information about the product and the manner in which it is to be packaged. It lists specifications which furnish details about product quality. Specifications are available at no cost to the supplier.

Products sold to the Government, and methods of processing as well, must comply with government standards and requirements. It is important, therefore, that NIPs and specifications be read and studied carefully. The offeror needs to have a complete knowledge of the item, its components (when applicable), and the method of packing required by the Government. Many performance failures have been due to a lack of knowledge or understanding of what was required.

This should not frighten the interested and qualified small business manufacturer. Government requirements usually are in close harmony with commercial standards and practices. Suppliers with a good industrial knowledge of an item usually have little difficulty in conforming production to any different or additional requirement that may be imposed because of military necessity or to provide a common basis for fair and free competition.

MSSA's military and civilian buyers and procurement officers at the ten regional headquarters and 20 affiliated field buying offices will be glad to provide additional information and explain further how to go about getting food business from the Armed Forces. The Agency continuously strives to simplify and to clarify its procedures so that small business firms not familiar with government procurement may readily and easily understand the what, when, and where of selling to MSSA. Many small business concerns, as has been said, have had little difficulty in getting military food business. Over 65 percent of 173,000 contracts MSSA issued in fiscal year 1960 went to small business firms. In dollars, this represented about 60 percent of the \$675 million expended that past year by MSSA for food for the Armed Forces of the United States.

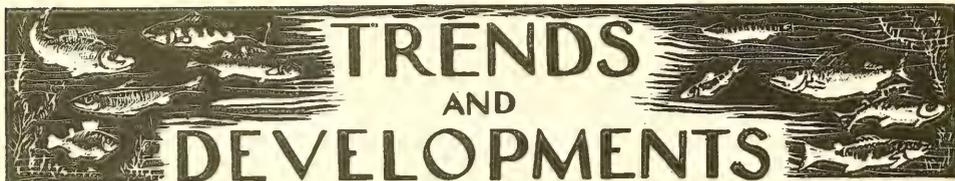
Nevertheless, MSSA still feels that there are many small suppliers who, when aware of the common-sense procedures as well as the opportunity to sell to MSSA, would like to go after military food business. Most who try are successful. The absence of complaints from them indicates their satisfaction with MSSA methods and also with the promptness with which it pays its bills.

If you are included among the American small business food suppliers not now doing business with MSSA, let this encourage you to write or phone to the nearest MSSA office indicating that you would like to do more business and want to do it with the MILITARY SUBSISTENCE SUPPLY AGENCY in meeting the food needs of your Armed Forces.



SEA TRANSPORTATION OF FROZEN FISHERY PRODUCTS

Taking into account both the bacteriological aspect and the economics aspect of the problem of transporting frozen fish by sea, the author is of the opinion that a temperature of -8° to -12° C. (18° to 10° F.) is most suitable for a trip of 2 to 3 weeks. ("Transport of Fish," General Fisheries Council for the Mediterranean Proceedings, 1957, 3 p.)



TRENDS AND DEVELOPMENTS

California

PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 61-A-2-Pelagic Fish: The coastal waters from Turtle Bay to Ensenada, Baja California, were surveyed (March 6-25, 1961) by the California Department of Fish and Game research vessel Alaska. The objectives were: (1) to sample spawning sardines to determine if there is a relationship between the spring spawners off southern California and central Baja California, and the genetically distinct groups which have been defined as "northern" and "southern" stocks; (2) to locate and sample fish from the transition zone between the two stocks to determine the extent of mixing; and (3) to transport live kelp (Macrocystis sp.) from Turtle Bay, Mexico, to southern California in conjunction with the Ocean Fish Habitat Development project.

Although persistent north-west winds hampered operations, 75 night-light stations were completed. Sardines were scarce. Not one sardine school was observed during 402 miles of night scouting nor was a single adult collected. The paucity of spawning sardines was confirmed by recent U. S. Bureau of Commercial Fisheries surveys which revealed a scarcity of sardine eggs and larvae in the same area.

Anchovies were abundant from Ensenada to Blanca Bay where they were taken at 9 night-light stations. In addition, 275 schools were observed while scouting. Several attempts were made to attract visually-located schools with the night light, but the fish avoided it in each instance.

Jack mackerel were present at 9 stations and Pacific mackerel at 6. Both were abundant in Turtle Bay where Mexican purse seiners were catching them during the daytime.

A gill net, set near the entrance of Turtle Bay, captured 8 California swell sharks (Cephaloscyllium uter), 1 gray smooth-hound (Mustelus californicus), and one leopard shark (Triakis semifasciata). This catch extended the range of the swell shark on the west coast of Baja California about 40 miles southward from the San Benitos Islands. Swell sharks have been reported unreliably from as far south as Alcapulco, Mexico. Two large (146 mm. and 160 mm.) female dwarf perch (Micrometrus minimus) collected at San Martin Island may prove to be the largest ever recorded and were south of the previously reported range for this species.

About 75 kelp plants were transported from Turtle Bay to Santa Monica Bay, Calif., where personnel of the Department's Ocean Fish Habitat Development project transplanted them.

Sea-surface temperatures ranged from 61.9° F. (16.6° C.) at Cedros Island to 52.0° F. (11.1° C.) at Cape Colnett. Most readings were between 55° F. (12.8° C.) and 57° F. (13.9° C.).

Airplane Spotting Flight 61-3-Pelagic Fish: The inshore area from the United States-Mexican Border to Bolinas Bay, Calif., was surveyed from the air (March 11-14, 1961) by the Department's Cessna "182" 9042T to determine the distribution and abundance of pelagic fish schools. Intermittent low clouds made observation difficult along some portions of the central California coast, but complete coverage was possible south of Point Arguello.

More fish schools (1,061 anchovy and 13 sardine) were seen during this flight than were observed on any previous flight since October 1958 when 1,346 anchovy schools were counted north of Monterey Bay. All

but 6 of the schools seen during this month's flight were south of Santa Barbara.

Most of the anchovy schools (1,015) were in 6 school groups. At San Diego, 177 schools were observed along the Coronado Strand; 130 were between Torrey Pines and La Jolla; 231 were off Oceanside; 86 were between Newport Beach and Huntington Beach; 115 were off Point Magu; and 276 were near Port Hueneme. The schools varied in size from small, fragmentary spots close to shore to fairly large, dense schools in deeper water out to about one mile.

Sardines were observed in only two areas. There were 7 small schools two miles southwest of the Oceanside pier and 6 small spots north of Point Piedras Blancas.

Northbound California gray whales, 139 in all, were seen throughout the range of the survey.

Porpoise schools were observed four miles off Goleta Point, near La Jolla Point and near the city of San Clemente. The school near Goleta was very large, and contained hundreds of individuals; the other two were composed of 20-25 animals.



Killer whale (Grampus rectipinna).

In addition to the above marine mammals, four small killer whales were seen in Monterey Bay, about one mile off Moss Landing.

Airplane Spotting Flight 61-4-Habitat Development and Pelagic Fish: The coastal waters of southern California to Turtle Bay, Baja California, were surveyed (March 18-21 1961) by the Department's Twin Beechcraft N5614D. The survey was conducted to gather living plants of the giant kelp (Macrocystis) in Turtle Bay and transplant them into Santa Monica Bay, southern California. The variety of Macrocystis in Turtle Bay exhibits a re-

sistance to warm water, and if it can be successfully introduced into the southern California area it may strengthen the local kelp during periods of warm water and increase the size and health of the local beds. Another purpose of the survey was to observe fish schools, where possible, from San Pedro to Turtle Bay.

The Department's research vessel Alaska was met on March 18, 1961 in Turtle Bay. Despite murky water and heavy surge, particularly outside Turtle Bay, the biologist-divers secured 37 sacks of kelp plants on March 19 and 20. The plants were taken from inside and outside Turtle Bay, in 25 to 50 feet of water. All sacks were submerged in the bait wells of the Alaska and on March 21, 8 were removed, placed aboard the airplane and flown to Torrance Airport. From there they were carried by car and boat to the Hermosa Beach artificial reef where all 8 sacks were tied onto the submerged street-car by the divers. The top of each net sack was opened and the kelp stipes were allowed to trail into the water in a natural manner. The other 29 sacks of kelp were to be brought to Santa Monica Bay in the bait wells of the Alaska.

During the flight to Turtle Bay observations were made on fish schools along the coast. On March 18, during the flight south, 478 schools were observed. Of these, 467 were anchovy, 10 were probably sardine and one, observed south of Cape Colnett, was of unidentified large fish. A majority of the schools (436) were between the Mexican Border and Cape Colnett. The water in this area, along the shore to 3 miles at sea, was green in color. Thirty-seven schools were between Cape Colnett and Punta Canoas. South of Punta Canoas' wind and clouds made further observations impossible. During the return flight March 21, a break in the clouds over Sebastian Viscano Bay revealed seven anchovy schools in the water below. Heavy clouds prohibited further observations until the plane was north of San Diego. In the area between Newport Beach and Laguna Beach, from 1 to 4 miles offshore, there were approximately 200 schools of mackerel or bonito.

A total of 9 gray whales, in two groups, was noted during the flight. All the whales were traveling northward. One group of 5 was south of Punta Descanso and the others were in Bahia San Quintin.

Airplane Spotting Flight 61-5-Pelagic Fish: The inshore area from the United States-Mexican border north to the Russian River was surveyed from the air (April 17-20, 1961) by the Department's Cessna "182" 9042T to continue the study of the distribution and abundance of pelagic fish schools.

In all, 185 schools were seen. Strong winds in central California and reduced visibility in southern California were at least partially responsible for the relatively small number tallied. Department research vessel personnel and commercial fishermen reported that anchovy schools were plentiful in some portions of the area surveyed.

Small school groups of anchovies were found one mile north of the Santa Monica pier (73 schools), and between Point Pinos and Carmel Bay (53 schools).

Sardines were seen in only one place, two miles southwest of Carpenteria, where six medium-size schools were counted.

While scouting Monterey Bay, 51 salmon trollers were counted. Most of these boats were working the area about three miles north-east of Point Pinos.

The water in the extreme inshore area from South Laguna to the Mexican border was very dirty and in some places the color was almost that of a typical "red tide" condition.

Note: Also see Commercial Fisheries Review, May 1961 p. 11.

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ROCKFISH STUDIED OFF SOUTHERN CALIFORNIA COAST:

M/V "N.B. Scofield" Cruise 61-S-1-Rockfish: The area around the islands of Santa Catalina, Santa Barbara, Anacapa, Santa Cruz, Santa Rosa, San Miguel, and San Nicolas was surveyed by the California Department of Fish and Game's research vessel N. B. Scofield to catch various species of rockfish (Sebastes) at different depths for length, weight, maturity, food habits, age, and other studies. Other objectives were to collect ample series of doubtful species for detailed laboratory studies, and to experiment with rockfish tagging techniques.

Baited hand lines were used in shallow waters, and baited set lines in deep waters. Fishing was in depths of 40 to 1,200 feet,

adjacent to, and between, the southern California islands. Twenty species of rockfish were taken, plus several other kinds of fish.

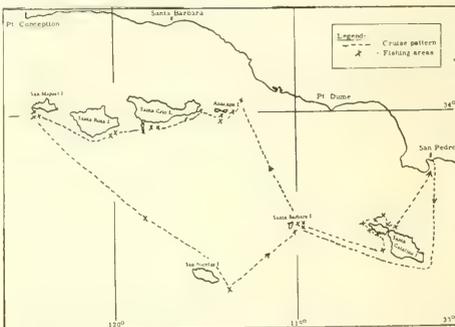
Length, weight, and maturity information was taken on all rockfish. Stomach contents were noted when they were not disgorged. Scales or otoliths were taken from certain species for age studies.

Large pink rockfish, Sebastes eos, and whitebelly rockfish, S. vexillaris, were frozen for studies to determine their validity-- if they are distinct from the greenspotted rockfish, S. chlorostictus, and the copper rockfish, S. caurinus, respectively.

Experiments were conducted to determine methods of tagging rockfish in waters of various depths.

Because of reduced pressure, when rockfish are brought to the surface from moderate depths gas expansion occurs in the ductless air bladder and sometimes in the eye sockets. However, with deep-water rockfish the eyes are invariably popped and the air bladder greatly expanded. Often, the air bladder will evert the stomach into the mouth. Just as often, the air bladder itself may be forced into the mouth through a slit in the throat.

In shallow-water species, wherein the eyes had not popped, the air bladder was successfully deflated by inserting a hypodermic needle through the body wall.



M/V N. B. Scofield Cruise 61-S-1-Rockfish (Feb. 16-28, 1961).

Methods were developed for deflating, anesthetizing, and tagging blue rockfish caught as deep as 230 feet. A 1:15,000

concentration of MS222 put blue rockfish under a proper level of anesthesia in 4 to 7 minutes. All specimens recovered, some after spending as long as 30 minutes in the solution. If the solution were applied directly to the gills with a syringe, a 1:750 concentration caused proper sedation in less than a minute.

Approximately 100 blue rockfish, *S. mystinus*, were deflated and placed in a live-bait tank aboard the N. B. Scofield. Of 50 that were tagged with a large, numbered, Petersen-type tag (for visual observations of individual fish), 38 survived. These, in addition to two whitebelly rockfish and a vermilion rockfish, were delivered to Marineland of the Pacific, for further observations.

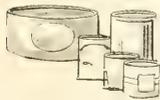
A total of 42 blue rockfish, each bearing a plastic spaghetti streamer tag, were released at sea around the various islands.

In an experiment designed to tag deep-water rockfish, without bringing them to the surface, a detachable tagged-hook was used. This consisted of a fish hook with a numbered plastic disc fastened to the hook eye. The hook was attached to a fishing line, or a set line, by a thread that would break with a three-pound strain. Fish weighing a pound or less were retained, but larger fish broke the thread after accepting the baited hook. About 100 baited, tagged hooks were released at depths of 90 to 1,200 feet. Two hooked-tagged fish were recovered in the same areas where fishing releases were taking place. One was a 1½-pound treefish, *S. serriceps*, from a depth of 120 feet; the other a 6½-pound cow rockfish, *S. levis*, from 525 feet. If this method of tagging proves practical, movements of deep-water rockfish, as well as certain other fish, might be traced.



Cans--Shipments for Fishery Products, January-March 1961

Total shipments of metal cans during January-March 1961 amounted to 22,757 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 22,023 tons in the same period a year ago. Canning of fishery products in January-March this year was



confined largely to tuna, Gulf oysters, and Pacific and jack mackerel. Increased shipments of metal cans during January-March this year as compared with the same months in 1960 were probably due to an increase in the California pack of canned tuna.

Total shipments of metal cans during January-February 1961 amounted to 13,208 short tons of steel as compared with 13,609 tons in the same period a year ago.

Total shipments of metal cans during January 1961 amounted to 7,080 short tons of steel as compared with 7,538 tons in the same month a year ago. The decrease of about 6.0 percent in the total shipments of metal cans in January this year as compared with the same period of 1960 was probably due to the sharply lower packs of both Pacific and jack mackerel.

Notes: 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.



Central Pacific Fisheries Investigations

ALBACORE TUNA TAGGING RETURNS INDICATE SINGLE POPULATION IN NORTH PACIFIC:

On the basis of tag recovery data, age and growth information, and distribution and size frequency data from the various fisheries, a model of the migration of albacore tuna in the North Pacific Ocean has been developed by biologists of the U. S. Bureau of Commercial Fisheries. This model, consistent with the hypothesis that there is a single population of albacore in the North Pacific Ocean, is:

A varying portion of the 2-, 3- and 4-year old fish and nearly all of the older fish in the United States fishery migrate westward each fall into the Japanese long-line fishery, and during the following spring, into the Japanese live-bait fishery. The remainder of the fish from the area of the United States fishery move westward to the mid-ocean waters of the North Pacific, some as far west as the fringe of the Japanese long-line fishing grounds. Those fish that do not move into the Japanese live-bait fishery return to the United States fishery the following

season. Thus, some fish may be available to the United States fishery for as many as 4 or 5 successive seasons.

Albacore enter the Japanese winter long-line fishery from both the United States fishery (westerly migration in the fall) and the Japanese live-bait fishery (easterly migration in late summer). Each spring, a large portion of these fish (age groups 2-5), migrate westerly from the long-line fishery grounds into the live-bait fishery, while a few separate and move eastward into the United States fishery. The larger adults (6-years or older) move southward from the winter long-line fishery into the tropical and subtropical waters to the spawning grounds of the North Pacific albacore population.

It appears that the major portion of the recruitment into the exploited stock (recruitment begins at age 2 and is completed at age 3) takes place in the eastern rather than the western North Pacific. There is a greater volume of migration of the commercial sizes of albacore in a westerly direction from the United States fishery into the Japanese fisheries, than vice versa.

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AREA SOUTH AND WEST OF HAWAII SCOUTED FOR SEASONAL SKIPJACK TUNA:

M/V "Charles H. Gilbert": As part of a long-term program of Central Pacific Ocean surveys planned by the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu with the object of learning more about the life and habits of the skipjack tuna (aku), the Bureau's research vessel Charles H. Gilbert completed a 5-week cruise on May 8, 1961. The particular purpose of the cruise was to locate concentrations of skipjack at some distance from the Islands prior to the beginning of the regular summer fishing season and thus to obtain information concerning the origin and migration routes of the schools which support the summer fishery in Hawaiian waters.

Aku schools were more abundant near Johnston Island and in an area about 150 miles south of Oahu than they were to the westward, between Kauai and French Frigate Shoals. In both areas most of the schools were composed of small fish. Near Johnston Island a number of skipjack were marked with plastic tags and released. Recapture of any of these marked fish in the Hawaiian akufishery this summer would provide an im-

portant clue to the origin of the schools which migrate into Island waters seasonally, and commercial and sport fishermen are urged to report full details of any such catches to the Honolulu Laboratory.

Scientists aboard the vessel collected samples of skipjack blood in several areas covered by the cruise, including the first such samples from waters to the west of Hawaii. When these samples are classified into blood types and compared with blood collected from skipjack taken close to the Islands and with other samples from areas to the south, such as the Line Islands and the Marquesas, the results are expected to provide further clues to the relationships and movements of the central Pacific skipjack populations.

Drift bottles, for studying the direction and speed of ocean currents around the Hawaiian Islands, were released throughout the cruise. All professional and part-time "beachcombers" are requested to be on the lookout for the bottles, each of which contains a conspicuous orange-and-white striped card. The return of these cards (appropriately filled in) to the Biological Laboratory will be of great help. The finders will be informed of the date and place of release of the bottles they pick up.

* * * * *

NEW TYPE GILL NET FOR SKIPJACK TUNA FISHING SHOWS PROMISE:

Fishery biologists and fishermen of the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu were encouraged by the results of three test operations carried out May 13-16, 1961, off Lanai and Waiane, Oahu, in which a gill net of monofilament line was used to catch skipjack (aku) tuna. The monofilament net, made of a clear, transparent synthetic fiber similar in appearance to the nylon leaders used by sport fishermen, was fished from the Bureau's research vessel Charles H. Gilbert along with an equal length of net made from conventional green-dyed nylon twine. Of the total of 326 skipjack tuna caught in the nets, all but 5 were in the monofilament portion.

The difference in visibility of the two kinds of net, as viewed from the underwater observation chambers of the research vessel, was very striking--the nylon net standing out conspicuously in the clear water, while the monofilament net was almost invisible to the human eye.

The strategy employed in the tests was to slow down the movements of a school of skipjack by chumming with live bait, set the net close to the school, and then throw additional live bait to induce a "feeding frenzy" that would overcome the skipjack's usual caution. It appeared to the observers that those fish which were not in such a state of frenzied excitement were to some extent aware of even the transparent monofilament net.

The gill net, which was about 1,200 feet long and 24 feet deep, could be hauled aboard the vessel in about 20 minutes by means of a hydraulic-powered device called a "Power-Block," and the 3-5 pound skipjack passed through the block along with the net without being seriously damaged.

The skipjack net fishing experiments were aimed at finding a method to enable Hawaii's sampan fleet to harvest skipjack more efficiently and economically, so as to meet the competition of better equipped fishermen in other areas. The development program is only in the preliminary stage, and the test operations were made with a small net improvised from materials on hand. The results were however, considered encouraging as they indicated that skipjack can be taken in monofilament gill nets in numbers large enough to make further experimentation possible and worthwhile. The Laboratory plans to construct a longer, deeper net entirely of monofilament web, using funds made available especially for this purpose. If proposed State financial support, presently pending in the Legislature, is forthcoming, this type net will be thoroughly tested aboard a sampan of the skipjack tuna fleet, under the actual conditions which the method will have to meet in order to be of help to the Hawaiian tuna industry.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, MARCH 1961:

Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, about 1.6 million pounds (value \$701,000) of fresh and frozen fishery products were purchased in March 1961 by the Military Subsistence Supply Agency. This was lower than the quantity purchased in February 1961 by 10.0 percent and 18.9 percent under the amount purchased in March

1961. The value of the purchases in March this year was lower by 23.9 percent as compared with February and 35.2 percent less than for March a year earlier.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Supply Agency, March 1961 with Comparisons

QUANTITY				VALUE			
March		Jan. -Mar.		March		Jan. -Mar.	
1961	1960	1961	1960	1961	1960	1961	1960
. . . (1,000 Lbs.) . . . . .		. . . . . (\$1,000)					
1,568	1,934	5,167	5,298	701	1,081	2,547	2,730

During the first 3 months of 1961 purchases totaled about 5.2 million pounds (valued at \$2.5 million)--a decrease of 1.5 percent in quantity and 6.7 percent in value as compared with the same period in 1960.

Prices paid for fresh and frozen fishery products by the Department of Defense in March 1961 averaged 44.7 cents a pound, about 8.1 cents less than the 52.8 cents paid in February and 11.2 cents less than the 55.9 cents paid during March last year.

Canned Fishery Products: Sardines were the only canned fishery product purchased for the use of the Armed Forces during March this year. In the first three months

Table 2 - Canned Fishery Products Purchased by Military Subsistence Supply Agency, March 1961 with Comparisons

Product	QUANTITY				VALUE			
	March		Jan. -Mar.		March		Jan. -Mar.	
	1961	1960	1961	1960	1961	1960	1961	1960
	. . . (1,000 Lbs.) . . . . .		. . . . . (\$1,000)					
Tuna	-	-	252	1,365	-	-	122	603
Salmon	-	-	-	-	-	-	-	573
Sardine	24	15	60	46	12	6	29	20

of 1961, purchases of canned tuna were up 7.6 percent and canned sardines were up 30.4 percent as compared with the same period in 1960. No canned salmon was purchased during January-March 1960 or 1961.

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.

VETERANS ADMINISTRATION REQUIREMENTS FOR CANNED FISH FROM 1960-61 PACK:

Early this year the Veterans Administration announced its estimated requirements of various canned food products, including fishery products (table 1).

Table 1 - Veterans Administration Requirements
for Canned Fish from 1960-61 Pack

Canned Product	Can Size	Quantity (Dozen Cans)
Salmon, red, or sockeye	1 lb.	17,517
Salmon, skin and backbone removed	4 lb.	2,802
Salmon, red or sockeye, sodium content restricted to not more than 60 mg. per 100 grams	1/2 lb.	8,211
Tuna, light meat, chunk style, sodium content restricted to not more than 60 mg. per 100 grams	1/2 lb.	9,122
Tuna, light meat, chunk style in vegetable oil	4 lb.	5,828
Sardines	1 lb.	5,212

Items listed are purchased by the Marketing Division for Subsistence, Veterans Administration Supply Depot, P. O. Box 27, Hines, Ill.



Fish Flour

DEVELOPMENT FOR HUMAN CONSUMPTION SUPPORTED BY SENATORS FROM MASSACHUSETTS:

With reference to the development of fish flour for human consumption in the United States, the Senators from Massachusetts made statements before the Senate on May 18 which appeared in the Congressional Record of that date. In addition, inserted in that publication on the same date by Senator Leverett Saltonstall was an editorial which appeared in the May 15, 1961, issue of the New Bedford Standard-Times and by Senator Benjamin A. Smith II a letter received from Interior Secretary Steward L. Udall.

In part, Senator Saltonstall pointed out:

"... I am happy to report to the Senate a development which should help considerably in solving the problems of the fishing industry, and which may also be a significant aid to U. S. foreign policy."

He went on to state that at New Bedford, Mass., a fishery products firm is converting whole, fresh fish into a fish flour that will be an important supplement to human food. Then he added:

"It can be sold for only 15 cents a pound. It appears to be the cheapest source of animal protein in the world. It can be stored for long periods of time without refrigeration. It can be mixed with grains to give undernourished peoples a balanced diet. We are confident that we have in this product a helpful answer

to widespread hunger adjacent to oceans teeming with fish.

"For several months I have been working with my colleague from Massachusetts, Senator Smith, Senator Douglas, of Illinois, Congressman Keith, of the New Bedford District, Mayor Lawler, and the members of the New Bedford City Council to secure full public approval of this unique product.

"We are asking this body to add \$200,000 to the budget of the Bureau of Commercial Fisheries to speed research on the product, to study other processes, to investigate the possibility of manufacturing this substance aboard trawlers while they are still at sea, and to check all the possible uses for human food.

"I request that an editorial entitled "Fish Flour Fills Need," be printed in the body of the RECORD at the end of my remarks. This editorial is dated May 15, 1961, and it appeared in the New Bedford Standard-Times. This is good evidence of the fine community support which is available to this unique Massachusetts enterprise"

In part, Senator Smith added:

"... At a recent worldwide conference in Rome it was estimated that 500 million people suffer from the type of protein deficiencies which small, inexpensive dosages of fish flour in their diet could cure. Mr. George McGovern, director of the food-for-peace program has expressed considerable interest in it.

"An expansion of the sales of this product would also be of enormous benefit to the ailing American fishing industry...."

"I would also like to place in the RECORD a letter which I received recently from Secretary of the Interior Udall. This letter, I feel outlines well the merits of fish flour and the arguments in favor of its being sold worldwide. It also tells of some of the obstacles facing the present fish flour program. I am in thorough agreement with the Secretary's remarks on these problems...."

Secretary Udall's letter as inserted in the Congressional Record follows:

UNITED STATES
DEPARTMENT OF THE INTERIOR
Office of the Secretary
Washington, D.C.

May 12, 1961

Hon. Benjamin A. Smith II,
U. S. Senate,
Washington, D. C.

Dear Senator Smith:

Thank you for your letter of April 26, concerning the Rome fish meal conference and fish flour. It is indeed encouraging that the prices of fish meal are now on the rise.

We were particularly pleased to learn of your interest in fish flour. It is our feeling, too, that fish protein concentrate offers tremendous potential in feeding hungry people all over the world. We in the Department recognize that such a product cannot, in all conscience, be sold abroad until approval for its use in America is first obtained from the Food and Drug Administration.

Mr. Donald McKernan, Director of our Bureau of Commercial Fisheries, is working closely with Mr. Harold Putnam, counsel, Senate Select Committee on Small Business, in an attempt to have Food and Drug approve the interstate marketing of fish flour for domestic human consumption. Mr. George Larrick, Commissioner of the Food and Drug Administration, in reply to our formal request for approval of fish flour, stated whole fish flour to be a product classed as adulterated under section 402(a) (3) of the Federal Food, Drug and Cosmetic Act. The Food and Drug Administration's rejection of fish flour is based on their decision that it consists, in whole or part, of filthy material. Their view is that heads, tails, viscera contents, etc., of large whole fish constitute filthy matter in that they are "esthetically objectionable" to the consumer.

We in the Department disagree with the Food and Drug's position on this matter. It is our feeling that these so-called esthetically objectionable components of fish are either removed or else totally lose their identity during processing into fish flour. A direct analogy exists in the preparation of gelatin made from beef hoofs. Here the raw materials used have the same esthetic objections as whole fish. No one would seriously affirm that all traces of any objectionable materials are removed, yet the product is marketed and widely used. Another interesting point is that millions of pounds of whole or headed sardines are consumed annually in this country. This seafood, with its viscera and tails intact, is both delicious and highly nutritious.

Since the first of the year, Mr. McKernan and representatives of his staff have had several meetings with officials of the U. S. Food and Drug Administration to encourage them to change their position on this matter. We have also prepared a standard of identity that will permit production of only the highest quality fish flour. Despite these efforts, however, the Food and Drug Administration has not changed its original position on the use of fish flour. It is our understanding that Secretary Ribicoff is requesting the Food and Drug Administration to hold public hearings to consider this matter. At that time we will again present our views regarding approval of fish flour.

Another problem is the absence of a suitably low-cost method of producing a uniformly high quality fish flour. It is the opinion of our scientists and those of the World Health Organization, Food and Agriculture Organization and the United Nations Children's Fund that no truly satisfactory method is known to exist for production of an inexpensive and highly nutritious fish protein concentrate. Comprehensive engineering and product utilization research is needed before we can produce a fish flour that we can use to feed the undernourished peoples of the world.

The Department feels that development of a suitable process for producing fish flour would be in the best interest of our country, both in helping the fishing industry and in furnishing a high quality animal protein concentrate to our neighbors in the underdeveloped countries. Such a program as this would appear to dovetail well into President Kennedy's food-for-peace plans and to further improve our social-political relations around the world.

The Department does not yet have a formal research program on fish flour, but it is hoped that we will be able to initiate one in the very near future.

Sincerely yours,

Stewart L. Udall,
Secretary of the Interior

Frozen Foods

NEW TIME-TEMPERATURE INTEGRATOR EFFECTIVE TESTING DEVICE:

A device that measures and integrates time and temperature to maintain quality in frozen foods has been developed by scientists of a Minneapolis firm. The miniature device, called a time-temperature integrator, tells the time-temperature experiences of frozen foods during various stages of handling and storage. It operates by means of electrochemical action and is about the size and shape of a cigarette, weighing only a fraction of an ounce. In use, it is simply placed with packages of frozen food.

The industry is still trying to determine how best to employ the tiny device. The firm's vice president of research said the U. S. Army Quartermaster Corps, which assisted in early stages of development, has tested 2,000 early models of the integrator with favorable results, and plans to test prototype production models this summer.

The integrator senses and records time and temperature as an integral function. The combined information is shown on a scale that is read as easily as a scale on an ordinary thermometer.

The firm's research specialist emphasized that the integrator does not measure food quality directly. It produces a time-temperature exposure reading that is consistent with data compiled by the U. S. Department of Agriculture on the deterioration rates of various frozen foods at different temperatures.

"This data shows," he said, "that frozen food maintains quality well at low temperatures (0° F. or below), but it becomes increasingly difficult to maintain quality at higher temperatures.

"Some foods that would maintain top quality for a year at 0° F. would suffer appreciable quality loss in a few months at 10° or in a few days at 20°."

He said that devices previously available were simply temperature indicators. This was of no value if it was not known how long the food remained at a certain temperature--such as above zero degrees.

The device can show the type of handling that foods have received and indicate when a laboratory quality check should be made. Also, it can be used to determine which lots of food should be moved from inventory early because of the amount of quality reserve left.

The new indicator is an outgrowth of three years of research by the firm's scientists in the field of electrochemistry. It is being produced on a pilot basis at the research center, which is making it available to the frozen food industry for experimental uses.

The integrator has no moving parts, no external wiring or power sources, and requires no special calculations. It is completely sealed in plastic and is durable enough to be packed in with most frozen food packages without additional protection. After use it is discarded.

Heart of the device is a glass tube filled with a special solution, the nature of which is not disclosed. Around this tube is wrapped a specially treated yellow paper sleeve.

At the ends of the paper are two metal electrodes of different material and these are connected by a copper ribbon. The entire assembly is sealed in a plastic tube.

It operates like a tiny electrolytic battery. To start its action, the indicator is squeezed with a special type of pliers furnished by the manufacturer of the device. This breaks the capsule of solution inside.

The solution wets the yellow paper and connects the two dissimilar metal electrodes, allowing an electrochemical reaction to start.

The reaction causes the yellow paper to turn red, beginning at one electrode and moving toward the other. The speed with which this occurs is dependent on temperature. The movement is always in the same direction. Cooling at a lower temperature merely slows the movement and will not cause it to back up.

In the current models, the red zone moves the full length of the unit about 20 days at 20° F., two months at 15° F., six months at 10° F., and more than one year at -0° F.

Above 20° F., the indicator is designed to operate especially fast. At 25° F., the indicator will travel full scale in a couple of days.

The device may be of interest to the fishery industry, and might possibly be used as an indicator to determine the deterioration rates of fishery products at different temperatures while in cold storage, in transit, or in retail cabinets. (Food Field Reporter, March 29, 1961.)



Fur Seals

PRICES FOR ALASKA SEAL SKINS DROP AT SPRING 1961 AUCTION:

The spring 1961 auction sale of U. S. Government and other foreign-produced fur seal skins was held at the processing plant at St. Louis, Mo., on April 20 and 21, 1961. Representatives of the Canadian Department of Fisheries and the Japanese Government also attended the sale.

Sales for the United States-owned seal skins totaled about \$1,950,000. The average price for all the conventionally-processed Alaska seal skins declined 14 percent to an average of \$87.88. The United States share of the skins was sold as follows: Black from \$128 to \$69 per skin for an average of \$93.33, a decline of 8.7 percent from the October 1960 sale; Kitovi, from \$138 to \$57 for an average of \$87.20, a decline of 17.2 percent; Matara, from \$118 to \$58 per skin for an average of \$83.57, a decline of 18.3 percent. The decline in average prices was generally expected, due to a general decrease in the prices of other high-quality furs. However, a disappointment was experienced in the sale of the sheared female or "Lakoda" skins. The average price for 10,468 of those furs was only \$11.99 as compared to \$36.05 at the fall 1960 sale when those skins were first presented to the fur trade. At the current sale, the Lakodas were divided into four classes or grades, the first two grades bringing a much higher price than the last two grades. Prices ranged from \$61 for the largest grade I skins to \$3.50 for the smaller grade IV skins.

Of the female skins processed, about 25 percent were rejected as unfit for sale.

The fall auction of Alaska fur seal skins is tentatively scheduled to take place on October 12-13, 1961.

Note: Also see Commercial Fisheries Review, Dec. 1960 p. 32.



Gear

INSTRUMENT DESIGNED TO RECORD DEPTH OF PURSE SEINE AS FUNCTION OF TIME:

Two scientists from the U. S. Bureau of Commercial Fisheries, San Diego, California, Biological Laboratory were aboard the commercial purse seiner West Point during a trip which extended from April 3 to April 27, 1961. This was the second of two trips made with the purpose of evaluating the use of sonar to locate and follow schools of tuna. Examination of the records and the evaluation are under way and will be reported later.

During the second trip, tests were made of an instrument designed by one of the scientists to record the depth reached by the seine (430 fathoms long and 42 fathoms deep) as a function of time. This device was attached to the lead line of the net. The results must be considered preliminary, since this was the first model put into use and it was not accurately calibrated for depth. The first test revealed that the lead line took about six minutes to reach depth. The depth recorded in this case was about 26 fathoms. Further observations along this line were made in June. Several of the instruments will be available and can be attached to various parts of the net.

* * * * *

NEW CONVOLUTED FLOAT DEVELOPED TO REPLACE DAMAGED PURSE-SEINE FLOATS:

A Seattle, Wash., inventor has developed a convoluted (coil-spring type) float that has attracted considerable attention on the part of purse-seine fishermen. The new float, which has been patented, is expected to be used to replace damaged floats easily without the time-consuming threading method

now employed in replacing floats on many purse seines. The new floats are not yet on the market. (Fisherman's News, April 20, 1961.)



Great Lakes

LAKE TROUT PLANTING PROGRAM FOR UPPER GREAT LAKES FOR 1961:

An estimated 1,322,000 yearling lake trout will be planted in Lake Superior from Michigan, Canadian, and Wisconsin hatcheries during the latter part of May and early June as part of a broad, long-range program to revive the lake trout fishery of the upper Great Lakes.

Plans coordinated by the Great Lakes Fishery Commission are to release some 560,000 yearlings from State and Federal hatcheries in Michigan. Canada will release about 506,000 lake trout while Wisconsin will release 255,700. These fish will not become sea lamprey targets for at least several years after being released because of their small size. Most of the planting stock will be made up of one-year-olds between 5 and 6 inches long. Although final results will not be known until 1962, early studies raised hopes that the U. S. Bureau of Commercial Fisheries scored a success toward control of the sea lamprey in tributary streams of Lake Superior where the chemical treatment program was completed in the fall of 1960.

The State of Michigan's planting program calls for 120,000 yearling lake trout to be released in Whitefish Bay. Some 202,000 yearlings will be released in Keweenaw Bay, while the Munising area will receive 70,000 young trout. Stock for these plantings will come from the U. S. Fish and Wildlife Service hatchery at Pendills Creek. Lake trout to be released in Keweenaw Bay were reared from eggs collected in Crystal, Glen Higgins, Elk, and Torch lakes during the fall of 1959.

Another 120,000 of the Federal hatchery's trout will be transferred to Wisconsin and combined with that State's releases in the Bayfield area of Lake Superior. Some 48,000 trout will be taken from Wisconsin's Conservation Department Watersmeet hatchery for an experimental planting in the Ontonagon area.

In addition to the Lake Superior plantings, approximately 95,000 lake trout were sched-

uled to be released during early May in Lake Michigan, offshore from South Point near Charlevoix. Planting stock for this release was purchased from Illinois, and reared at the Fish and Wildlife Service Charlevoix hatchery.

The planting is the fourth in a series of experimental releases to learn more about the distribution and movements of hatchery-reared lake trout in Lake Superior, and to determine how long these fish can survive before being attacked by sea lampreys.

Hopes of launching a large-scale lake trout stocking program in Lake Michigan are contingent on findings of this study. All fish released will be fin-clipped to aid research.



Great Lakes Fishery Investigations

LAKE ERIE 1961 FISH POPULATION SURVEY CONTINUED:

M/V "Musky II" April 1961: Operations of the U. S. Bureau of Commercial Fisheries research vessel Musky II on Lake Erie began in early April with trawl tows at Stations No. 4 (East Harbor) and No. 5 (Sandusky Bay). The rather uniform catches consisted mostly of yellow perch and spot-tail shiners. As expected, the bay station produced a larger variety of species and included a greater number of the more common fish.

Yellow perch of the 1959 year-class were quite abundant. Their lengths varied between 5.5 and 8.3 inches and averaged 6.9 inches. Yearling perch were taken in lesser numbers. They averaged 3.5 inches in length; 0.5 inches shorter than the members of the 1959 year-class at this time a year ago. One out of three of the yearling males was sexually mature. Only an occasional two-year-old male was found to be immature whereas over 50 percent of the two-year-old females taken were undeveloped. In general, female perch ran a bit larger in size than males of the corresponding year class.

Data were obtained on other commercial species including white bass, sheepshead, channel catfish, and smelt. Very few yearling smelt have been observed thus far in spite of an apparently successful hatch last year.

A more intensive study has been initiated to follow the development of dissolved oxygen depletion and related phenomena in Lake Erie. The vessel and crew were used during alternate weeks of the month for this purpose. Nannoplankton and bottom samples were collected in addition to regular water samples for later analyses in determining contents and concentrations of various elements. Water temperatures of the lake in the Sandusky area averaged 39° F. at the beginning of April, increasing to about 46° F. by the end of the month. Dissolved oxygen concentrations ranged quite high, showing the lake to be well saturated at this time of year.

Scale samples and measurements of major species were also collected during the month of April from commercial landings at the following ports: Monroe, Michigan; Bono, Sandusky, Vermilion, and Ashtabula, Ohio. These collections will be supplemented with samplings from Wheatley, Ontario; Erie, Pa.; and Dunkirk, N. Y., which are being taken by biologists of neighboring state and provincial agencies. Samples from at least 150 net-run specimens of each of the seven major species (at each port) make up these collections.

The spring commercial catches of the more select species were not heavy. Few blue pike, whitefish, and ciscos were caught. Good landings of yellow-pike were rather spotty. While the larger yellow-pike were taken in greater quantity than anticipated, the 1959 year-class usually dominated the catch. These two-year-olds, averaging about 15-16 inches, have reached the "borderline" category. Many can be marketed either as No. 2's or 1's depending on price and demand.

The hatch and survival of young yellow-pike in 1960 was considered poor. However, commercial fishermen are now reporting varying numbers of 8- to 11-inch yellow-pike in their lifts. The reports are encouraging. Even so, the survival of the 1960 year-class cannot begin to approach that of the 1959 year-class which is not believed to be exceptionally high as compared to years of former abundance.

In Ohio waters, the sorting of the two-year-old yellow perch from trap net catches presented somewhat of a problem. The vast majority of the perch were well below the 8½-inch minimum size limit. Normal growth, however, should place many of them in the "keeper size" toward the end of the year.

Large numbers of sheephead were available for the taking. Some fishermen were landing them while others said they could not handle them until a higher price and a steadier market was assured.

Note: Also see Commercial Fisheries Review, June 1961 p. 23.

RESEARCH VESSEL "CISCO" PROGRAM FOR 1961:

The recently developed trawl fishery for chubs and the anticipated rehabilitation of the lake trout in Lake Michigan make it important that an accurate estimate of the present chub populations be obtained, since it will be desirable to know what changes, if any, these developments will bring about. During 1960 the U. S. Bureau of Commercial Fisheries research vessel Cisco, by systematically fishing standardized gill nets and trawls, was able to obtain what is thought to be a reasonably good basis for future comparisons of chub populations in southern Lake Michigan. In 1961 the same program will be carried out in the northern portion of the lake. The standard gear (nylon gill nets of 9 mesh sizes from 1¼- to 4-inch mesh totaling about ½-mile per gang, and bottom trawls of a type used by Lake Michigan chub fishermen) will be fished mostly off Frankfort, Charlevoix, and Manistique, Mich., and Sturgeon Bay, Wis. Although the primary interest will be in chubs, other species, especially the recently stocked lake trout, will also be of concern.



Cisco, research vessel of the Service's Great Lakes Fishery Investigations.

A second objective during 1961 will be to compare present chub populations with those of 1955. The identical linen gill nets which were set off Charlevoix, Manistique, and Ludington, Mich., in 1955 will be set in the same manner as to location, depth, and time of year, in 1961. A similar study off Grand Haven, Mich., in 1960 revealed that in the

intervening years since 1954 there had been a noticeable change to a higher proportion of bloaters among the chub stocks of that area.

The 1961 program will also include experimentation with a 40-foot modified British Columbia midwater trawl. The trawl will be equipped with a depth and temperature telemetering unit. The primary concern will be to explore its possibilities as a biological collecting device, but its potential as a commercial chub fishing net will also be examined.

Limnological collections and observations will be made each cruise at six stations on transects between Charlevoix and Manistique and between Frankfort and Sturgeon Bay.

* * * * *

SEA LAMPREY CONTROL PROGRAM FOR 1961 UNDER WAY:

The sea lamprey control unit of the U. S. Bureau of Commercial Fisheries Great Lakes Fisheries Investigations started the 1961 field work on both Lake Superior and Lake Michigan in March. Eighty percent of the electrical barriers to be operated on Lake Superior were activated by March 31, 1961. The chemical control unit had treated only one small Lake Michigan tributary, but continued to make progress in surveys of sea lamprey streams and in bio-assays to learn the effects of larvicides in water from different tributaries.



Hawaii

SKIPJACK TUNA LANDINGS ABOVE AVERAGE FOR FIRST FOUR MONTHS OF 1961:

Landings of skipjack tuna in Hawaii during April 1961 were estimated to be 680,000 pounds, about 130,000 pounds above the 12-year (1948-59) average. Approximately 10 percent were fish under 8 pounds, 45 percent 8 to 15 pounds, and 45 percent between 15 and 25 pounds in weight. Nineteen vessels were fishing during April with an average catch of 35,800 pounds per vessel, over 8,500 pounds above the average for the preceding 10 years.

Total landings for the first four months of 1961 were estimated to be 1,815,000 pounds, 578,000 pounds above average. A large part of this increase was attributed to March landings, which were more than twice the average.

Bait (nehu) was quite scarce during early April, but was fairly easily obtained by the end of the month.



Inspection of Fishery Products

FISHERY PRODUCTS INSPECTION MEETING HELD IN WASHINGTON:

A day's meeting, open to all interested in fish and the fishing industry--producer, processor, distributor, consumer--was scheduled by the U. S. Department of the Interior's Bureau of Commercial Fisheries for June 9, 1961, in Washington, D. C.

The purpose of the meeting was to discuss the Department's inspection program for fishery products, to consider new approaches which will make inspection services available to small industry groups, and to explore the possibilities of establishing quality standards and inspection services for fresh fish. A prior meeting was scheduled for June 8 primarily for representatives of firms now using the Department's continuous inspection service.

The Bureau of Commercial Fisheries has been offering its fishery products inspection services for three years. Now it seeks to determine whether or not the program as originally designed is satisfying the needs of the consumer and of the many diverse segments of the fishing industry.

The Bureau believes that this can best be accomplished by meeting with the management of industry and other organizations to discuss existing problems and future plans for inspection activities.



Irradiation Preservation

IRRADIATION RESEARCH PROMISES LONGER TERM SHELF-LIFE FOR FOODS:

A recently installed irradiation facility at Oregon State College will be used in studies to make possible long-term storage of present short-shelf-life food items. According to the College, sterilization by radiation offers the first promising new principle of food sterilization since the discovery of the canning technique in 1809.

One of the College's professors of chemistry who is also chairman of the College's Radiation Safety Committee, said that with the new \$20,000 cobalt irradiation facility, it will be possible for the College's scientists to subject focus to 3,000-500,000 roentgens of radiation an hour.

By using smaller doses of irradiation (radio-pasteurization), the bacterial population of micro-organisms can be reduced 90-99 percent without causing undesirable changes in food.

In the past years, the College has done considerable irradiation research on meats and seafoods. This research will be expanded and other work on genetic changes in insects, irradiation damage to plastics and other materials, and radiation decomposition of chemicals will be started.

The cobalt irradiation instrument is about $3\frac{1}{2}$ feet high and $2\frac{1}{2}$ feet in diameter. For safety, the cobalt-60 irradiation source is shielded with one foot of lead. The radioactivity is in 12 cobalt pencil-like rods measuring a half-inch in circumference and six inches in length.

Some research has already been done on irradiation of fishery products. It is hoped that new developments in this field will eventually result in extending the shelf-life of fishery products. (Food Field Reporter, March 27, 1961.)



King Crab

KING CRAB TAG-RETENTION STUDIES STARTED:

Using the chartered vessel Stag, a king crab tagging study in Tutka Bay, Alaska, was started early this year by U. S. Bureau of Commercial Fisheries biologists from the station at Kasitana Bay. For the king crab tag-retention study, a total of 1,100 crabs were tagged; 1,000 with loop tags and 100 with dart tags. This population of crabs is semi-isolated, which is particularly suited to tag-retention experiments.



Marketing

EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS, SPRING- EARLY SUMMER 1961:

United States civilian per capita consumption of fishery products was about the same this past winter as in winter 1960, and was expected to continue close to the year-earlier rate in the next few months. The average retail prices of fishery products were noticeably higher this January-March than last. Average prices for these foods in the next few months were expected to remain well above the year-earlier level.



Supplies of edible fish and shellfish this spring and early summer will likely be at least as large as a year earlier. Commercial landings, now on the seasonal upturn, were expected to reach a peak around mid-year. During the first quarter of 1961, landings were well above those of the same part of 1960. Imports of fresh and frozen fishery products, which were noticeably higher this January-March than last, were likely to continue above the year-earlier level in the next few months, while exports might remain lower.

Stocks of food fish and shellfish were close to the low point of the year. Holdings of the frozen products were almost 7 percent higher this April 1 than last. They were expected to increase seasonally in the months ahead. Packers' stocks of the canned products were slightly higher at the beginning of this year than on the same date in 1960. They were expected to continue to decline seasonally until the 1961 canning season is well under way in late spring and summer.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the former agency's May 9, 1961, release of The National Food Situation (NFS-96).



Maryland

NEW "NATURAL RESOURCES INSTITUTE" RESPONSIBLE FOR FISHERIES RESEARCH;

A new natural resource agency was forged when Maryland's Governor signed a bill uniting the State Department of Research and Education with the University of Maryland, thus joining the State's top efforts in research and education on natural resources. Effective June 1, 1961, the former department will be known as the Natural Resources Institute of the University of Maryland.

The Institute will continue to conduct a comprehensive research and educational program covering fisheries of marine and fresh waters, game, forestry, pollution problems, and related fields. It will work closely as part of the Board of Natural Resources with the agencies responsible for managing the natural resources, and will specialize in research for the Game and Inland Fish Commission, Tidewater Fisheries Commission, Water Pollution Control Commission, and the Department of Forests and Parks.

Dr. L. Eugene Cronin, who has directed the Department of Research and Education since 1955, will serve as first Director of the new Institute. Commenting on the change in status, Cronin says, "This new relationship provides an excellent opportunity for further improvement in the quantity and quality of Maryland's efforts to protect and develop her natural resources. It is good that the Institute will remain part of the Board of Natural Resources and the primary research agency on many of the problems facing the management agencies. We will gain, and the State will gain, by having the many specialists and facilities of the University more available to assist on these problems. I think the new Institute can conduct a strong program of highly practical research, undertake the broad and continuing

basic studies which are essential if practical research is to be successful, and aid in the education of the public and of specializing students."

The new Natural Resources Institute can trace its history to the founding of the Chesapeake Biological Laboratory at Solomons Island, Md., in 1929. It was established by the Conservation Department in close association with the University of Maryland and directed by Dr. R. V. Truitt until 1955. This laboratory has the distinction of being the oldest state-supported marine biological laboratory in continuous use on the East Coast.

In 1941 the State Legislature created the Department of Research and Education, incorporating the Laboratory into a broader natural resource program, including research in inland resources, wildlife, fresh-water fish, forestry, and conservation education. At present, marine research is centered at Solomons, the inland resources and conservation education divisions are located in Annapolis, and a new Western Maryland center will be established in the near future.



North Atlantic Fisheries Exploration and Gear Research

COMPARISON STUDIES CONTINUED OF STANDARD MANILA OTTER TRAWL WITH ONE CONTAINING POLYPROPYLENE PARTS:

M/V "Delaware" Cruise 61-6: Additional tests of an experimental otter trawl were made during an April 14-25, 1961, cruise of the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. The experimental net, in which the top wings, top belly, and square were constructed of 42-thread-cotton-equivalent-diameter size polypropylene fiber twine, was found to catch more fish than the standard No. 41 manila-twine trawl with which it was compared. The results are in agreement with those of a previous cruise (61-2) when a similar net with upper sections of a lighter polypropylene twine caught 66 percent of the trip's total fish, while the conventional net caught 34 percent. During the April cruise, the polypropylene-equipped net took 57 percent of the fish as compared to 43 percent taken with the all-manila

net. Equal numbers of tows were made with each type of net during both cruises.



Instrument used to take internal mesh measurements (M/V Delaware Cruise 61-6).

A total of 110 1-hour tows were conducted with the two trawls during the cruise in a confined area (3 by 12 miles) on Georges Bank. The trawls were rigged to the same measurements using the same rollers and doors, and both were fished on the starboard side. The trawls were changed every 2 tows and operations were continued on a 24-hour per day basis. Each individual fish of commercially-valuable species was counted and measured.

Catch Results, M/V <u>Delaware</u> Cruise 61-6 (108 tows) ^{1/}					
Species	Catch			Percentage of Catch	
	Polypropylene Net	Manila Net	Total	Polypropylene Net	Manila Net
Haddock	1765	873	2638	67	33
Cod	1041	1121	2162	48	52
Sea Dabs	3047	2333	5380	57	43
Pollock	263	334	597	44	56
Yellowtail flounder	200	95	295	68	32
Gray sole	55	50	105	52	48

^{1/}Two tows were deleted from all calculations as not being representative. A large school of cod and pollock was encountered during these tows, made with the polypropylene-equipped net, which would have weighted catches disproportionately because of obviously increased availability of fish.

Internal, wet after-use measurements were taken of the top sections of both trawls. The dry before-use, polypropylene, 5-inch netting of a 42-thread-cotton-equivalent-diameter size, when measured after-use and while wet, had an average mesh size (stretched measure between knots) of 4.76 inches. The 5-inch, 100 yard 3-ply manila netting averaged wet after-use, 4.42 inches.

Also in agreement with findings of cruises 61-2 and 61-6 of the Delaware, captains of three commercial vessels report favorably on fishing results obtained using Bureau-supplied net sections and ropes aboard their own boats. These reports indicate higher catch rate, easier handling and easier towing of the polypropylene-equipped nets. The chief engineer of one of the vessels reported that his engine exhaust temperatures were consistently lower when the experimental net was towed although the same propeller r.p.m. was maintained as with the standard net. The lighter engine loading indicates a lower water resistance of the net and resultant higher towing speed.

In addition to positive results obtained, certain objectionable qualities of the synthetic material were noted. Because of its black color, broken strands were harder to find for mending--especially at night-time and, because of the hard slick surface, special effort was required to tie knots that would hold. Many broken meshes that were believed at first to be a result of parted twine were found to be caused by a slippage of the twine bobbin "end knots" tied during netting manufacture. (The visibility problem can be readily solved by having the twine made up in another color. Elimination of the knot slippage will probably require modification of the fiber or treatment of the twine.)

The 3 $\frac{3}{4}$ -inch-circumference headrope which initially measured 78 feet in length stretched to 86 feet during fishing trials. This is an increase of 9.06 percent which is within the manufacturer's stated elasticity (10 percent) for this material. The rope was found to have returned to a length of 78 feet-5 inches three days after completion of the cruise.

Fishing results to date indicate that replacement of the heavier-than-water materials in the top part of the trawl with buoyant materials, probably allows the headrope to rise higher. Because of reduced water

resistance of the polypropylene twine the net tows easier and it is likely that the footrope may tend bottom better. Increased catches experienced are attributed to these factors.

Note: Also see Commercial Fisheries Review, April 1961, p. 26.



North Atlantic Fisheries Investigations

BIOLOGICAL DATA ON GEORGES BANK SEA SCALLOPS COLLECTED:

M/V "Delaware" Cruise 61-7: As part of the U. S. Bureau of Commercial Fisheries research program on sea scallops, the Bureau's research vessel Delaware collected biological data at 160 stations on Georges Bank during a 10-day cruise that ended early in May 1961. Fishing operations were conducted on four major Georges Bank sea scallop production areas.

During the cruise 180 bathythermograph casts were made to obtain hydrographic data associated with the fishing stations. About 400 live scallops were brought back to the Bureau's Woods Hole (Mass.) Biological Laboratory for detailed study. In addition, several offshore species of fish were returned for the display tanks in the new Bureau aquarium. A fine collection of bottom invertebrates were also obtained which included several varieties of starfish, sea anemones, giant barnacles, and many other marine animals.

* * * * *

FLUKE TAGGED OFF EASTERN LONG ISLAND:

A total of 1,800 fluke (summer flounder) were tagged and released on offshore grounds southeast of Long Island in 50-70 fathoms of water by U. S. Bureau of Commercial Fisheries biologists. This area is near Hudson Canyon and in the area where commercial concentrations of fluke are found in winter and early spring, following their fall offshore movement. The fluke were tagged with red and white plastic discs which were attached to the edge of the fish just behind the head.

Presumably, many of these tagged fish will be caught this summer in coastal waters from Delaware Bay to Cape Cod. Tag recoveries will provide useful information on migrations and the biology of this valuable sport and commercial fish. The help of fishermen and others handling fish is needed for

the success of tagging studies. If you find a tagged fluke, take it to the nearest Federal or state fisheries representative or mail the tag to the

U. S. Bureau of Commercial Fisheries, Woods

Hole, Mass. Be sure to give your

name and address,

date and place where the fish was caught (if you have this information), and method

used to catch it.



A reward of \$1 will be paid for each tag turned in. If both tag and fish are brought in so that measurements can be made, \$2 will be paid. For your cooperation the Bureau will also send you details of the tagging.



Oceanography

DUKE UNIVERSITY TO BUILD BIOLOGICAL OCEANOGRAPHIC VESSEL:

Increased knowledge of marine biology on the central Eastern Seaboard will be made possible by a National Science Foundation grant to Duke University, according to a June 9, 1961, news release.

The \$618,276 grant will enable Duke's Marine Laboratory near Beaufort, N. C., to construct a biological oceanographic vessel, one of the first major United States research vessels to be designed and built with biological oceanography as its prime function. Students will also receive training in the marine sciences aboard the vessel.

The grant provides for a design and feasibility study, construction and fitting of the vessel, and installation of oceanographic equipment. It will also help build a pier extension at the Marine Laboratory's Piver's Island site across the Newport River from Beaufort, a storehouse for ship's gear, and a laboratory for use of participants in a proposed cooperative research and training program.

The vessel will be about 120 feet in length. It will accommodate approximately 12 scientists and graduate students, and 8 crew members. Capable of work on the high seas, it will operate primarily from Virginia to North Florida, and from the shoreline through the Gulf Stream to the outer edge of

the continental shelf. The ship will be of steel construction with an 800-horsepower engine and a cruising speed of 10 to 11 knots.

The ship and its ancillary facilities will also be available for use by scientists and students of other institutions interested in the marine biology of the Atlantic Coast.

None of the marine laboratories in the Duke area has vessels large enough to work safely in offshore waters. Acquisition and operation of this vessel will enable Duke and other interested universities to extend the scope of their research to include the deep ocean as well as the estuaries and immediate coastline.

Research will be carried out on such problems as seasonal abundance and breeding seasons of important fish and other organisms, food chains and productivity, the distribution of flora and fauna, types and qualities of substrate, and seasonal distribution of planktonic larvae. The vessel will also make possible a more comprehensive study of the migration of crustaceans and fish.

Duke's Marine Laboratory, which occupies 13 acres of the southern portion of Piver's Island, is an administrative unit of Duke's College of Arts and Science. It is only 1.5 miles from open ocean.

* * * * *

VERTICAL OCEAN CIRCULATION HELPS TO FEED FISH:

Vertical circulation of ocean waters near the ocean surface is helping to feed the fishes of the sea. U. S. Navy scientists have measured distinct sinking and upwelling of water masses near the surface for the first time, the Navy's Electronics Laboratory in San Diego, Calif., reported. The currents could continually bring up food from the depths for the surface marine life and also take down the surface food, such as plankton, for the larger fish in the deeper depths.

The currents are formed by relatively large waves that are found where cold deeper layers meet the warmer surface layers. These "internal waves" create vertical currents as they roll along.

Knowledge of these currents is very desirable for underwater missile launching,

submarine movement, and the distribution of food for marine life. Television and movie cameras were used to spot the currents. The equipment was housed in a car suspended from a tower, one mile off the California coast.

Similar investigations in the Atlantic Ocean, Indian Ocean, and the Gulf of Mexico strongly indicate that the vertical current movement is world-wide.

The origin of the "internal waves" is still a mystery. Some scientists believe storms far out at sea start the waves, others think they are due to cold and warm layers meeting.



Oregon

FROZEN FISH AND SHELLFISH DEALER LICENSE RULE CHANGED:

The law requiring Oregon retail dealers and wholesale distributors handling or dealing in packaged frozen food fish or packaged frozen shellfish to have a license was repealed by the 1961 legislature, the Oregon Fish Commission auditor reminded dealers on May 11, 1961. The repeal is to become effective August 9, 1961.

Retail and wholesale distributors in Oregon handling packaged frozen food fish or packaged frozen shellfish only, at any time prior to August 9, 1961, will be required to have the proper license at the regular fee of \$3 for a retail dealer, or \$10 for a wholesale distributor.

The present law does not permit refunding fees to those who have bought licenses for the entire license year ending March 31, 1962, nor does it permit the issuance of licenses for part of a license year.

Wholesalers, peddlers, and retail dealers handling fresh and unpackaged frozen food fish or shellfish will still be required to have the proper license.



Oysters

STEEL RAFT FOR GROWING OYSTERS DEVELOPED BY TEXAS INVENTOR:

A Texas inventor has applied for a patent on a steel raft developed for growing oysters in Texas waters.

The raft is made of 4-foot diameter steel pipe with three braced cross-pipes of 6-inch diameter and 33 feet long. The over-all dimensions are 34 feet by 41 feet.

The raft is to be towed to the seeding grounds, where it will be sunk. On the raft there are uprights along which reinforcement rods are placed. From the rods there will be stringers of plastic strips that will act as the cultch for collecting the oyster spat. The raft, after the oyster spat has set, will be raised, if this appears necessary, and towed to the growing area. When the oysters mature, the raft will again be raised and towed directly to the dock. It is estimated it will take approximately 45 minutes to one hour to raise the raft and this will be the only labor involved until the dock has been reached.

The purpose of using this method is to save labor in harvesting and to have mobility to pre-select areas having optimum growing conditions.

If this project works as planned, several more larger-size rafts will be built.

The inventor has conferred with shellfish biologists and feels that the raft method has possibilities.



Polish Modern Stern-Type

Trawler Factoryship

ENTERS U. S. PORT FOR REPAIRS:

A modern Polish stern-trawler factoryship was in Boston, Mass., during March this year for repairs to a damaged propeller. This vessel is the same type that the Polish have been making for Russia. The vessel was built in Gdynia, Poland, 1959, of 2,670 gross tons, about 281 feet long with a 45-foot beam and 17-foot draft; the vessel has a speed of about 13½ knots.

The trawler had been fishing on the Grand Banks and off Greenland for ocean perch and cod, but was caught in ice for 10 days. The fishermen work 4 hours on and 4 hours off during the day and 6 hours on and 6 hours off at night and sleep two to a stateroom. The crew consisted of 105 men when they docked at Boston.



Fig. 1 - The modern Polish stern trawler viewed from the bow while in drydock at Boston, Mass.

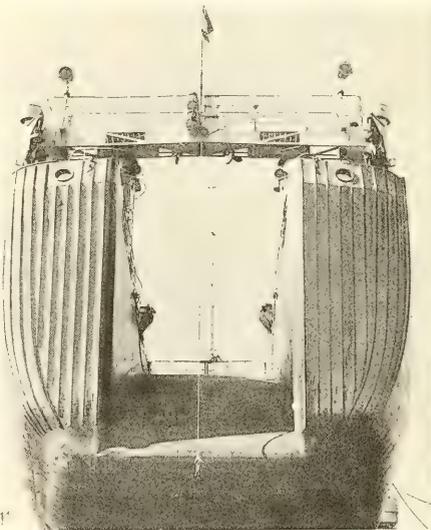


Fig. 2 - View from outside of stern section of Polish stern trawler showing the chute for launching and retrieving the otter trawl.

The vessel is usually at sea about 70 days to a trip and then stays in port a month.

It can carry enough oil, food, and other supplies for the complete trip, with the exception of a stop for fresh water. The vessel's base of operations is Gdynia.

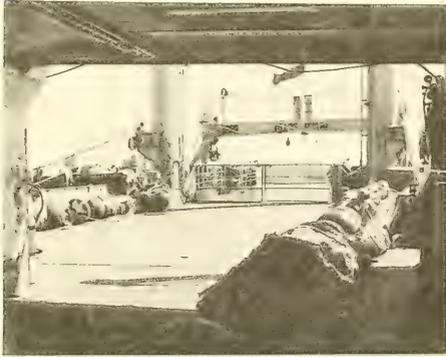


Fig. 3 - View from inside of stern section of the Polish stern trawler with nets stowed on each side of clear deck space.

The Polish vessel can process a catch of 36 tons a day and the gross holding capacity of the vessel is about 2,500 metric tons of processed meal, oils, and frozen fillets. At the time the vessel docked at Boston, the catch was mostly made up of ocean perch and cod. Three West German filleting machines are used along with a heading and skinning machine for processing the catch.



Radioactivity in Marine Waters

LONG-RANGE STUDY ANNOUNCED:

The U. S. Public Health Service announced on March 2, 1961, the beginning of a joint long-range study with the U. S. Department of the Interior of radioactivity in the estuarial waters of the Savannah River, near Savannah, Ga.

The purpose of the study is to trace the routes of radioactivity in a marine environment, from its source to possible human consumption, and to study factors affecting the uptake or reconcentration of radioactivity by various forms of marine life. Measurement of the levels of radioactivity present in the marine environment, including water, fish mollusks, aquatic plants, silt, and suspended solids, will be conducted by the Public Health Service in the estuary and, later, in the upstream waters of the river.

The initial phase of the study will consist of monthly and seasonal collections of water and silt samples, shrimp and crabs, oysters, minnows, and other types of fish life, together with marine plants. The samples will be examined by the Public Health Service radiological laboratory at Montgomery, Ala., where an analysis for specific radioactive substances such as strontium-90 will be conducted. The U. S. Fish and Wildlife Service is performing specialized analyses of marine organisms.



Research Vessels

LOUISIANA FIRM TO CONSTRUCT FISHERY RESEARCH VESSEL:

A \$1,773,948 contract for construction of an ocean fishery research vessel for use primarily in the Northwest Atlantic has been awarded to the Southern Shipbuilding Corporation of Slidell, La., Secretary of the Interior Stewart L. Udall announced on May 17, 1961.

Bids were opened on April 14, 1961. There were five bidders. The vessel was designed by Dwight S. Simpson and Associates, naval architects and marine engineers of Boston, Mass. The vessel will replace the *Albatross III* which was deactivated more than a year ago.

This vessel is one of the first to be constructed under the new national oceanographic program which has received endorsement and impetus by the President. It is a program under which concerted attention will be given to the whole national effort in basic and applied ocean research.

One of the objectives of the fisheries part of the oceanographic investigations is to help the domestic industry in the quest for the three billion additional pounds of fish the Nation will be consuming 20 years hence. Another is to add to the accumulating oceanographic knowledge through water temperature findings, data on the chemical content of sea water at various places and under various conditions, factors affecting plant and animal life in the sea, information on surface and subsurface water movements, and many other kinds of oceanographic data acquired automatically in fishery biological studies.

The naval architects designed the vessel to meet the needs set forth by the fishery scientists of the U. S. Bureau of Commercial Fisheries. A vessel design committee (composed of biologists) conferred often with the architects to help design a ship which will be functional both from the standpoint of a floating laboratory and an ocean-going ship. Its task will be to perform the numerous studies necessary to determine the distribution and the variation in abundance of the bottomfish of the Northwest Atlantic and to conduct various phases of oceanographic research.

It will be a stern trawler, the first to be built in the United States and to operate from a North American port. It is patterned after the new German and Danish stern trawlers, and will be equipped with a ramp to haul the loaded nets aboard. This permits the continuance of exploratory or experimental fishing during heavy weather.

The ship will be of welded steel construction, single bottom, and with single screw and rudder. It will have one continuous deck, two partial decks, and two superstructure decks, with laboratories and scientific equipment. Adequate berth and mess space will be provided for 16 scientists and 25 crew members.

The vessel will have over-all length of 187 feet. Length at the waterline will be 173 feet nine inches. The beam is 33 feet. The ship has a ready-for-sea displacement of 1,000 tons, will travel 12 knots an hour, and has a range of 9,000 miles. It will carry 80 tons of fresh water. It is designed for use in general fisheries and oceanographic research in any navigable waters in the world in all seasons and in all reasonable conditions of weather and temperature.

The cost of \$1,773,948 includes basic laboratory and research facilities. Following construction, which is estimated at 15 months, the vessel will be based at Woods Hole, Mass.



Salmon

UTILIZATION OF UNITED STATES LANDINGS, 1956-60:

During the 5-year period, 1956-60, United States landings of salmon varied between a high of 324.2 million pounds in 1956 and a low of 201.7 million pounds in 1959. The



Iced troll-caught salmon aboard an Alaska troller.

average amount of salmon used for canning during the five-year period was close to 87 percent, varying between 89.0 percent in 1960 and a low of 85.3 percent in 1958. The five-year average disposition of salmon landings for other than canning was 3.0 percent for mild-curing, 4.7 percent for the fresh market trade, and 5.3 percent for freezing.

Utilization of United States Salmon Landings, 1956-60					
Year	Canned	Mild-Cured	Fresh	Frozen	Total
..... (1,000 Lbs.)					
1960 ..	214,382	6,527	7,699	12,392	241,000
1959 ..	173,990	9,258	6,967	11,469	201,684
1958 ..	262,381	9,690	21,453	13,933	307,457
1957 ..	232,229	6,831	13,741	12,352	265,153
1956 ..	282,270	7,070	14,513	20,396	324,249

Scallops

SHUCKING MACHINES DEVELOPED FOR CALICO SCALLOPS:

Two different companies already have successfully developed shucking and separating machines for calico scallops, and a third company is now testing shucking and separating machines. One company has already established a pilot plant in Cocoa, Fla., and a second company is expected to erect a plant in the very near future. The third company presently experimenting with shucking and separating machines is a very prominent fish processing company.

The calico scallop (*Pecten gibbus*) is a species of scallop smaller than the regular New England scallop. Extensive grounds of the scallops were discovered off the east coast of Florida (from Daytona Beach southward to Ft. Pierce in depths of 10 to 32 fathoms) in 1960 by U. S. Bureau of Commercial Fisheries exploratory fishing work. Note: Also see Commercial Fisheries Review, July 1960 p. 41.



Shrimp

U. S. PRODUCTION OF SHRIMP PRODUCTS, 1952-60:

The United States production of manufactured shrimp products in 1959 amounted to 163.6 million pounds valued at \$15.1 million at the plant. Compared with 1958, this was an increase of 10 million pounds, but a drop in value of \$13 million because of lower prices in 1959.

The larger 1959 pack was almost all due to an increase in fresh and frozen shrimp--148 million pounds in 1959 as



Fig. 1 - Hand peeling and deveining of shrimp at a large shrimp-processing plant in Tampa, Fla.

Item	1960		1959		1958		1957		1956		1955		1954		1953		1952		
	Qty.	Value																	
	1,000 Lbs.	US\$ 1,000																	
Fresh and Frozen:																			
Raw, headless	1/	1/	61,598	36,980	63,276	48,214	58,268	45,070	61,355	42,633	69,123	36,680	82,416	43,115	61,990	41,497	59,536	35,919	
Peel, raw (incl. deveined)	-	-	11,096	9,945	7,622	8,430	9,375	9,952	7,512	7,304	6,743	5,896	4,156	2,605	610	382	280	192	
Cooked (incl. peeled & deveined)	-	-	1,891	2,316	2,080	3,405	1,494	2,438	2,237	3,101	1,758	1,798	1,607	2,056	759	1,124	2,518	3,350	
Peel, raw (not cooked)	-	-	69,764	45,314	60,865	43,622	51,085	37,764	50,888	37,301	38,991	26,907	24,802	17,579	17,438	13,393	17,265	12,841	
Non-peel (shrimp, heads, etc.)	-	-	3,636	2,693	3,664	2,938	3,575	2,839	2,907	1,688	1,657	1,252	321	480	1/	1/	1/	1/	
Total fresh & frozen	1/	1/	147,938	97,743	137,307	106,623	124,727	98,113	124,899	92,027	138,274	78,593	113,303	65,315	80,797	56,396	79,625	52,502	
Canned:																			
Natural (drained weight)	2	2	13,965	16,920	13,332	16,948	14,308	20,790	9,120	13,136	13,676	16,421	13,516	13,562	14,021	13,691	15,242	18,947	12,269
Specialties (soups, stew, etc.)	-	-	261	61	172	51	246	94	394	159	571	336	287	116	305	101	410	205	467
Total canned	14,226	16,981	14,010	16,999	14,554	20,884	9,514	13,295	14,207	16,757	13,803	13,675	14,322	13,792	16,652	19,152	12,736	13,224	
Other:																			
Sun-dried	1/	1/	322	291	349	494	347	561	471	607	498	416	990	611	3/	3/	903	3/	1,105
Cup 3 (pickled, pickled, gumbo)	1/	1/	12	24	57	92	76	103	37	56	69	74	3/	3/	3/	3/	3/	3/	
Mix. and bran	340	10	1,254	39	1,162	30	808	24	1,122	14	1,036	35	1,770	51	2,000	80	2,068	87	
Total other	1/	1/	1,588	354	1,568	616	1,231	688	1,630	697	1,603	525	2,760	662	2,923	983	3,173	1,182	
Grand total	1/	1/	163,583	115,301	153,629	128,129	134,472	112,116	140,736	109,481	133,684	89,746	130,591	80,269	99,372	76,531	95,538	66,708	

1/ Data not available.

2/ Preliminary.

3/ Cured shrimp are included with sun-dried shrimp.



Fig. 2 - Raw breaded shrimp on conveyor belt moving to weighing and packaging line.

compared with 137 million pounds the previous year, but the value was nearly \$9 million less. More frozen breaded (raw and cooked) shrimp and raw peeled and deveined shrimp was packed in 1959 than in any previous year in the history of the shrimp products industry. It is estimated that the 1960 production of frozen breaded and raw peeled and deveined shrimp will exceed that for 1959. The 1959 pack of frozen breaded (raw and cooked) shrimp was 9 million pounds more than the previous year. The production of raw peeled and deveined shrimp in 1959 totaled 11.1 million pounds--an increase of 3.5 million pounds over 1958. The 1959 canned shrimp (natural-drained weight) pack declined only 0.5 million pounds from the previous year but the value dropped \$3.8 million because of lower prices.

The only data presently available for 1960 are for canned shrimp and several other shrimp specialties. The 1960 canned shrimp (natural-drained weight) pack of 14 million pounds valued at \$16.9 million was about the same as in 1959.



South Atlantic

Exploratory Fishery Program

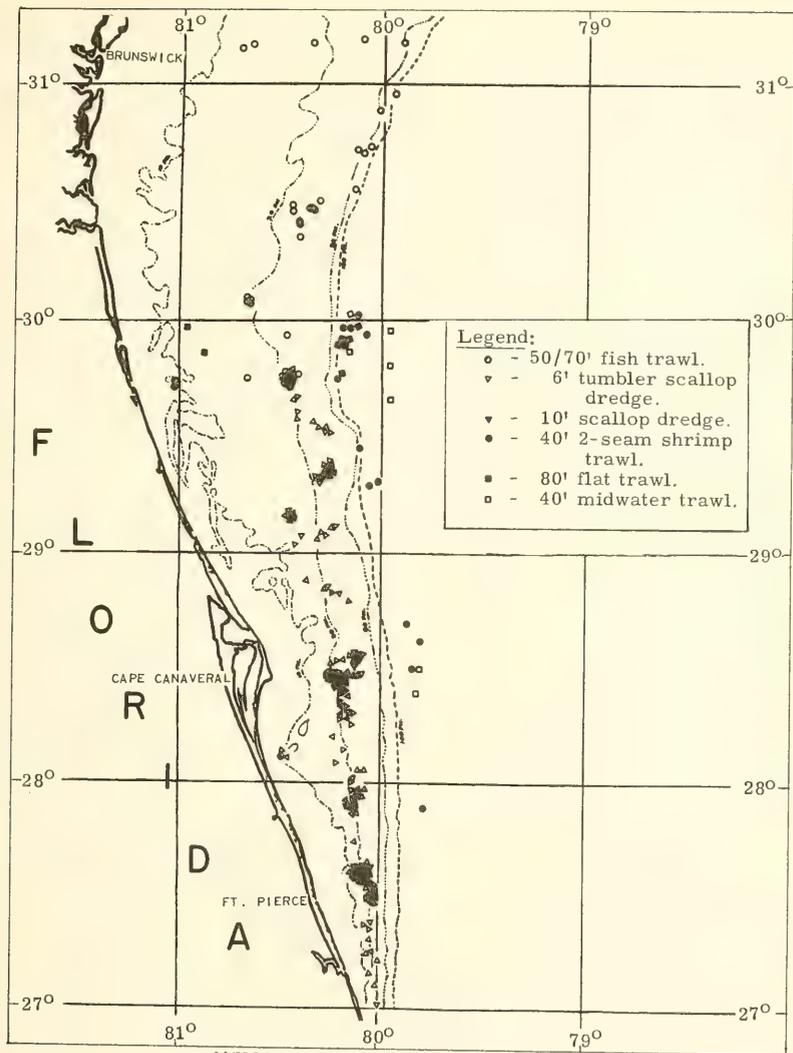
FISH AND SHELLFISH EXPLORATION OFF GEORGIA AND FLORIDA:

M/V "Silver Bay" Cruise 30: On May 11, 1961, the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay completed another of a series of cruises designed to determine the fishery resources off the coasts of Georgia and Florida. During the cruise, 200 stations were occupied along the Continental Shelf and Slope between Brunswick, Ga., and Ft. Pierce, Fla.

Fish trawling was conducted at 37 stations using a 50-foot headrope and 70-foot footrope roller-rigged fish trawl to determine the commercial availability of snapper, grouper, and related species. Maximum catches of readily salable species were about 1,000 pounds per hour, comprised of some 60 percent vermilion snapper, 20 percent porgies, and 20 percent other snappers and grouper. All successful fish trawling was conducted in conjunction with recorder indications of fish concentrations. No gear damage was experienced during this phase of cruise 30.

Royal-red shrimp (*Hymenopenaeus robustus*) were trawled at 17 stations between St. Augustine and Cape Canaveral, Fla., to compare the potential with that observed in previous years. One 24-hour fishing period (5 drags) working in depths of 164 to 190 fathoms produced 1,195 pounds (heads-on) of 31-35 count royal-red shrimp.

Further delineation of the calico scallop bed off Cape Canaveral was conducted with 135 stations made in 10 to 40 fathoms between Summer Haven and Jupiter Inlet. Dead shell and varying amounts of live



scallops were taken over the entire area surveyed. Using a 6-foot tumbler dredge catches ranged up to a maximum of $9\frac{1}{2}$ bushels of medium (average diameter 21 inches) scallops

which yielded 3 to $3\frac{1}{2}$ pints of meats from the average 75-pound bushel of shell stock.

Note: Also see *Commercial Fisheries Review*, May 1961 p. 24, May 1960 p. 29, March 1960 p. 26, and February 1960 p. 42.



Tuna

ALBACORE FISHERY PROSPECTS OFF WEST COAST FOR 1961:

The 1961 albacore tuna fishery off the United States west coast south of the International Border should reach as far south as Guadalupe Island, and even though the center of abundance will probably remain offshore, a limited to moderate coastal fishery may develop, according to the Tuna Forecasting Investigation of the U. S. Bureau of Commercial Fisheries.

It is too early in the year to make a prediction for regions north of the International Border. For previous years, relationships have been noted between temperatures in June and early July and area of catch off Oregon and Washington. Sea-surface temperature from the northern region will be examined continuously and interpretation of the information will be published later if it is thought useful in suggesting whether or not there will be a substantial fishery off Oregon later in the year.



U. S. Fish Meal and Solubles Supply and Fish Oil Production and Foreign Trade, January-March 1961

During the first three months of 1961, the United States production of fish meal amounted to 7,600 tons as compared with 10,000 tons produced in the same period of 1960. As compared with the first quarter of 1960, production in the first quarter of 1961 was down 2,800 tons for tuna and mackerel, and up 41 tons for menhaden meal and up 350 tons for other meals.

Imports of fish meal and scrap totaled 44,300 tons for January-March 1961--higher by 9,000 tons than during the same period of last year. Imports from Peru (30,700 tons) made up 69 percent of the total imports, while Canada followed with the next largest

amount imported (almost 6,700 tons). The remaining 6,900 tons were received from Chile, Union of South Africa, Angola, and other countries.

Table 1 - U. S. Supply of Fish Meal and Solubles, January-March 1960-61

Product	January-March		Total 19602/
	19611/	1960	
. (Short Tons)			
Fish Meal and Scrap:			
Domestic Production:			
Menhaden	531	490	218, 423
Tuna and mackerel	4, 852	7, 699	26, 325
Herring, Alaska	-	-	6, 071
Other	2, 173	1, 819	38, 897
Total Production	3/7, 556	3/10, 008	289, 716
Imports:			
Canada	6, 665	11, 316	30, 982
Peru	30, 726	17, 467	68, 156
Chile	2, 377	3, 758	21, 183
Angola	1, 433	-	888
Union of South Africa	3, 036	2, 678	7, 073
Other countries	96	85	3, 279
Total Imports	44, 333	35, 304	131, 561
Total Fish Meal Supply	51, 889	45, 312	421, 277
Fish Solubles (wet weight):			
Domestic Production:			
4/	5, 281	5, 971	98, 929
Imports:			
Canada	329	273	869
Denmark	-	1, 858	1, 858
Other countries	180	45	447
Total Imports	509	2, 176	3, 174
Total Fish Solubles Supply	5, 790	8, 147	102, 103
1/ Preliminary.			
2/ Revised.			
3/ Based on reports from firms which accounted for 93 percent of the 1960 total production.			
4/ Includes production of homogenized-condensed fish.			

Table 2 - U. S. Production and Foreign Trade in Marine Animal Oils, January-March 1960-61

Product	January-March		Year 1960
	1961	1960	
. . . (1,000 U. S. Gallons) . . .			
Marine Oils:			
Domestic Production: 1/			
Menhaden	10	10	24, 454
Herring:			
Alaska	-	-	1, 385
Maine	2/	2/	133
Tuna and Mackerel	101	97	507
Sardine, Pacific	-	-	144
Other (including whale oil)	51	111	1, 204
Total Production 1/	162	218	27, 827
Imports:			
Whale oil, sperm (crude and refined)	1, 026	1, 566	4, 837
. (1,000 Lbs.)			
Exports:			
Fish and fish-liver oils	36, 549	29, 053	143, 659
Whale and sperm oil	2	794	1, 401
1/ Preliminary.			
2/ Quantities of herring oil are included in "unclassified" in order to avoid disclosure of an individual firm's production.			

During the first three months of 1961, the domestic production of fish solubles amounted to 5,300 tons--a drop of 700 tons from the same period of 1960. Imports of

this product totaled 500 tons during the first quarter of 1961 as compared with 2,200 tons during the 1960 three-months period.

A total of 36.5 million pounds of fish and fish-liver oils were exported during the first three months of 1961--up 7.5 million pounds as compared with the same period of 1960.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, MARCH 1961:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during March 1961 increased by 1.2 percent in quantity and 3.4 percent in value as compared with February 1961. The increase was due primarily to higher imports of groundfish fillets (up 1.0 million pounds), canned tuna in brine (up 1.6 million pounds), and frozen shrimp (up 1.4 million pounds). The increase was partly offset by a 2.3-million-pound decrease in the imports of frozen albacore and other tuna.

Compared with March 1960, the imports in March this year were up by 4.4 percent in quantity and 14.9 percent in value due to higher imports of frozen tuna other than albacore (up 4.4 million pounds), groundfish fillets (up 3.8 million pounds), frozen shrimp (up 1.8 million pounds), and canned tuna in brine (up 2.2 million pounds). Compensating in part for the increases was a drop of about 4.1 million pounds in the imports of frozen albacore tuna, and canned salmon (down 1.6 million pounds).

Item	QUANTITY			VALUE		
	March		Year	March		Year
	1961	1960	1960	1961	1960	1960
	(Millions of Lbs.)			(Millions of \$)		
Imports:						
Fish & shellfish: Fresh, frozen, & processed ^{1/}	83.8	80.2	1,011.2	27.7	24.1	304.8
Exports:						
Fish & shellfish: Processed only ^{1/} (excluding fresh & frozen)	1.7	3.5	48.7	1.0	0.9	19.2

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

United States exports of processed fish and shellfish in March 1961 were lower by

62.0 percent in quantity and 47.4 percent in value as compared with February 1961. Compared with the same month in 1960, the exports this March were down 51.4 percent in quantity, but were up 11.1 percent in value. The lower quantity of exports in March this year as compared with the same month in 1960 were due mainly to much lower exports of California sardines and canned squid. The increase in value of the exports this March from March a year ago was due to relatively heavy exports of canned salmon.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1961 at the 12 $\frac{1}{2}$ -percent rate of duty is 57,114,714 pounds. Any imports in excess of the quota are dutiable at 25 percent ad valorem.

Imports from January 1-April 29, 1961, amounted to 15,083,873 pounds, according to data compiled by the Bureau of Customs.

Imports in 1960 for the period January 1-April 30 amounted to 13,516,144 pounds.

* * * * *

PRESENT ADMINISTRATION'S OUTLOOK ON FOREIGN TRADE:

The current Administration's outlook on the competitive effect of import trade was stated recently by the Deputy Assistant Secretary of Commerce for International Affairs, in an address entitled "The Foreign Economic Policies of the Administration." On May 5, 1961, when the address was delivered, he stated, in part:

"It is to be anticipated in the coming decade that the shifts in exports and imports of the United States will be accelerated. Consequently, producers now in the import competing industries will be under the necessity of improving their production methods or gradually moving out into industries which are more competitive. The United States simply cannot produce everything of everything. It will either have to relinquish certain areas of production, or permit some firms at the margin of efficiency to die.

"There is a hopeful alternative that the rate of growth throughout the world will

permit some industries in the United States to expand rapidly and become export oriented; while the import competing group merely expands less rapidly or stagnates--removing the necessity of any company going out of business.

"While this process of gradual attrition among industries goes on apace as a result of domestic competitive pressures without governmental subsidy or relief, the fact that the rules of the game are changed when tariffs are substantially altered, is justification for government assistance in relocation of industrial activity."



Virginia

INSTITUTE OF MARINE SCIENCE AWARDED GRANT TOWARDS CONSTRUCTION OF NEW LABORATORY:

The Director of the Virginia Institute of Marine Science, announced on May 16, 1961, that the National Institute of Health has awarded a health research facilities grant amounting to \$27,345 to the Institute to defray part of the construction cost of the new microbiology-pathology building now nearing completion.

"The new laboratory will provide space for an expanding research program into the relationships between marine microorganisms and the state of health of all living things, including man," the Director reported. Microorganisms are often thought of as disease producers causing trouble among other plants and animals, but actually many of them are helpful. For example, soil scientists know that a thorough understanding of the soil condition includes knowledge concerning the bacteria and fungi which populate it. There is a direct relationship between these tiny one-celled plants, which live in the soil, and the fertility of the soil itself.

Scientists at the Virginia laboratory suspect that there is a similar situation in the marine and brackish waters; that bacteria and fungi affect growth of oysters and other marine crops, but there is not enough information yet to prove it. The facilities of the new building are designed to help with this problem. It is possible that stream pollution upsets the normal microflora, which in turn has its effects on these waters and their usefulness to man.

Studies to be conducted in this new laboratory may shed much light on problems of the oyster industry, and the Virginia fisheries in general.



Wholesale Prices, May 1961

The May 1961 wholesale price index for edible fishery products (fresh, frozen, and canned) at 128.5 percent of the 1947-49 average increased 2.1 percent from the preceding month, and advanced 1.5 percent from May 1961. The increase in the index from mid-April to mid-May this year was mainly due to higher prices for fresh drawn haddock, fresh or frozen dressed halibut and salmon, and a pronounced upturn in prices for fresh-water varieties. The price increase in fresh drawn haddock was also reflected in an advance in fresh haddock fillet prices. From May last year to this May, higher prices for fresh or frozen dressed halibut and salmon, shucked oysters, frozen haddock and flounder fillets, and canned salmon more than offset lower prices for fresh drawn haddock, the fresh-water varieties, and fresh and frozen shrimp.



Fresh East Coast shrimp on display at one of the stands at Fulton Fish Market, N. Y. C.

The fresh and frozen drawn, dressed, or whole finfish subgroup index for this May increased 11.9 percent from the preceding month. The more significant price increases were in fresh drawn haddock (up 40.0 percent) because of higher ex-vessel prices, and considerably higher prices for the fresh-water varieties. Prices were higher this May for fresh and frozen halibut and salmon, mainly due to higher ex-vessel prices for the fresh product. Compared with May last year, the subgroup index this May increased 3.7 percent. Higher prices for fresh and frozen halibut (up 15.3 percent) and fresh salmon (up 7.0 percent) offset sharp declines in fresh drawn haddock and whitefish prices.

From April to May this year the fresh processed fish and shellfish subgroup index declined 0.8 percent. Higher prices for fresh small haddock fillets (up 9.4 percent) were offset by a decline in the price of fresh shrimp at New York City (down 2.5 percent). As compared with May last year, prices for

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, May 1961 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/		Indexes (1947-49=100)					
			(\$)		May	Apr.	May	Apr.	Mar.	May
			1961	1961	1961	1961	1961	1960		
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					128.5	125.8	131.9	126.6		
Fresh & Frozen Fishery Products:					140.6	136.1	146.8	142.2		
Drawn, Dressed, or Whole Fish:					155.6	139.0	161.3	150.1		
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.08	.06	78.1	55.8	122.4	94.1		
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.35	.33	107.8	103.1	101.1	93.5		
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.88	.85	137.7	191.0	196.6	184.8		
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.66	.46	163.6	114.0	173.6	183.4		
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.83	.50	166.9	101.2	141.6	212.5		
Yellow pike, L. Michigan & Huron, rnd., fresh .	New York	lb.	.72	.51	167.7	119.6	164.2	170.0		
Processed, Fresh (Fish & Shellfish):					142.3	143.4	150.1	145.8		
Fillets, haddock, sml., skins on, 20-lb. tins . .	Boston	lb.	.29	.27	98.7	90.2	141.2	81.9		
Shrimp, lge. (26-30 count), headless, fresh . .	New York	lb.	.77	.79	120.9	124.0	134.3	135.1		
Oysters, shucked, standards	Norfolk	gal.	7.25	7.25	179.4	179.4	173.2	170.1		
Processed, Frozen (Fish & Shellfish):					112.8	113.7	115.1	117.7		
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	100.8	100.8	100.8	98.1		
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.32	.32	100.5	100.5	105.2	80.1		
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	116.8	116.8	122.8	112.8		
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.69	.70	105.7	107.2	107.2	123.5		
Canned Fishery Products:					112.2	112.2	111.2	104.8		
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . .	Seattle	cs.	28.00	28.00	146.1	146.1	140.1	127.8		
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.00	11.00	79.3	79.3	79.3	80.0		
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	4.50	4.50	105.0	2/105.0	91.0	93.9		
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.75	8.75	93.1	93.1	93.1	93.1		
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 due to shift from 48 cans/case to 24 cans/case for California sardines.										

items in the subgroup this May declined 2.4 percent. Increases in the fresh haddock fillet prices at Boston and shucked oyster prices were offset by a decrease (10.5 percent) in the New York City fresh shrimp price.

Wholesale prices this May for frozen processed fish and shellfish also declined slightly (0.8 percent) from the preceding month. Prices of all items were unchanged from the previous month except frozen shrimp at Chicago which dropped 1.4 percent. The subgroup index declined 4.2 percent from May 1960 to this May because of lower frozen shrimp prices at Chicago (down 14.4 percent). The decline

was offset somewhat by higher prices for all frozen fillets (frozen haddock fillets were up 25.4 percent).

There was no change in the subgroup index for canned fishery products from April to May this year. Prices, on the whole, were at the same level as the previous month. Compared with May a year ago, the subgroup index increased 7.1 percent largely due to a 14.3-percent increase in canned pink salmon prices, the same as occurred in April. Canned California sardines were up 11.8 percent, but canned tuna prices were only slightly below (down 0.9 percent) the May 1960 prices. Maine canned sardine prices this May were unchanged from the same month a year earlier.





International

FISHING LIMITS

NORWAY AND UNITED KINGDOM RATIFY AGREEMENT:

The ratification documents containing the agreement between Britain and Norway on the fishing limits off the Norwegian coast were exchanged at the British Foreign Office, London, on March 3, 1961.

Main provision of the agreement is that British trawlers be allowed to fish in the outer six-mile zone for a period of 10 years, when Norway extends her fishing limits from 4 to 12 miles. The agreement comes into force automatically with the exchange of documents. The extension of the limits will be undertaken in two stages--from 4 to 6 miles on April 1, and from 6 to 12 miles on September 1. The 10-year period is reckoned from October 1960, when the provision was agreed upon and consequently expires in October 1970.

The Norwegian Government has hired six whale catchers to be employed as fisheries patrol vessels. (The Fishing News, March 10, 1961.)

FOOD AND AGRICULTURE ORGANIZATION

FISHERIES EXPERTS ASSIGNED ON SURVEYS IN LATIN AMERICA, AFRICA, AND CYPRUS:

Three experts in fisheries economics were nominated for Food and Agriculture Organization (FAO) assignments in Cyprus, Chile, and in the Federation of Rhodesia and Nyasaland during March 1961. The experts were the Director of the Division of Technology, Central Fisheries Experimental Station, Palermo, Sicily; a lecturer from the College of Technology, Portsmouth, England; and the Managing Director of a canning company in Cape Town, South Africa.

The Technology Director from Sicily arrived in Cyprus, March 9, for a four-months

assignment as a fisheries development expert. His assignment will be to do an economic survey of the fisheries potential in the Cyprian offshore waters.

The British lecturer will be the economist member of a three-man team which will conduct a reconnaissance survey of Kariba Lake in the Federation of Rhodesia and Nyasaland. The survey will be used to prepare a plan of action for a full-scale study of the fishery potential of the reservoir. He also left March 9 for Kariba Lake and was scheduled to join the other team members consisting of a fisheries biologist with the California Department of Fish and Game, and the Chief of the Fishing Gear Section, Fisheries Technology Branch, Fisheries Division, FAO. His assignment will also be for 4 months.

The Director of the South African canning firm, who has previously visited Peru and Chile to study fishery developments, left for Chile in March where he will spend a year as a fish-marketing expert. He will advise the government and fisheries industry on problems arising from efforts to rehabilitate the Chilean fishing industry following the earthquake there last year.

* * * * *

FISHERY RESEARCH VESSELS TOPIC OF FORUM IN TOKYO:

How do creatures seven miles down in the ocean's depths generate light within their bodies? Why do fish migrate; do they navigate celestially as birds do? Adult sea fish are caught, but their eggs are never found. Where do they spawn?

Questions like these are beginning to be answered by research vessels exploring the sea, which contains regions less known than the moon's surface.

Some 200 Japanese research vessels range thousands of miles from their native land, testing currents, temperatures, the concentration of plankton--gathering indicators of where the fish are. Waiting for this

International (Contd.):

information is the far-flung Japanese fishing fleet.

The fishery research vessel, which not only collects hydrographic information, but tests new fishing methods and gear, will be the major subject at a Food and Agriculture Organization (FAO)-sponsored forum on research vessels, September 18-30, 1961, in Tokyo, Japan.

"The purpose of the meeting is to compile and exchange information on the design and operation of research vessels, particularly those for fishery research," said the Chief of FAO's Fishing Boat Section, who will serve as secretary of the meeting. "It will also give oceanographers, biologists, and naval architects a chance to discuss mutual problems and accomplishments."

The necessity for fishery research can be illustrated by the fact that millions of tons of fishprotein are taken from the sea each year. The amount taken has increased by about one half in the last 10 years.

"With a growing world population, the sea will have to increase its harvest. But for this increase we must know the best method of protecting and utilizing her resources," the Chief of the Fishing Boat Section stated. "Only a few kinds of fish of the large number of known varieties are caught. Many parts of the ocean, especially in the southern hemisphere, are scarcely fished at all."

Fisheries research vessels, no matter who designs them, all have one thing in common. They are expensive. For the ships must be floating laboratories.

"A small research vessel of about 500 tons will cost around 1.65 million dollars," he said. "This is expensive, but any ship of 500 tons is expensive. The reason for the high cost, is all the instruments and facilities that a research vessel must carry. The United States of America is planning to build 70 research vessels costing \$210 million during the next 10 years.

"There is a need for vessels to do just basic research," he added. "The maximum economic yield of many fisheries needs to be determined. Prior to World War II, Japan was one of the few countries greatly involved in such research. Japan now depends on fish as their principal source of animal protein and the Japanese not only eat hundreds of varieties of fish, but many kinds of seaweed.

"Comparing fisheries with agriculture, we are far behind. For instance, the yield of the sea possibly could be increased by 'ploughing' the ocean bottom as one would till the soil. This would bring dissolved substances from the depths to the surface and provide more food for fish."

Fishery research vessels have already paid off in immediate results. A German vessel, the Anton Dohrn, has found several new fishing grounds. One bank located near Greenland and yielding ocean perch has been named the Dohrn Bank.

A Norwegian fisheries research vessel spotted the herring before they reached the Norwegian fjords. This enabled the herring season to be extended and the increased revenue from the larger catch paid for the boat.

FAO's Fishing Boat Section has advised a number of its member governments, including the United States and Iceland, on the designs of their fishery research vessels. The Section designed three such vessels for the Union of South Africa. Another of its jobs was saving the Swedish Government about \$160,000 on refitting its fishery research vessel, the Skagerak. The Section recommended engines and winches that cut the refitting cost; the resulting saving more than equaled the Swedish contribution to FAO that year.

The Research Vessel Forum will not be just limited to fishery research ships. The Forum will also examine hydrographic survey ships, polar exploration vessels, hospital ships, lighthouse tenders, cable ships, and nonmagnetic ships.

* * * * *

INTERNATIONAL MEETING ON ROLE OF FISH IN NUTRITION:

The role of fish in world nutrition--the present abundance of fish and future potential supply--will be discussed at an international conference on Fish in Nutrition, to be held from September 19-27, 1961, in Washington, D. C.

Sponsored by the Food and Agriculture Organization (FAO), the conference will deal with the world production and utilization of fish, not only for human nutrition but also in animal feeding. The U. S. Fish and Wildlife Service is handling the conference on behalf of the United States Government.

Participants representing some 50 nations of FAO's 82-nation membership are expected

International (Contd.):

to attend, along with scientists invited from governmental and non-governmental organizations and members of the fishing industry.



"The conference is unique in that it will be the first time that scientists in the fields of nutrition, fisheries, and animal health have been gathered together with experts in fish processing to consider what is really known of the place of fish and fishery products in human and animal nutrition," the chief of FAO's fisheries technology branch and general secretary of the meeting stated.

The conference will provide an opportunity to compile and make available internationally the current knowledge on the nutritive value of fish and fishery products and on the biological factors affecting their nutritional value.

Discussion at the conference on nutritional, biochemical, and clinical research now under way on fishery products and components should provide a guide for future scientific investigation to fill in the gaps in research knowledge.

A grant given by the U. S. National Institutes of Health through the U. S. National Academy of Science will provide for a limited number of travel fellowships to enable internationally-known scientists to participate in the conference. These grants are also partly designed for the active scientist in developing countries, who can utilize knowledge gained at the conference upon his return.

The agenda calls for papers to be presented on such topics as the importance of fish protein in combating protein malnutrition, as found in weaned infants as a result of diet and poor nutritional practices; the possible role of fish fats and oils in connection with cardiovascular diseases; the effect of processing on the nutritive value of fish products.

GENERAL AGREEMENT ON TARIFFS AND TRADE

EIGHTEENTH SESSION OF THE CONTRACTING PARTIES:

The Contracting Parties to the General Agreement on Tariffs and Trade (GATT) held their Eighteenth Session in Geneva, May 15-19, 1961. A total of 38 nations have acceded to the GATT, and a number of other countries either have acceded provisionally or have other special relationships with the Contracting Parties.

The GATT, as the basic instrument guiding commercial relations among most of the principal trading nations of the world, is the cornerstone of United States commercial policy. The provisions of the GATT are designed to promote mutually beneficial international trade and thereby to raise living standards, expand productive employment, and utilize more fully the resources of the world. The various meetings of the Contracting Parties to the GATT, such as the Eighteenth Session, provide an international forum in which the Contracting Parties work to achieve the aims of the GATT, discuss trade policy problems, and attempt to resolve trade difficulties in a manner conducive to the growth rather than the reduction of trade levels.

The one-week session ran concurrently with the GATT tariff negotiations conference which began in Geneva, September 1, 1960.

Of the approximately 30 agenda items scheduled for consideration by the Contracting Parties, some of the more significant ones dealt with the Association of Finland with the European Free Trade Association; a review of latest developments on the special three-pronged program for the expansion of trade through (1) tariff negotiations, (2) an examination of agricultural protectionism, and (3) the maintenance and expansion of the export earnings of the less developed countries; and the removal of quantitative import restrictions.

The Contracting Parties heard reports at this Session on consultations the United States and other contracting parties have held with Italy and France on their remaining quantitative restrictions. Also, the GATT Committee on Balance-of-Payments Restrictions, of which the United States is a member, reported on the consultations held in April with several countries still imposing import restrictions for balance-of-payments reasons. The removal of quantitative restrictions by other countries has been a principal objective of the United States, and the work of this com-

International (Contd.):

mittee and other GATT mechanisms have been important factors in influencing the relaxation of such restrictions upon trade.

INTERNATIONAL JOINT COMMISSION

REPORT ON PASSAMAQUODDY TIDAL POWER PROJECT SUBMITTED:

In a letter from the International Joint Commission dated April 10, 1961, the U. S. Department of State has received the "Report of the International Joint Commission, United States and Canada, on the International Passamaquoddy Tidal Power Project," dated April 4, 1961. The report released May 1, 1961, conveyed the Commission's findings that the tidal project, either alone or in combination with certain auxiliary power sources, will not permit power to be produced at a price which is competitive with the price of power from alternative available sources.

On August 2, 1956, the Governments of the United States and Canada in a Reference, directed the Commission to determine the estimated cost of developing the international tidal power potential of Passamaquoddy Bay, and whether the cost of such a development would permit the production of hydroelectric power at an economically feasible price. Passamaquoddy Bay separates the State of Maine from the Province of New Brunswick on the Atlantic Coast near the mouth of the Bay of Fundy.

The April 4 Report represents the final conclusions of the Commission in response to the Reference of August 2, 1956, which was submitted to the Commission in accordance with the provisions of Article IX of the Boundary Waters Treaty of 1909, and in light of the provisions of Public Law 401, 84th Congress, second session, approved January 31, 1956.

The Reference further directed the Commission to determine the effects which the project might have on the national and local economics in the area, as a result of the proposed construction, maintenance, and operation of the tidal power structures.

The Commission's Report determined that because of the relatively high cost of development of the tidal power potential, the project would not appreciably affect long-term industrial development in the area. This Re-

port pointed out, however, that there would be substantial short-term benefits to the economies of Maine and New Brunswick during the six-year construction period which would result from estimated expenditures of over \$200 million for goods and services if the project were carried out.



Passamaquoddy Tidal Power Projects plan.

The Commission found that the proposed project would have very little effect on the important sardine industry in the St. Croix River estuary of Passamaquoddy Bay, and only a minor effect on other fisheries. Were the project to be carried out, the Commission notes that re-location and modification of existing fisheries facilities, plus certain modifications in the design of the tidal structures, would minimize damage to existing fisheries.

The Commission's Report also noted that additional recreational facilities would be created by the formation of two large salt water lakes, and by the structures of the proposed tidal project itself. Navigation conditions in the St. Croix River estuary and at St. Andrews and other ports in the Bay area would be improved by the raising of the Passamaquoddy Bay high pool, and by the decrease in the tidal range. In addition, tidal dams, locks, and gates would provide suitable foundation on which an international highway could be built to connect present coastal highway ways in Maine and New Brunswick.

Nevertheless, the Commission found that the Passamaquoddy Tidal Power Project is not economically feasible at the present time when evaluated by conventional methods of economic analysis as applied to hydroelectric projects. The Commission recommended that development of the project be viewed as a long-range possibility having better prospects of realization when other less costly energy resources available in the area will have been fully realized.

The Governments of the United States and Canada are studying the findings and recommendations of the International Joint Commission in the April 4 Report, and will withhold comment until their studies are completed.

Note: Also see Commercial Fisheries Review, June 1960 p. 68, May 1960 p. 36, March 1960 p. 38.

INTERNATIONAL NORTH PACIFIC FISHERIES COMMISSION

COMMITTEE ON BIOLOGY AND RESEARCH; WORKING PARTY ON OCEANOGRAPHY MEETS:

The Committee on Biology and Research of the International North Pacific Fisheries Commission (INPFC) was authorized to make a joint report on oceanography of the area of interest to the Commission and correspondents were named by Canada, Japan, and the United States to prepare such a joint report. The report has been carried on by mail since it was not possible for the Working Party members to meet in 1960. But since it was considered essential that all authors come together to coordinate their contributions and prepare the final report, the Working Party on Oceanography of the Commission's Committee on Biology and Research met in Nanaimo, British Columbia, Canada, May 15-June 15, 1961.

NORTHWEST ATLANTIC FISHERIES COMMISSION

ANNUAL MEETING HELD IN WASHINGTON, D. C.:

The 1961 Annual Meeting of the International Commission for Northwest Atlantic Fisheries was held June 5-10, 1961, in Washington, D. C. The meeting was presided over by the Commission's Vice-Chairman, the Deputy Minister of Fisheries for Canada. All sessions of the meeting were held in the U. S. State Department Building.

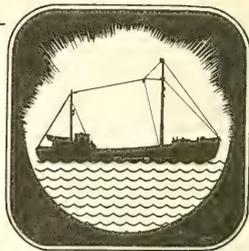
The Annual Meeting was directly preceded by the following meetings held at the U. S.

Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Mass.:

(1) Symposium on Marking, May 24-27.

(2) A meeting of the Group on Environmental Problems on May 27.

(3) Meetings of the Standing Committee on Research and Statistics and of Advisers Groups, May 29 to June 2.



Meetings of the Continuing Working Party on Fishery Statistics in the North Atlantic Area were held on June 6-8 during the Annual Meeting in Washington.

NORTHWEST PACIFIC FISHERIES COMMISSION

JAPANESE AND SOVIETS HOLD FIFTH ANNUAL MEETING:

At the fifth annual meeting of the Japanese-Soviet Commission for Northwest Pacific Fisheries, the 1961 Japanese North Pacific salmon quota--major issue in the discussions--finally came up on the agenda in mid-April. Both sides predicted an early agreement. The Japanese Minister of Agriculture and Forestry predicted that this year's settlement would be earlier than in 1960, when the final agreement was signed on May 18, but he also indicated that there would be no decrease in the Japanese salmon quota which in 1960 was 67,500 metric tons in the Northwest Pacific Commission area.

On the other hand, reports indicate that the Soviet Union plans an increase in its North Pacific salmon catch. Russia caught 70,000 tons in 1960 and reportedly told Japanese negotiators that it planned to catch 80,000 tons this year. The Soviets demanded that Japanese catches in restricted zones be held to 50,000 tons, with catches in unrestricted zones held to 70,000 tons. Japan caught 140,000 tons in all zones last year.

On April 7 the crab quota in the North Pacific was tentatively established, with Japan allotted 260,000 cases (48 6.5-oz. cans) and Russia 195,000 cases (96 6.5-oz. cans). The 1961 quotas are identical to those for 1960.

International (Contd.):

Japan's West Kamchatka crab fleet was reported ready at Hakodate in mid-April awaiting word of agreement before sailing. Meanwhile, early in April the 5,746-ton Tokei Maru with a crew of 404 left port for crab fishing in Bristol Bay off Alaska.

The Soviet delegates early in April charged the Japanese with "obstructing" the discussions when the Japanese refused to expand the area of treaty control south of the 45th parallel. The Russians charged that up to a thousand Japanese vessels fished in that area and had doubled their salmon take compared to the catch five years ago.

After lengthy discussions, the Japanese early in the meeting agreed to use nets with larger mesh during the 1961 and 1962 gill-net salmon seasons in the North Pacific. The agreement states that half the length of salmon fishing nets to be used in all fishing areas in the North Pacific should have a mesh of more than 65 millimeters (about 2.6 inches) in size.

Japan, in the meantime, because it had not reached agreement with the Soviets regarding the 1961 salmon catch quota for the North Pacific, on April 19 authorized Japanese salmon fishing fleets (4 fleets, each consisting of one mothership and fishing vessels) to begin operations in waters outside the Soviet-Japanese fishery treaty zone. Some Japanese officials reportedly suspected that the Soviets were trying to utilize concessions on catch limits within the restricted zone as a lever to induce Japanese agreement to an expansion of the restricted area southward of the zone (south of 45° north latitude). In any event, the Japanese Government decided not to hold up any longer the sailing of the fleet even though it is recognized that such action could prejudice chances of Soviet-Japanese agreement in their current negotiations. The Japanese, however, have announced that they will exercise voluntary controls on their total catch in line with the catches of previous years.

UNITED STATES REPRESENTED AT CONFERENCE ON REGIONAL FISHERIES ORGANIZATION FOR WEST AFRICA

The United States was represented at an international conference concerning the establishment of a regional fisheries organization for West Africa. The conference was held in Dakar, May 15-20. It was called by

the Food and Agriculture Organization (FAO) for the purpose of organizing the new nations and the remaining colonial governments of the African Atlantic coast into a regional council for the interchange of scientific and technical information on fisheries, similar to the FAO's Indo-Pacific Fisheries Council in southeastern Asia.

The convening of the Dakar conference by FAO has resulted from a recent rapid growth of interest in the fishery resources of the eastern tropical Atlantic on the part of the fishing industries and governments of a number of countries. The waters of the region have received comparatively little scientific study, but available oceanographic and biological evidence indicates that they are rich in fish which may contribute importantly to the economic development of the West African nations and dependencies, and to the protein nutrition of their peoples.

Of especial interest to the United States fishing industry and to the tuna biologists of the Bureau are the major developments in tuna production in the eastern Atlantic in the past few years. Tuna landed in West African ports by Japanese and European fishermen are being processed in United States canneries in Puerto Rico, and a number of United States tuna vessel operators are testing the applicability of their fishing methods to the conditions on the African fishing grounds.

WHALING

ANTARCTIC WHALING OUTPUT HIGHER FOR 1960/61 SEASON:

Whale oil production in the 1960/61 Antarctic pelagic season was up 18,000 short tons from the previous season.

Of the 5 countries participating in Antarctic whaling, larger catches were reported this year by Norway, Japan, and the U. S. S. R. The Netherlands and the United Kingdom reported smaller output.

	Blue-Whale Units		Whale Oil Production	
	1960/61 ^{1/2}	1959/60	1960/61 ^{1/2}	1959/60
	... (Units) ...		... (Short Tons) ...	
Norway	5,197	4,568	124,246	109,834
Japan	5,980	5,217	111,134	103,096
U. S. S. R.	2/2,800	2,789	2/67,150	63,070
United Kingdom	1,455	1,900	37,958	44,315
Netherlands	1,011	1,038	24,176	26,323
Total	16,443	15,512	364,664	346,638

^{1/}Preliminary.

^{2/}Partially estimated.

International (Contd.):

Norway continues to be the world's leading producer of whale oil, but Japan is rapidly becoming a close second. In recent years, the U. S. S. R. has greatly expanded whaling operations and in 1959/60 passed the United Kingdom in whale oil output.

Twenty-one expeditions operated during the 1960/61 season--one more than in the previous year. Both Japan and the U. S. S. R. added an expedition, and the United Kingdom dropped one. Total country expeditions were Norway 8; Japan 7; U. S. S. R. 3; the United Kingdom 2; and the Netherlands 1.

Because the Antarctic pelagic whaling countries could not reach agreement on sharing of the permitted catch, no pre-season catch plan was set for the 1960/61 season. The International Whaling Commission requested each country to limit the size of its catch to a level no greater than the previous season. The 1959/60 catch plan, totaling 17,540 blue-whale units, was Norway, 5,800; Japan, 5,040; U. S. S. R., 3,000; the United Kingdom, 2,500; and the Netherlands, 1,200. (Foreign Crops and Markets, U. S. Department of Agriculture, May 22, 1961.)

WORLD'S 1959 SHRIMP PRODUCTION

The world's commercial production of shrimp in 1959 was estimated at 766 million pounds (heads-off weight). The larger shrimp-producing countries are in the Asian and North American continents and landings in those areas accounted for about 80 percent of the 1959 world production. The remaining 20 percent was largely made up of production in European and South American countries.

The 1959 world production of shrimp was estimated to be about 19 million pounds more than the previous year. The more significant increase was in the United States and Mexican catches although production was up for a number of other North and South American countries. European shrimp production in 1959 increased about 5 million pounds from the previous year, but was much lower for several of the Asian shrimp-producing countries.

Estimated World Production of Shrimp, 1948, 1953, 1958, and 1959				
Continent and Country	1959	1958	1953	1948
	(Million Pounds--Heads-off Weight)			
Africa:				
Egypt	7.5	7.0	2.0	0.9
Morocco	1.6	1.5	0.1	0.1
Total	9.1	8.5	2.1	1.0
Asia:				
Burma	6.8	8.7	10.3	1/
China (Mainland)	2/120.0	2/120.0	1/	1/
Hong Kong	0.8	3.8	0.3	0.1
India	85.9	111.8	119.0	48.5
Iran	1.6	0.6	2/	1/
Japan	78.3	74.1	54.1	44.0
Korea	25.7	23.0	27.7	43.3
Pakistan	19.9	19.5	18.2	3/
Philippine Republic	5.9	5.3	2.1	1.3
Taiwan	6.7	5.3	3.3	1/
Thailand	2/11.0	11.0	11.3	10.7
Vietnam	6.6	6.6	1/	1/
Total	369.2	389.7	246.3	147.9
Europe:				
Belgium	1.4	1.0	2.6	1.8
Denmark	3.1	2.2	1.2	1.2
France ^{4/}	4.1	4.6	5.1	3.9
Italy	3.9	4.2	3.3	2.2
Netherlands	17.2	14.3	21.3	10.5
Norway	12.7	9.5	5.0	2.5
Spain	18.3	17.4	12.3	14.6
Sweden	4.2	2.8	1.7	1.0
United Kingdom	2.5	2.8	2.5	3.4
West Germany	33.7	37.1	52.6	18.6
Total	104.1	95.9	107.6	59.7
Oceania:				
Australia	3.9	2.8	2.0	2/
North America:				
Cuba	1.9	1.6	1.7	1/
El Salvador	2.1	1.4	0.1	1/
Mexico	80.1	69.1	45.6	44.6
Panama	8.9	7.5	0.9	0.1
United States	142.9	127.2	154.9	99.4
Other	2/4.0	3.7	2.1	0.3
Total	239.9	210.5	205.3	144.4
South America:				
Argentina	1.1	1.8	7.2	1.7
Brazil	25.7	24.3	10.5	1/
Colombia	3.5	2.0	0.3	1/
Ecuador	7.5	6.0	0.4	1/
Surinam	1.3	1.2	1/	1/
Venezuela	2.1	1.5	0.4	0.1
Other	2/1.5	0.6	0.9	0.1
Total	42.7	37.4	19.7	1.9
Grand Total	765.9	744.8	583.0	354.9

1/Data not available.
2/Estimated.
3/Pakistan included with India.
4/Algeria included with France.
Note: Includes all countries except those with small or limited production.
Sources: Food and Agriculture Organization series, Yearbook of Fishery Statistics; U. S. Fish and Wildlife Service, Survey of Shrimp Fisheries of Central and South America, Special Scientific Report - Fisheries, No. 235 and Foreign Shrimp Fisheries Other Than Central and South America, Special Scientific Report - Fisheries No. 254; and U. S. State Department Foreign Service dispatches.



Angola

FISH-OIL INDUSTRY AND TRADE, 1959-1961:

Angola's production of fish oil increased from 4,900 metric tons in 1959 to 6,000 tons in 1961. Total production is diverted to exports, the bulk of which is shipped to Western Germany (tables 1 and 2).

	1961 ^{1/}	1960 ^{1/}	1959
	.. (1,000 Metric Tons) ..		
Stocks, January 1	0,6	0,6	0,8
Production	6,0	5,0	4,9
Imports	-	-	-
Total Supply	6,6	5,6	5,7
Consumption	Neg.	Neg.	Neg.
Exports	6,0	5,0	5,1
Stocks, December 31	0,6	0,6	0,6
Total Distribution	6,6	5,6	5,7
^{1/} Estimated.			

Country of Destination	1960 ^{1/}	1959
	(1,000 Metric Tons)	
West Germany	4,2	3,3
Denmark	0,5	-
Other	0,4	0,7
Total	5,1	4,0
^{1/} Estimated.		

The average price of fish oil in Angola was 7 U. S. cents a pound in 1959 and 1958, and 8 cents in 1957. (U. S. Foreign Agricultural Service Report, Leopoldville, April 13, 1961.)

Note: Values converted at rate of 28,52 escudos equal US\$1.



Australia.

DEMAND GOOD FOR NORWEGIAN FISH STICKS AND PORTIONS:

Sales in Australia of fish sticks imported from Norway trebled in the last nine months of 1960. This was stated in Sydney by the managing director of the firm which is the sole Australian agent for Norwegian fish. He said the spectacular demand for fishsticks had occurred chiefly in Melbourne and also in Adelaide and Perth.

The Australian states, "Our fish sticks are made from the choicest haddock caught in the icy waters of Norway.

"Our experience over the past three years shows that haddock is the type of fish prefer-

red in Australia--not only in fish sticks but in other products as well.

"Cod is okay in U. S. A. but is not a good seller in Australia.

"When we switched from cod to haddock our fish sticks sales began to climb," he said. He added that a small increase in the price of haddock fish sticks had not slowed sales. On the contrary, Melbourne housewives bought more.

"We have found that provided quality is maintained the average housewife doesn't mind paying a little extra for fish. On the other hand, we have found that if you drop the price the housewife thinks there's something wrong with the product and sales go down. But you must maintain quality," he said.

A year-round advertising campaign on television and radio was helping considerably to push the sales of Norwegian fish in Australia. The present advertising campaign in Sydney is restricted to point-of-sales material (window stickers, branded cello tape, jumbo cartons, etc.). According to the Australian representative of the Norwegian exporter, the crumlets (breaded fish portions) were the biggest-selling line of any frozen fish in consumer packs in Melbourne and Adelaide.

Another product he predicts will sell almost as well is flounder cutlets (square portions of breaded quick-frozen fish), which are sold in pound consumer packs containing eight portions per pack. The flounder portions are imported from Denmark. (Fish Trades Review, February 1961.)

FOREIGN TRADE IN MARINE OILS, FISCAL YEARS 1958/59-1959/60:

Australian imports of all marine-animal and fish oils increased in fiscal 1959/60 as compared with 1958/59. Whale-oil imports increased by 11 percent, cod-liver oil (in-

Item	1959/60	1958/59
	(Imperial Gallons)	
Whale oil	1/353,677	1/317,783
Cod-liver oil (incl. refined)	64,504	58,620
Fish oils (unrefined) N.E.I.		
incl. penguin & seal	123,120	87,286
Marine-animal oils, N.E.I.	46,760	29,936
Total	588,061	493,625
^{1/} Includes 272,128 gallons from Norfolk Island in 1959/60 and 256,903 gallons in 1958/59.		
N.E.I. - Not elsewhere included.		

Australia (Contd.):

cluding refined) by 10 percent, fish oils (unrefined) and penguin and seal oil were up 41 percent, other marine animal oils increased by 56 percent--the combined imports of these oils increased by 19 percent (table 1).

Table 2 - Australia's Exports of Marine-Animal and Fish Oils, Fiscal Years 1958/59-1959/60

Item	1959/60	1958/59
Whale oil	(Imperial Gallons)	
	3,055,652	3,372,748
Other marine-animal and fish oils	6,151	30,162
Total	3,061,803	3,402,910

Most of Australia's exports of marine-animal oil is made up of whale oil. Total exports of that oil decreased by 11 percent in 1959/60 as against 1958/59, and is expected to decrease even further in 1960/61 due to a smaller catch. Exports of other marine-animal oils and fish oils fell sharply in 1959/60 (see table 2). (U. S. Foreign Service dispatch, Canberra, April 21, 1961.)

* * * * *

GOVERNMENT RULING CONFIRMS BAN ON IMPORT OF FISHING VESSELS:

In reply to a request by a United States fishing vessel owner for permission to sell his vessel in Australia, the Australian Department of Shipping and Transport states:

Under the Customs (Prohibited Imports) Regulations, the prior approval of the Minister for Shipping and Transport is required before a vessel of any description can be imported into Australia. It is the policy of the Commonwealth Government to support the Australian shipbuilding industry, both by the payment of a subsidy of up to 33 $\frac{1}{3}$ percent of costs in the construction of vessels over 500 tons and by the imposition of a customs duty on smaller vessels.

Consistent with the Government's policy of supporting the shipbuilding industry, which is at present in need of additional orders, the Minister has in most cases refused to permit the importation of new or secondhand vessels into Australia, except in special circumstances such as small craft, replacements for marine casualties, or prototypes of vessels not at present built in Australia. (United States Consulate, Sydney, April 18, 1961.)

Note: Also see Commercial Fisheries Review, April 1961, p. 47.

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SHELLFISH LANDINGS, FISCAL YEAR 1959/60:

Australia's fiscal year 1959/60 shellfish landings (live weight) of 36.8 million pounds were much better than expected. The spiny lobster catch amounting to 28 million pounds topped the previous year's catch by more than 2 million pounds. Most of the increase was in the main fishing grounds in Western Australia. There was a fairly substantial increase over the previous year in Tasmania production, and a smaller increase in Victoria and New South Wales production. The South Australian spiny lobster catch was the lowest since 1953/54.

Table 1 - Australia's Shellfish^{1/} Landings, Fiscal Years 1958/59-1959/60

Species	1959/60	1958/59
	... (1,000 Lbs.) . . .	
Spiny lobster ^{2/}	28,008	26,301
Shrimp:		
Greasy back	1,264	680
School	123	2,092
Tiger	3,675	679
King	1,493	2,280
Banana	662	974
Other	332	46
Total shrimp	7,749	6,751
Crab:		
Mud	359	} 906
Sand	685	
Total crab	1,044	906
Crayfish (fresh-water)	15	12
Total shellfish	36,816	33,970

^{1/}Based on live weight.
^{2/}Includes shovel-nosed lobster--39,430 pounds in 1959/60 and 25,394 in 1958/59.

The 1959/60 shrimp catch of 7.7 million pounds also increased substantially despite an earlier forecast of a lower harvest than the 6.8 million pounds landed in 1958/59.

Table 2 - Australian Spiny Lobster and Shrimp Species

Common Name	Scientific Name
Crayfish, marine (spiny lobster)	<i>Iasus verreauxi</i>
	<i>Iasus lalandii</i>
	<i>Panulirus longipes</i>
Lobster, shovel-nosed	<i>Thelus orientalis</i>
Prawn (shrimp):	
Greasy back	<i>Metapenaeus mastersii</i>
School	<i>Metapenaeus macleayi</i>
Endeavour	<i>Metapenaeus endeavouri</i>
York	<i>Metapenaeus eboracensis</i>
Tiger	<i>Penaeus esculentus</i>
King	<i>Penaeus plebejus</i>
Banana	<i>Penaeus merquiensis</i>
Rainbow	<i>Farapenaeopsis sculptilis</i>

The largest increase was in Tiger shrimp landings which were up 3.2 million pounds from the previous year, and the greasy back shrimp catch which increased 0.6 million pounds. The 1958/59 landings of other shrimp species dropped sharply from the previous year. (Australian Fisheries Newsletter, March 1961.)

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Australia (Contd.):

**WHALE OIL SUPPLY, DISTRIBUTION,
AND FOREIGN TRADE, FISCAL YEARS
1957/58-1960/61:**

The Australian 1960 whaling season was marked by a further decline in the catch on the Western Australian coast. The 1960 baleen whale quota was set at 1,850 whales; 870 whales for the West Coast and 980 for the East Coast and Norfolk Island. The full quota was taken on the East Coast and at Norfolk Island, but the actual catch in Western Australia only totaled 545 humpback whales and two blue whales. In the fall of 1960, the comparatively small Western Australian catch reflected smaller production of whale oil and other products. The season opened on May 29 and ended on September 30, 1960. The yield of oil per whale was slightly lower than in 1959. The average yield fell from 52.29 barrels of oil per whale in 1959 to 51.13 barrels in 1960.

Australia's production of whale oil during the 1960 season amounted to 13,044 long tons as compared with 15,006 tons in 1959. Output of whale byproducts declined by 976 tons to 6,665 tons in 1960. As in previous years, the bulk of Australian whale oil production was exported. Exports during fiscal year (July 1-June 30) 1959/60 were to Western Germany, Italy, the United Kingdom, and the Netherlands, and totalled 3,055,652 Imperial gallons. In view of the smaller catch of whales in 1960, exports are likely to be somewhat smaller for fiscal year 1960/61 and may be around 2.6 million gallons. The relatively small quantity retained in Australia is largely used in the margarine industry.

Australia's total supply of whale oil (opening stocks, production, and imports) decreased from 5.1 million Imperial gallons in fiscal year 1957/58 to 4.3 million gallons in 1958/59. A further decline to 3.8 million gallons in 1959/60 and 3.3 million gallons in 1960/61 is anticipated.

Total distribution of whale oil (exports, domestic consumption, and end-of-year stocks) is also expected to decrease from an actual 5.1 million gallons in 1957/58 to an estimated 3.3 million gallons in 1960/61. The use of whale oil in margarine production has decreased since 1958; it is expected to level off at 550,000 gallons for 1959/60 and 1960/61 (table 1).

Item	1960/61 ²	1959/60 ¹	1958/59	1957/58
	. . . . . (Imperial Gallons)			
Supply:				
Beginning year stocks ³ / ₄	135,916	150,385	300,893	904,176
Production ² / ₄	3,129,256	3,599,634	3,901,360	4,118,640
Imports	80,000	81,549	60,880	79,693
Total supply	3,345,172	3,831,568	4,263,133	5,102,509
Distribution:				
Exports	2,600,000	3,055,652	3,372,748	4,021,710
Domestic consumption:				
Margarine	550,000	550,000	650,000	689,706
Other	90,000	90,000	90,000	90,000
End of year stocks ³ / ₄	105,172	135,916	150,385	300,893
Total Distribution	3,345,172	3,831,568	4,263,133	5,102,309
1/Estimate, with exception of production and foreign trade data.				
2/Forecast.				
3/Estimated.				
4/Includes Norfolk Island production.				

Total exports of whale oil from Australia declined from 3.4 million gallons in 1958/59 to 3.1 million gallons in 1959/60. The United Kingdom was the main buyer of whale oil in

Country of Origin or Destination	1959/60	1958/59
	. . . . . (Imperial Gallons)	
Imports:		
United Kingdom	-	5,427
Norfolk Island	272,128	256,903
Cocos Islands	45,600	-
New Zealand	30,226	55,362
Other Commonwealth Countries	5,613	-
German Federal Republic	-	91
Norway	110	-
Total Imports	353,677	317,783
Exports:		
United Kingdom	280,253	1,917,200
New Zealand	440	-
Union of South Africa	-	1,892
Belgium and Luxembourg	-	92,114
German Federal Republic	1,986,232	429,235
Italy	536,121	433,675
Netherlands	252,606	479,546
For orders	-	19,086
Total Exports	3,055,652	3,372,748

fiscal year 1958/59--bought 57 percent of total marine oil exports; however, shipments to the United Kingdom fell off in 1959/60 and West Germany became the leading buyer -- bought 65 percent of the total whale oil exports (table 2). (U. S. Foreign Service Dispatch, Canberra, April 27, 1961.)

Note: See Commercial Fisheries Review, January 1960 p. 61, October 1959 p. 48.



Belgium

CANNED FISH PRICES, FEBRUARY 1961:

Canned fish prices (c.i.f.) at Antwerp, Belgium, as of February 1961 are shown in table 1.

Product	Bfrancs/ cs.	US\$/ cs.
Canned pink salmon:		
Japan 96 1/4-lb. cans/cs.	671	13.42
" 48 1/2-lb. cans/cs.	645	12.90
Canned tuna:		
Japan 48 7-oz. cans/cs.	385	7.70
" 48 3 1/2-oz. cans/cs.	240	4.80
Peru 48 7-oz. cans/cs.	-	6.90
" 96 3 1/2-oz. cans/cs.	-	8.70
Canned sardines in olive oil:		
Portugal 100 4.4-oz. 1/cans/cs.	495-510	9.90-10.20
Morocco 100 4.4-oz. 1/cans/cs.	430	8.60
Canned pilchards:		
Japan & U. S. 48 15-oz. cans/cs.	4.26	8.52
" 96 7 1/2-oz. cans/cs.	4.90	9.80
Canned mackerel:		
Portugal 100 4.4-oz. 1/cans/cs.	850-880	17.00-17.60
Japan 100 4.4-oz. 1/cans/cs.	535-540	10.70-10.80
1/4-club, 125 grams net.		

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IMPORTS OF CANNED FISH, 1959:

During 1959, Belgium imported close to 16,000 metric tons of canned fish valued at about US\$9.3 million. The principal supplier

Table 1 - Belgium's Imports of Canned Fish by Origin, 1959

Country of Origin	Sardines		Pilchards		Salmon		Other		Total	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
	Metric Tons	US\$ 1,000								
United States	1/	0.1	395	157.1	35	40.3	2	1.2	432	198.7
Canada	23	9.2	-	-	966	881.1	-	-	989	890.3
Portugal	3,569	1,967.4	8	5.2	-	-	1,261	779.7	4,838	2,752.3
South Africa	-	-	216	67.2	-	-	-	-	216	67.2
Japan	2	1.4	1,677	557.1	3,699	2,552.6	925	515.6	6,303	3,626.7
Yugoslavia	270	123.9	1/	0.2	-	-	537	328.6	807	452.7
Netherlands	5	7.8	82	27.6	60	51.1	579	192.8	726	279.3
Morocco	90	41.8	-	-	-	-	-	-	90	41.8
Peru	-	-	-	-	-	-	468	241.9	468	241.9
Norway	5	4.5	1/	0.1	1/	1.1	564	392.8	569	398.5
Spain	51	31.2	-	-	-	-	177	116.0	228	147.2
Others	24	18.5	7	2.4	12	12.0	288	191.4	331	224.3
Total	4,039	2,205.8	2,385	816.9	4,772	3,538.2	4,801	2,760.0	15,997	9,320.9
1/ Less than 1/2 ton.										

was Japan with 6,303 tons valued at \$3.6 million, followed by Portugal with 4,838 tons valued at about \$2.8 million. Canned fishery products from the United States amounted to only 395 tons (valued at \$157,100) of California sardines or pilchards, 35 tons of salmon (valued at \$40,300), and 2 tons of unclassified fishery

products valued at \$1,200. Portugal was Belgium's principal source of true sardines and Japan the chief supplier of canned salmon.



Brazil

JAPANESE FISHERMEN HOPE TO ESTABLISH FISHING COMPANY AND FISH OFF BRAZIL:

Three Japanese fishermen from Choshi, Chiba Prefecture, are reported to be planning on forming a fishing corporation and building three large steel vessels of 240 tons each for tuna fishing off Recife, Brazil. They hope to enter into an arrangement with the Japanese-Brazilian joint company established in Brazil, to which one of the fishermen is already delivering tuna using a 250-ton vessel.

All three are reported to be excellent fishermen. They are presently seeking approval from the Japanese Fishery Agency to proceed with their plans. (Suisan Keizai Shimbun, April 26, 1961.)

* * * * *

SHRIMP FISHING INDUSTRY:

Brazil's fishing grounds consist of all the coastal waters of Santa Catarina and Parana. With modern equipment, efficient shrimp fishing can be conducted several miles from the coast, but most fishermen work only in tidal areas within a few hundred yards of the shore. Shrimp are available all year round, but the catch by current primitive methods is greatly reduced during the rainy season November through March. Heavy run-off during that period brings very muddy waters into the shrimp fishing areas.

Brazil (Contd.):

There are 6 or 7 important shrimp processing plants in Santa Catarina, but none in Parana. Although 5 of these plants have some freezer equipment which is mostly old, inefficient, and of low capacity, 90 percent of the processed, shrimp is either dried or canned. Canned shrimp are peeled and deheaded; dried shrimp have the heads on. There are no firms at this time known to be using modern processing equipment for peeling and deveining or removing heads. There are several firms, however, which would be interested in such equipment if they thought they could develop large markets to justify the expanded capacity.

One of the two processing plants in Santa Catarina with the biggest freezer capacity has equipment for freezing about 4,500 pounds in 24 hours, and has 80 tons of frozen storage capacity. It has no washing, deveining, peeling, or deheading equipment, and has no fishing boats of its own. The freezer capacity of the other plant is unknown. However, it does have three DC-3's in which to transport its entire frozen catch (unwashed and unprocessed) to Sao Paulo, averaging 6 to 7 tons a week. This plant's freezing equipment was installed by Japanese technicians in the last two or three years. Except for this one plant, none of the Santa Catarina firms have reliable means of shipping frozen shrimp to large markets. For this reason all of their frozen output is sold locally. The larger plant uses its freezing capacity for all types of food products including meat, and not just for shrimp, but does not use its freezer to capacity.

Reliable statistics on total annual landings of shrimp are unavailable. Both very large and small sizes of shrimp are fished. The only locally-owned and operated shrimp fishing boats are dugout canoes. It is estimated that about 12,000 of these operate from the Santa Catarina and Parana coastline. These boats fish for all species of fish, and not just shrimp. In addition, a few large and fairly efficient shrimp boats operate along the coast. These are all based in Santos and the ownership is unknown, although it is believed they are all Brazilian-owned and operated with locally-recruited crews. The large boats have no freezer capacity and preserve their catch with ice and antibiotics. They can handle 20 to 30 tons each. They only land their catch in Santa Catarina or Parana when a sudden decline occurs in the Santos-Sao Paulo or Rio de Janeiro markets. They are kept informed of market conditions by radio. As far as it is known, there are no plans for local construction or purchase of large and more efficient shrimp vessels.

Most workers in Santa Catarina fish-processing plants receive between Cr\$7,000 and Cr\$12,000 (US\$32.63-55.94) a month, with the average between Cr\$7,500 and Cr\$9,000 (US\$34.96-41.95) a month.

Processing firms buy fresh shrimp with heads on from fishermen on a per-kilo basis.

The total annual shrimp catch could be considerably increased if a larger number of modern, and more efficient boats were used instead of the dugout canoes now in use. However, there is little likelihood that such expansion of capacity will occur unless Santa Catarina producers are convinced that they have steady markets, either domestic or foreign, and unless they are guaranteed reliable transportation facilities for their output. Although some firms have requested the Brazilian Government to finance the purchase of large vessels, and to establish regulations limiting local coastal shrimp fishing to local firms, the Government is not likely to agree to those requests. (United States Consulate, Curitiba, April 18, 1961.)

* * * * *

SAO PAULO'S FISHING INDUSTRY EXPANDS IN 1960:

Fish caught in neighboring waters is unloaded at several points along the São Paulo coast, particularly at state-run fish depots, where the fishing vessels lay in for ice. The only production statistics available, however, are those of the Santos and Ubatuba fish depots, where an estimated 65 percent of the total 1960 fish catch was unloaded. These statistics indicate that 24,336 metric tons of fish were unloaded at those depots in 1960, 6,787 tons or 38.8 percent more than in 1959.

The growth of Sao Paulo's fishing industry, which was very limited between 1944 and 1953, was increased substantially in the last few years. Two of the factors that stimulated deep-sea fishing in recent years were the operations of Japanese vessels and crews and the installation in 1955 and 1959, under state supervision, of the Ubatuba and Santos fish depots. These two depots are supplying increasing quantities of ice to fishing vessels, contributing greatly to reducing the proportion of fish that spoil between the time they are caught and unloaded. The Ubatuba depot, which supplied 500 metric tons of ice in 1955, produced 1,210 tons in 1960, while the Santos fish depot, which started operating on a commercial basis in the last quarter of 1959, supplied 1,699 tons of ice in 1959 and 9,870 tons in 1960. A chain of ice-making and cold-storage facilities which are being put up by the São Paulo State Government at Iguape, Registro, Itanhaem, Peruibe, São Sebastiao, and Ilha Bela and scheduled to go into operation between 1960 and 1962, are expected to be important factors in the continued growth of fish production in the area. Statistics of fish unloaded and stored will be maintained at these depots and within the next two years the Secretariat of Agriculture will have accurate and complete statistics on fish production in the State of São Paulo.

The yield per vessel, both per trip and per man, is still generally low as compared with other countries, although some progress is being made. Official statistics on average yields of fish per vessel are not available. However, data on the productivity of a local sardine fishing company indicate that the yield per vessel increased from a monthly average of 87.5 tons in 1959 to 176.1 tons in 1960, an increase of 101.3 percent. The increase was due in part to more favorable fishing conditions (schools of sardines lying close to the coast) and to increased ice and storage facilities of the Santos fish depot.

Brazil (Contd.):

The city of São Paulo is the principal consuming center of fish shipped from Santos and Ubatuba and other points of the São Paulo coast. Statistics prepared by the Department of Animal Production indicate that of the 21,300 metric tons of fish unloaded at the Santos fish depot in 1960, approximately 80 percent were consumed in the city of São Paulo, nearly 15 percent were absorbed by the Santos market, while the remaining 5 percent went to other cities and towns in the interior of the State of São Paulo.

The city of São Paulo also absorbs fish which is trucked in from Rio de Janeiro and other producing centers. Consumption of fish in the city of São Paulo climbed from 9,520 metric tons in 1954 to 23,916 tons in 1959 and 26,416 tons in 1960, an increase of 177 percent in 7 years.

In contrast, fish consumption in the interior of the state is limited. In 1960, 111 interior towns consumed only 1,010 metric tons of fish. Over 25 percent of that quantity, or 259 tons, were absorbed in 10 towns with large Japanese communities, who consume substantial quantities of fish as part of their diet.

Average prices of fish sold in the city of São Paulo in 1960 were 42.4 percent higher than 1959. This is 11.8 percent more than the average rise in the price of other food-stuffs.

One of the Government-sponsored programs which has given good results is the training in deep-sea fishing techniques given to young fishermen at the Maritime Fishing Institute at Santos, where the number of students has risen from 15 in 1955 to 240 in 1960. Fishing schools will also be opened at Ubatuba and Iguape in the near future. Another project under study by the Department of Animal Production is the setting up of a government fund to finance the purchase by fishermen and cooperatives of modern vessels and gear, as the general lack of modern equipment is hampering the rapid development of the fishing industry. (United States Consulate, São Paulo, February 16, 1961.)



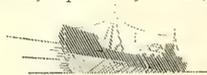
British West Indies

BARBADOS FISHING INDUSTRY GROWING:

The Barbados fishing industry has been growing steadily in importance since 1954, when power-driven fishing launches were introduced to replace sailing vessels. Since that time, the annual fish landings have increased sixfold. During 1960, about 16 million pounds of fish were caught with an estimated value of \$4 million; in 1959 a total of 6.7 million pounds valued at \$1.7 million. Of the 16 million pounds caught in 1960, 62 percent were flying fish, 13 percent dolphin, 8 percent shark, 4 percent albacore tuna, 3 percent marlin, 2 percent whahoo, 2 percent red snapper, and 63 percent miscellaneous.

The number of fishing launches dropped from 463 in 1959 to 458 in 1960. The introduction of power-driven launches has resulted in a decrease in the number of people employed by the fishing industry. A total of 1,700 people was employed in the industry during 1960 (1,100 offshore fishermen, 400 other fishermen, 50 fish market employees, and about 150 peddlers).

The fishing industry is now faced with a problem of oversupply. Although funds were appropriated in the 1960/61 budget for the construction of an abattoir and fish freezing plant, construction has not as yet started. It is expected that work will eventually begin about the latter part of 1961, and that the plant will cost \$750,000. A fish freezing plant would help to stabilize the market which is presently operating on a "feast or famine" basis. There is also the possibility of developing overseas markets for frozen flying-fish fillets. (United States Consulate report from Barbados, April 28, 1961.)



Canada

BIOLOGICAL RESEARCH NOTES:

Canada's biological research was the subject of a panel discussion on April 11, 1961, at the Fisheries Council of Canada's annual meeting in Toronto.

Sea Lamprey: The sea lamprey, which reached the upper Great Lakes through the Welland Canal, has been held responsible for the virtual disappearance of the lake trout. Dr. F. E. J. Fry of the University of Toronto claimed that there has been clear evidence of the sea lamprey eliminating the

Canada (Contd.):

larger lake trout before they become ready to spawn. There is still dispute as to the extent to which the lamprey has affected the valuable food fish of the upper Lakes. Costly international efforts to control the lamprey are in progress. Dr. Kennedy of the London Station of the Fisheries Research Board of Canada considered that the success of these efforts is decidedly doubtful.

Lake Trout Crossed With Speckled Trout: K. H. Loftus, who heads up fisheries research in the Ontario Department of Lands and Forests, described a new kind of fish, obtained by crossing lake trout with speckled trout which gives some promise of being able to withstand the lamprey and to take the place of the lake trout.

Failures in Great Lakes Fisheries: There has been failure in the Great Lakes of other fisheries than that for lake trout. About 1925, the most important fish in Lake Erie, where the largest fisheries are, namely the lake herring or cisco, underwent a catastrophic decline in abundance. R. G. Ferguson, who is in charge of Lake Erie fisheries research for the Department of Lands and Forests, recounted the efforts to discover the cause of the collapse of the fishery. Evidence failed to show that this was to any extent the result of overfishing. There is as yet no inkling of what was the cause of the lack of fish. The only thing to be done was to turn to other kinds of fish, as the fishermen did. A similar event recently occurred in Northern Georgian Bay. With the lake trout gone, the commercial fishermen still had whitefish. But, then their numbers dropped and fishermen were forced out of business. Loftus said that again there was no evidence of overfishing and that some unknown cause must have been responsible for fishery failure.

Overfishing Not Responsible for Drop in Yield: The general belief that fishing is sometimes so heavy as to reduce the long-term yield of marketable fish has had slight substantiation anywhere in the world. Ferguson told how heavy fishing of whitefish in Pigeon Lake, Alberta, was definitely found to reduce the age of the fish, but if anything to increase rather than decrease the quantity available. Fry said that in the fishing experiment in South Bay, Manitoulin Island, the smelt were fished most heavily. This did not decrease the quantity, but it did de-

crease the size of the fish. Kennedy reported that the very heavy fishing of pike in Heming Lake increased the quantity, but reduced the size, the average age becoming 2 years instead of 4, and the fish had grown more rapidly. The general result, therefore, is that the heavier the fishing the more and better are the fish as long as they are not too small for marketing. This is a new and soundly based outlook for commercial fishing.

Smelt in Great Lakes: There was discussion of whether or not it is a good thing that smelt were introduced into Lake Michigan and spread to the other Lakes. Ferguson maintained that it is, that in Lake Erie they are much appreciated by sports fishermen, and the commercial fishermen have developed a profitable method of harvesting them. Fry argued that, at least in colder lakes, they had probably done more harm than good. If they are to be considered detrimental, Kennedy claimed that there is not the slightest chance of getting rid of them. Any conceivable measures for their removal would entail utterly prohibitive cost. Loftus was able to see that the smelt could be a great asset, provided that fishing methods are improved and markets are found for them.

* * * * *

FISH SOLUBLES USED TO STOP SOIL EROSION:

After extensive studies, the British Columbia Research Council has found how to start vegetation on previously sterile slopes. Laboratory work and practical field trials have shown that by applying grass seed and fish solubles together, followed by a spray of lime, erosion can be stopped and a vigorous grass cover established. The process is not expensive.

The problem of heavy erosion of cuts and fills on new highways has plagued highway engineers everywhere. Erosion of sandy soil clogs drainage ditches and plugs culverts, causing high maintenance costs. Difficulty has always been experienced in starting a cover of vegetation to halt such erosion.

The superiority of the process over conventional methods is clearly seen in the experimental plots on the new Upper Level Highway in North Vancouver.

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Canada (Contd.):

FISHERIES ACT AMENDED:

An Act to Amend the Canadian Fisheries Act passed the House of Commons on May 2, 1961.

12-Mile Restriction to be Relaxed: Section 55 gives the Minister of Fisheries authority to allow large Canadian fishing vessels, presently banned from fishing inside 12 miles, to fish up to the 3-mile territorial sea limit in any area off the Canadian east coast mainland. In other words, the Department of Fisheries intends to use a zoning system--authorizing the abolition of the present 12-mile restriction in some areas but probably not in others. Prevalence of foreign druggers in some areas, and intensity of inshore fishing in others, will obviously be factors considered in making these decisions.

Definition of Fishing Vessel: The Act defines a fishing vessel as follows: "fishing vessel means any vessel used, outfitted or designed for the purpose of catching, processing, or transporting fish."

Pollution Penalties Increased: Fines have been increased--up to a thousand dollars for a first offense and up two thousand dollars for second and subsequent offenses, with provisions for an imprisonment term in place of, or in addition to, a fine.

Fisheries Department Authority Broadened: Section 34 has been amplified to clarify the regulation-making powers of the Department, and to broaden them. Under this section authority can be delegated to local authorities "to vary any close time or fishing quota that has been fixed by the regulation." This will permit faster action in making such changes and will be valuable in a number of the fisheries, particularly so in the West Coast salmon industry.

Other Changes: Power of a fishery officer to act as a justice of the peace has been removed.

A more comprehensive procedure is introduced for the seizure of any vessel, vehicle, or equipment that is used in violation of the Act.

New sections make it clear that the Department has full jurisdiction over Canadian fishing vessels operating on the High Seas. (Fisheries Council of Canada, *Bulletin*, May 15, 1961.)

FOREIGN TRADE, UTILIZATION, AND PRODUCTION OF MARINE OILS, 1958-1960:

Foreign Trade: Canada exported a total of 15.7 million pounds of marine oils in 1958, 35.5 million pounds in 1959, and 31.7 million pounds in 1960. These exports consisted of herring oil, crude cod-liver oil, sunrotted cod-liver oil, pharmaceutical cod-liver oil, and whale oil. When the period 1958-1960 is compared with the 5-year average for 1950-1954, Canada's exports of herring oil increased greatly; crude cod-liver oil exports declined in 1958, but since then have improved; sunrotted cod-liver oil has increased slightly, but exports of whale oil practically ceased in 1960 because there was no whaling on Canada's west coast that year. Whaling operations were discontinued because of a labor-management dispute.

Product	1960	1959	1958	5-Yr. Avg. 1950-1954
	(1,000 Pounds)			
Whale oil	64	4,790	3,360	7,958
Herring oil	23,028	23,261	7,094	14,563
Cod-liver oil (crude)	858	509	38	1,373
Cod-liver oil (sunrotted)	7,514	6,979	5,154	6,480
Fish oil	226	4	48	1/
Total	31,690	35,543	15,694	30,374

1/Not available.
Note: Totals in this table differ with those in table 2 due to conversion of table 2 data from Imperial gallons to pounds.

A heavy increase in shipments of industrial herring oil to the United Kingdom in 1959 continued through 1960 and accounted for most of the increase in total marine oil exports. These exports of industrial herring oil accounted for two thirds of Canada's total marine oil exports. The United States received an increasingly larger amount of pharmaceutical, crude, and sunrotted cod-liver oil from Canada each year from 1958-1960--amounted to 6.8 million pounds in 1960. Purchases of Canadian industrial herring oil and whale oil by the United States dropped off in 1960. United States purchases of Canadian fish oil declined from 48,000 pounds in 1958, to 4,000 pounds in 1959, but increased to 226,000 pounds in 1960 (table 2).

Canadian marine oil imports amounted to 15.9 million pounds in 1958, 6.3 million pounds in 1959, and 12.4 million pounds in 1960. The drop in total imports in 1959 was mainly due to a sharp decline (about 9.6 million pounds) in the amount of fish oil imported from the United States. In 1960, the United States was replaced by the United Kingdom as Can-

Canada (Contd.):

	1960	1959	1958
	. . . . (1,000 Pounds)		
Cod-Liver Oil, Pharmaceutical, Crude and Sunotted:			
United States	6,829	6,484	4,261
United Kingdom	1,543	996	931
Others	-	3	-
Total	8,372	7,483	5,192
Herring Oil, Industrial:			
United States	60	564	-
United Kingdom	21,760	21,287	2,867
Netherlands	597	-	2,666
Western Germany	597	1,411	1,563
Others	14	-	-
Total	23,028	23,262	7,096
Whale Oil:			
United States	64	634	838
United Kingdom	-	1,822	2,523
Netherlands	-	942	-
El Salvador	-	815	-
Western Germany	-	582	-
Total	64	4,795	3,361
Fish Oil:			
United States	225	4	48
Others	1	1/	1/
Total	226	4	48
Total Exports	31,690	35,544	15,697

ada's main source of whale and sperm oil; however, the United States still remains as Canada's leading supplier of fish oil. Canada imported an average of 5.4 million pounds of marine oils over the 5-year period 1950-1954 (table 3).

	1960	1959	1958
	. . . (1,000 Pounds) . . .		
Cod-Liver Oil:			
United States	-	-	-
United Kingdom	1,353	2,099	2,169
Iceland	-	-	10
Norway	122	71	39
Netherlands	-	30	-
Total	1,475	3,200	2,218
Whale & Sperm Oil:			
United States	264	190	98
United Kingdom	298	40	69
Norway	67	68	37
Total	629	298	204
Fish Oil:			
United States	10,198	3,647	13,201
Japan	55	175	242
Norway	24	7	13
Total	10,277	3,829	13,456
Total Imports	12,381	6,327	15,878

Use in Margarine and Shortening: The use of marine oils in the manufacture of margarine increased in 1958 as against the average of the 5-year period 1950-1954, declined in 1959, and declined somewhat further in 1960. There has been an increase in the use of vegetable oils, especially soybean, and an

increase in the use of animal oils, such as lard, for margarine.

On the other hand, the use of marine oils in the manufacture of shortening increased somewhat in 1958 as against the 5-year average of 1950-1954, fell off critically in 1959, but recovered by some 2 million pounds in 1960 (table 4). Competition from soybean in 1961 for both margarine and shortening should not be as strong, since soybean has lost its price advantage.

	1960 ^{2/}	1959	1958	5-Year Avg. 1956-60
 (1,000 Pounds)			
Margarine:				
Production	166,641	152,473	145,607	144,015
Marine oils used	12,386	12,777	19,806	15,775
Percentage of total oils used	9.1	10.4	16.8	13.8
Shortening:				
Production	164,423	160,876	163,288	159,575
Marine oils used	7,526	5,379	16,741	15,464
Percentage of total oils used	4.6	3.3	10.0	9.7

1/Refined-oil basis.
2/Preliminary.

Production: Canadian Atlantic coast production of marine oils did not fluctuate significantly from 1958 to 1960, when compared with the 5-year average of 1956-1960. A decline was evident in 1959, but a slight recovery occurred in 1960.

	1960	1959	1958	5-Year Avg. 1956-60
	. . . . . (1,000 Pounds)			
Atlantic Production:				
Cod Oil	8,006	8,037	5,954	7,626
Other	4,589	4,358	7,538	5,934
Total	12,595	12,395	13,492	13,560
British Columbia Production:				
Herring oil	16,489	45,564	39,626	30,481
Total Production	29,084	57,959	53,118	44,041

West Coast or British Columbia marine oil production increased in 1958 and 1959 as compared with the 5-year average of 1956-1960, but declined substantially in 1960 due to heavy stocks, labor disputes, and limited activity in the herring fisheries (table 5). (U. S. Foreign Agricultural Service Report, Ottawa, April 14, 1961.)

Note: Also see *Commercial Fisheries Review*, April 1961 p. 48, August 1960 p. 44.

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Canada (Contd.):

NEW BRUNSWICK FISH MEAL PRICES, MAY 1961:

Fish-meal prices (60-percent protein) quoted by the New Brunswick producers early in May 1961 averaged about C\$102 a short ton (\$1.70 a protein unit) for both exports and domestic sales. Due to short supply and good demand fish-meal prices have advanced steadily since February and as of early May were up about \$20 a ton from the \$81-84 a ton (\$1.35-1.40 a protein unit) quoted by producers in mid-February this year. (United States Consulate, Saint John, N. B., May 12, 1961.)

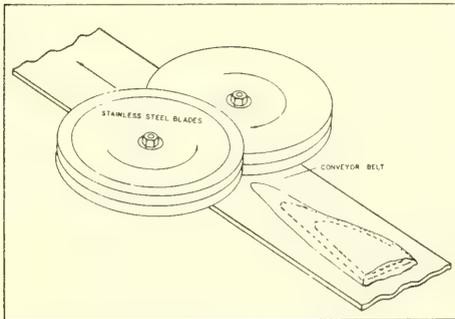
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NEW SLICING MACHINE FOR LARGE COD FILLETS DEVELOPED:

Experiments by the Halifax Technological Station of the Fisheries Research Board of Canada have shown that a substantial increase in the efficiency of candling cod filelets for parasites can be expected if the filelets are first sliced longitudinally into slices a half inch thick before candling. A machine to perform this task of slicing the cod filelets into suitably sized slices has been designed and developed at the Station.

The first machine designed at the Station was a large machine measuring approximately 7 feet long by 10 feet wide, and was constructed of aluminum and steel.

The cutting mechanism of this slicing machine was a multi-band knife, in which four knives were crossed to form a figure "8." Each knife made two cuts, one from left to right, and one from right to left. Thus the tendency for the filelets to be pulled to either side of the conveyor belt was eliminated.



Drawing showing blade arrangement on fillet slicing machine.

The filelets were fed to the cutting mechanism by a 24-inch wide white rubber conveyor belt. As the belt approached the knives, it turned downward at an angle of 45-degrees in order that gravity could assist the friction of the fillet on the conveyor belt in pushing the fillet through the band knives. Water sprays were used both to lubricate the band knives and to keep the conveyor belt free of particles of fish. Hardened steel guides kept the knives at the proper spacing. The bearings used were standard ball bearings for the knife pulleys and babbit bearings for the conveyor system.

Tests on the machine were carried out in various fish plants in Prince Edward Island and Nova Scotia. On the basis of the tests, it was decided that this machine was larger than desirable and that a smaller machine requiring less maintenance to the cutting mechanism would be advantageous in adapting the slicing machine to existing cutting lines. Accordingly, work was started on the design and construction of a more compact machine employing circular knives in place of the previously used multiple-band knives. This machine was the prototype for the present fillet slicing machine.

The frame of the fillet slicing machine is constructed of two sides cut from 1/4-inch-thick aluminum 65ST alloy plate, mounted side by side with front, bottom, and rear panels bolted together with 2-inch by 2-inch aluminum angle gussets. This forms a box-like structure upon which bearings, conveyor belt, and knives, etc. are mounted. All joints are sealed with an aluminum-asphalt type of cement and a drain pipe is provided in the bottom to lead off water used for lubrication of knives and clearing the conveyor belt.

The frame is supported on a single leg of 9-inch diameter aluminum tubing which is, in turn, welded to a base of aluminum slats. The height of this stand is such that the working surface of the feed conveyor belt is 36 inches above floor level. The stand is bolted to the frame with four aluminum bolts so that it can be removed for shipment.

There are two 8-inch wide white rubber conveyor belts. The first, or feed belt, feeds the filelets tail first, skin side down, into the rotating knives at a speed of 48 feet per minute. The second belt serves to remove the sliced filelets from the machine and convey them either to another belt, water trough, or other containers. The elevation angle of the discharge conveyor may be adjusted from horizontal to a maximum of 30 degrees.

Both belts are driven from the same 1/4-hp. totally enclosed gear motor by two 3/8-inch pitch-chain drives, one going to the drive pulley of each conveyor. All shafts used in the conveyor system are 18.8 alloy stainless steel.

The bearings used for the conveyor system are of stainless steel construction, with an easily replaced, inexpensive liner of nylon forming the bearing surface. These bearings will last satisfactorily with oil, grease, or water as the lubricant or if necessary without lubrication, with no danger of damage to shaft or bearing. Nylon bearings seem to be well suited for operation under wet or corrosive conditions such as are often found in fish cutting plants.

On the sides of the frame, the shafts and bearings for the rotary knives are bolted vertically. These consist of two cast aluminum housings supporting stainless steel shafts with two ball bearings each. Three 15-inch-diameter No. 420 stainless steel circular knives are attached to the top of each shaft with spacers fitted between the blades to keep them 1/2 inch apart. The two sets of knives overlap by 3 1/2 inches. All the knives have single-bevelled cutting edges and are so arranged that the unbevelled sides of opposing blades rub lightly giving a cutting action similar to a pair of scissors, thus reducing the tendency of the blades to throw the fillet in the direction of rotation of the blades. The blades are lubricated with water to further reduce this tendency. The lower ends of the shafts are joined by a pair of spur gears to ensure that both blades turn at the same speed of 220 r.p.m. and in the correct direction relative to each other. One shaft is extended to accept a 12-inch-diameter V-belt pulley driven from a 1-hp. 1150-r.p.m. totally enclosed electric motor mounted vertically on the side of the machine.

Before assembly all aluminum components were degreased with trichlorethylene and given a phosphoric acid etch. This was followed by a thin coat of zinc chromate primer sprayed over the metal. The machine was then assembled and received one coat of aluminum paint and a finish coat of white enamel.

Tests have shown that approximately 80 percent of the large filelets split with this machine would be suitable for sale as fresh or frozen filelets. The remaining 20 percent, being for the most part small pieces cut from the top of the fillet, would be suitable only for use in fish blocks for use in the

Canada (Contd.):

manufacture of fish sticks. The assessment is arbitrary and would depend upon the size of package, market, and to some extent on the policy of the producer. (Canadian Fisherman, April 1961.)

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PRICES FOR BRITISH COLUMBIA
HERRING OIL AT TORONTO,
JANUARY 1960-MARCH 1961:

The following prices for British Columbia herring oil delivered at Toronto, Canada, were furnished on May 5, 1961, by the United States Foreign Agricultural Service in Ottawa: In Canadian cents per pound: 1960: January 8.58; February 8.32; March 8.25; October, November, and December 8.93. 1961: January 9.07; February 9.57; and March 9.67. (U. S. Foreign Agricultural Service Report, Ottawa, May 5, 1961.)

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STUDIES INDICATE "WETNESS" IN
FISH FILLET BLOCKS DUE TO
POOR DRAINING BEFORE FREEZING:

Many Canadian plant operators have trouble in producing fish fillet blocks for eventual use as fish sticks. Fish stick processors claim the blocks are too "wet" and that there is too great a loss in broken sticks during frying and packing. What is the source of this "wetness"? And how does it affect the fish sticks so that they are more fragile and easily broken?

The most obvious answer to the first question is the drip which is present in varying degrees in all frozen fish. This drip is the excess water which drips out of a piece of frozen fish on thawing and which is not absorbed by the tissues. In a freshly frozen good quality fish it may be less than 5 percent, but in one stored for several months at too high temperatures, it may be as high as 40 percent or even higher. It will be less in good quality fish than it will be with poor-quality fish. Slow freezing results in much more drip than rapid freezing. It used to be thought that this was because the slower rate of freezing resulted in the build-up of large ice crystals which then allowed the drip to escape on thawing. However, the real factor is the ability of the proteins to re-absorb the fluid released by the melting of ice crystals during thawing of the muscle tissue. Most fish muscle tissue contains about 80 percent water but only about 18 percent pro-

tein. Such factors as slow freezing, long storage, storage at temperatures above about 0° F., drying out or freezer burn, all damage the protein, and decrease its capacity to hold water.

These factors are those which affect the storage quality of frozen fish. The damage to the protein results in less moisture-holding capacity with increased drip and a parallel deterioration in texture, or increased toughness. As a result, when the sticks cut from these stored blocks are fried, considerable drip may be formed. This will result in some wetness and softness but since the protein will be tougher, the only effect should be to reduce the eating quality of the sticks rather than increase the incidence of broken sticks.

Drip may be almost eliminated by giving the fillets a brine dip prior to freezing. After a few seconds in brine, half saturated or less, the fillets absorb sufficient salt to increase the affinity of the muscle proteins for water. This effect is retained in the frozen product, and the drip during thawing is reduced to less than five percent unless very poor freezing and storage conditions are used. The use of brining, however, has declined in recent years. One reason may be that since much frozen fish is now cooked without prior thawing, the disadvantages of drip is avoided. Another is its tendency to promote fat oxidation and rancidity, which may become serious on long storage, or with fatty species. Brining, however, does eliminate the drip problem and should be useful in the non-fatty species where long storage is not required.

Considering this, it is necessary to look further for the main cause of broken fish sticks. Perhaps the answer may be found by taking a look at a typical fish block processing and packing line. As the fillets come from the skinning machines, they are usually quite wet. They may be carried in flumes and may also pass through a tank of brine or antibiotic before they arrive at the packing table. Almost always they accumulate somewhere along the way in piles, and inspection will show that the fish in draining build up puddles of fluid which does not runoff. They are put into the trays, which in the case of blocks are usually about 2 inches thick, about 11½ inches wide, and 21 inches long, holding about 17 pounds of fillets. Further draining occurs at this point, and a visible development of small and large water pockets may be observed among the fish in the tray. The extent of ac-

Canada (Contd.):

cumulation of this water obviously depends on the amount of draining of the fillets prior to being packed. But it also depends on the time elapsing between packing and going into the freezer. It is influenced also by the quality of the fish, a soft fish draining much more than a good-quality firm fish.

The measures necessary to minimize this formation of water pockets in the blocks are: (1) the fillets should be allowed to drain adequately before being packed. This can only be done in single layers, probably best on screens of some type if satisfactory sanitary measures can be found. (2) the trays should go immediately into the freezer after packing so that there is no time for drip formation and water build-up to occur in the blocks. In practice, the stringency of the measures to be employed will be governed by the type and quality of the fish being processed.

A question that comes up is, what happens to this water when the blocks are frozen? If there is a lot of drip and excess water, some of the juice gets squeezed out during the freezing between the edges of the cartons, and onto the plates. Deformation of the cartons may occur; the cartons and the freezers become very messy. Examination of the frozen blocks where excess water was allowed to accumulate will show ice pockets of varying size, sometimes 2 or 3 inches square, and $\frac{1}{2}$ inch or more in thickness. This, however, is of little concern to the operator at this stage--but what of the fish stick frying operator? He saws up the blocks, ice as well as fish, breads and batters the sticks, and fries them. But now the ice melts. Some sticks will have only water in one end or the other, but more may have a layer of ice between pieces of fillet causing them to separate and the sticks to break apart. Thus a much greater loss due to broken sticks will result than if good blocks were used. This is the most important cause for the complaints about "wet" fish blocks, and why the block-producing plants must strive to lessen the accumulation of liquid in the blocks just prior to freezing.

--By W. J. Dyer, Biochemist,
Halifax Technological Station
Fisheries Research Board of Canada,
(Trade News, November 1960.)



Chile

FISH MEAL AND OIL EXPORTS
INCREASED SHARPLY IN 1960:

In 1960, Chile exported a record quantity of fish meal and its first sizable tonnage of fish oil. Fish meal exports in 1960 exceeded 31,000 short tons--an increase of 60 percent from 1959. Two-thirds of 1960 exports went to the United States.

Year	United States	Western Europe	Other	Total
	..... (Short Tons)			
1960	20,971	9,928	136	31,035
1959	7,159	10,000	1,903	19,062
1958	6,958	2,424	950	10,332
1957	1,160	3,696	111	4,967
1956	1,188	3,326	-	4,514
1955	5,918	3,621	-	9,539
1954	66	1,463	-	1,529

Chile exported substantial quantities of fish oil in 1960 for the first time. Shipments totaled 6,585 tons as compared with only 65 tons in 1959. Virtually all of 1960 exports went to Western Europe, principally to the United Kingdom, West Germany, and Norway. (Foreign Crops and Markets, U. S. Department of Agriculture, April 10, 1961.)

Note: Also see Commercial Fisheries Review, May 1961 p. 45.

PRODUCTION, AND EXPORTS OF
WHALE OIL, FISH OIL,
AND FISH MEAL:

Chile's production of whale oil decreased from 7,409 metric tons in 1959 to 7,049 tons in 1960. Production is expected to increase to 7,500 tons in 1961. Domestic consumption of whale oil decreased sharply in 1960 as compared with 1959, while exports were up--but

Table 1 - Chile's Production and Disposition
of Whale Oil, 1959-1961

Item	1961	1960	1959
	(Forecast)	(Preliminary)	(Revised)
	..... (Metric Tons)		
Production	7,500	7,049	7,409
Disposition:			
Exports	2,000	1,769	260
Domestic disappearance ^{1/}	5,500	5,280	7,149
Total Disposition	7,500	7,049	7,409

^{1/} Breakdown into edible and industrial not available; mostly used for domestic margarine production.
Note: (1) Marketing season begins January 1;
(2) Imports negligible and not listed; stocks data unavailable.

both are expected to increase slightly in 1961, (table 1). Of the total 1,769 tons of whale oil exported in 1960, 1,071 tons went to the United Kingdom, 556 tons to the Netherlands, and 142 tons to West Germany. These were Chile's largest whale oil exports in several years.

Chile (Contd.):

Total whale oil exports may amount to 2,000 tons in 1961. Chile exported 200 tons of whale meal in 1960, all of which was shipped to the United Kingdom.

Species	1960		1959	
	.. (Number) ..			
Blue whale	131		80	
Finback	52		70	
Humpback	2		3	
Sei whale	13		17	
Right whale	-		1	
Sperm whale	1,886		2,062	
Total	2,084		2,233	

The total number of whales captured fell from 2,233 in 1959 to 2,084 in 1960. A decrease in the number of sperm whales captured was the principal reason for this decline (table 2).

Product	1960		1959	
	.. (Metric Tons) ..			
Sperm oil	5,641		6,435	
Whale oil	1,408		974	
Total oil	7,049		7,409	
Meat	200		250	
Whale meal	1,400		1,500	
Bone oil ^{1/}	2,000		1,900	

^{1/} Principally from whales, but includes an unspecified quantity of bone oil from other marine animals.

Chile utilized her whale catch for the production of sperm oil, whale oil, meat, meal, and bone oil, but due to the drop in the whales taken in 1960, production of those products also decreased (table 3).

Chile's production of fish oil in 1960 was estimated at 2,534 tons as compared with 1,403 tons in 1959. There were no imports of fish oil either in 1959 or in 1960. In 1960, Chile exported 3,054 tons of fish oil. The United States was the least important buyer, purchasing only 201 tons (table 4). On the other hand, the United States was by far the most important buyer of Chilean fish meal with 12,018 tons out of a total 18,435 tons exported. This was a large increase over 1959, when the United States bought only 3,508 tons (table 5).

Destination	Quantity	
	Metric Tons	
United States	201	
Germany	1,267	
Norway	911	
Denmark	675	
Total	3,054	

Chile's 1960 production of fish meal more than doubled that of 1958, increasing from

Table 5 - Chile's Exports of Fish Meal by Country of Destination, 1959-1960

Destination	1960		1959	
	.. (Metric Tons) ..			
United States	12,018		3,508	
Belgium	450		491	
Bolivia	2		1	
France	900		-	
Germany	905		3,121	
Italy	750		-	
Netherlands	1,750		3,227	
Mexico	100		300	
Spain	1,500		-	
United Kingdom	60		-	
Venezuela	-		1,016	
Total	18,435		11,664	

18,779 tons to 38,686 tons. Most of this increased production was consumed domestically in 1959 and 1960; however, exports increased sharply in 1960, rising to 18,436 tons.

Table 6 - Chile's Production, Consumption, and Exports of Fish Meal, 1958-1960

Year	Production	Domestic Consumption		Exports
		(Metric Tons)		
1960	38,686	20,250	18,436	
1959	30,673	19,007	11,666	
1958	18,779	9,373	9,046	

There were no imports of fish meal in 1960. The total amount of fish meal to be exported in 1961 is expected to amount to 20,000 tons. (U. S. Foreign Agricultural Service Report Santiago, April 14, 1961.)



Costa Rica

FISHERMEN'S COOPERATIVE ESTABLISHED:

Sixty independent fishermen at Puerto Limon on Costa Rica's Caribbean Coast have formed a cooperative to be known as the "Cooperativa de Pesca de la Zona Atlantica." The provisional President and Secretary of the cooperative are two Costa Ricans of Chinese descent.

The cooperative was formed in January this year, but only now are the members actively attempting to implement the objectives of the group. It is the intent of the cooperative to develop fishing for spiny lobster to a much greater extent and, also, to assist the Government in the enforcement of conservation measures which it has promulgated to assure that the spiny lobster fishery will not be needlessly ruined by careless exploitation.

It is probable that the members of this cooperative will constitute a potential market

Costa Rica (Contd.):

for small marine engines, vessel hardware, and other products. Each of the 60 members of the cooperative owns his own vessel, and many of them are either planning or in the process of building new and larger vessels. (United States Embassy in San Jose, April 14, 1961.)



Denmark

FISH FILLETS AND BYPRODUCTS EXPORTS, JANUARY-FEBRUARY 1961:

Denmark's exports of fresh and frozen fish fillets and blocks in the first two months of 1961 totaled 11.4 million pounds, an increase of 97 percent as compared with the same period in 1960. Exports of cod and related species during the period were up 72 percent, and flounder and sole increased 67 percent from the same period in 1960. Herring added to the increased 1961 exports as none were shipped during the comparable period in 1960. Denmark shipped 1.1 million pounds of frozen fish fillets and blocks (almost entirely cod and related species) to the United States during the first two months of 1961.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks, and Byproducts, January-February 1961		
Product	January-February	
	1961	1960
	.. (1,000 Lbs.) ..	
Frozen Fillets and Blocks:		
Cod & related species	6,356	3,700
Flounder & sole	3,033	1,817
Herring	1,862	-
Other	136	258
Total	11,387	5,775
	.. (Short Tons) ..	
Byproducts:		
Fish meal, fish solubles, and similar products	5,182	4,672

Note: Shipments from the Faroe Islands and Greenland direct to foreign countries not included.

During January-February 1961, Denmark's exports of fish meal, solubles, and similar products were 11 percent more than the comparable two months in 1960.

* * * * *

FISH MEAL AND SOLUBLES PRICES, APRIL 1-8, 1961:

During the week ending April 8, 1961, the only export order for Danish fish meal was a large order from Poland at 890 kroner a met-

ric ton (US\$117.07 a short ton) f.o.b. Esbjerg, the same price as was reported early in March for a similar order.

Moderate sales of fish solubles averaged 715 kroner a metric ton (\$94.06 a short ton). This price represented a substantial increase over a late February price of about \$68.40 a short ton. (United States Embassy, Copenhagen, May 12, 1961.)

* * * * *

FISH-MEAL PRICE JUMPS DUE TO DEFAULT ON FUTURE CONTRACTS:

Due to the sudden bankruptcy of a Portuguese supplier of Peruvian fish meal on the Dutch market, the Dutch importer who had contracted with this firm for the delivery of 180,000 metric tons of fish meal during 1961 at a price of US\$0.16 per 100 kilograms per 1 percent protein content (\$94.35 a short ton, 65 percent protein) is now in serious difficulties because the importer is under contractual obligation to supply that amount at that price to Dutch end-users. Dutch fish-meal prices rose in a few days following this announcement to \$0.24 per 100 kilograms per 1 percent protein content (\$141.52 a short ton, 65 percent protein). Local fish meal traders predict that the cancellation of this large order will be a boost for Danish fish-meal production which has been extremely low in recent years because of competition from Peruvian fish-meal supplies. (United States Embassy, The Hague, Netherlands, May 2, 1961.)

* * * * *

FISHERIES TRENDS, FIRST QUARTER 1961:

Better foreign demand for herring and other fish meals has improved expectations for Denmark's industrial fisheries. First quarter 1961 exports of fish meal were about 75 percent above the exports during the first quarter of 1960, and futures prices had jumped to 850 kroner per metric ton (US\$111.37 a short ton) from the 700 kroner (US\$91.72 a short ton) level which prevailed in the first part of 1961. The winter herring catch was running slightly ahead of 1960, as were the catches of most varieties of both industrial and food fish. Shipments of fresh and frozen fish were up about 20 percent.

With ever-growing demand for food fish, and with prospects for some recovery in the fish meal sector, Danish fishing circles now

Denmark (Contd.):

predict that 1961 output may reach the record 1959 level. At the same time they continue to press for action that will both expand and insure a continued market for those products within the European Economic Community.

First quarter 1961 exports of Faroe Islands' fish were slightly in excess of those recorded during the same period in the prosperous year of 1960. Meanwhile, the Greenland Trade Department was readying plans for increasing output of Greenland fish and shrimp during the forthcoming summer season. However, the current transportation strike may prevent construction of shrimp processing and freezing plants in Greenland during the coming summer as has been planned. (United Embassy in Copenhagen, April 19, 1961.)

* * * * *

FOURTH INTERNATIONAL FISHERIES TRADE FAIR, 1962:

The 4th International Fisheries Trade Fair is scheduled in Copenhagen for April 14-23, 1962. As of early 1961 ten nations were represented among the firms who had already booked exhibition space.

The fisheries trades and the fishing industries are still the center of a whole group of interests to be represented in the Fair. A very comprehensive display of the newest developments in vessel motors will be shown.

The Fair is backed by the Danish Fisheries Council and the Chamber of Manufacturers. Details on the Fair are available from the International Trade Fair, Puggaardsgade 10, Copenhagen V, Denmark.

* * * * *

SINGLE-BOAT FLOATING TRAWL EXPERIMENTS:

The Danish fish cutter *Akaroa* of 90 tons arrived in Norway with two Esbjerg fishermen to initiate experimental fishing to test a new type of single-boat floating trawl. The tests, which will take place on the grounds off Egersund, Norway, are supported by the Danish Ministry of Fisheries, which, according to the newspaper *Vestkysten*, has made available a guarantee of Kr. 20,000 (US\$2,900)--*Fiskets Gang*, April 13, 1961.



Ecuador

SHRIMP EXPORTS, FIRST QUARTER 1960 AND 1961:

During the first three months of 1961 Ecuador exported about 1,391,000 pounds of shrimp. This amount was about 3.3 percent higher than the 1,347,000 pounds exported in the first quarter of 1960. The exports by months for the first three months of 1961 were: January 476,000 pounds, February 452,000 pounds, and March 463,000 pounds. (United States Embassy in Quito, May 1, 1961.)



France

FISH MEAL AND OIL PRICES, APRIL 1961:

Average fish meal and oil prices reported for April 1961 by the head of the French Fish Meal Manufacturers Association were as follows:

Fish Meal	Protein Content (%)	NF/Metric Ton	US\$/Short Ton
French fish meal ^{1/}	55	500	91.92
" " " 1/	60	540	99.27
" " " 1/	65	620	113.93
Peruvian fish meal ^{2/}	60-65	590-600	108.42-110.25
Angola fish meal ^{2/}	65	580-590	106.58-108.42
Norwegian herring meal ^{2/}	73	730-750	134.14-137.82
Fish Oil	Fatty Acid Content (%)	NF/Metric Ton	US\$/Short Ton
French oil (herring):			
Dark	10	550	101.06
Light	5-6	600	110.25
^{1/} Ex-plant loaded aboard car or truck, 15 metric tons minimum.			
^{2/} Loaded aboard car French port, customs paid, 15 metric tons minimum.			
Note: Values converted at rate of 4,937 new francs equal US\$1.			

(United States Embassy in Paris, May 19, 1961.)



German Federal Republic

COMPANY DEVELOPS FREEZING UNIT FOR FACTORYSHIP TRAWLERS:

A West German company in Bremerhaven has developed a new belt system for the continuous freezing of fish aboard its factory trawlers. The German company claims that the new equipment will contribute significantly to the efficiency of its trawler operations.

The freezing machine is built in the form of a tunnel, about 40 feet long, 8 feet wide, and 4.5 feet high. Within the freezing tunnel, two synchronized bracket-joint chain belts are rotated by a variable gear, powered by an electric motor of 0.6 hp., which permits the adjustment of the belt speed from 27 to 216 minutes per complete revolution. The two belts carry a total of 260 compartments (each about 4 inch-

German Federal Republic (Contd.):

es wide, 7 inches deep, and 59 inches long) formed by removable aluminum plates mounted on the bracket joints of the belts. Viewed from the side, the compartments have the form of a square-cornered U.

The fish placed in these compartments freeze quickly to the walls of the aluminum plates. The rear cog wheels moving the belts are constructed to permit the compartments to retain their U-shape while changing direction. This prevents the frozen fish from dropping out. When the compartments return to the front of the tunnel, they run over round cog wheels which cause the walls of the compartments to spread and change their form from a U-shape

to a W-shape, thus shaking out the frozen fish over the discharge chute.

The compartments can also be divided into two sections, each to be filled with about 10 pounds of herring emersed beforehand in an alginate solution to prevent the herring from becoming rancid and drying out. The blocs of frozen herring thus obtained are again treated with the alginate solution before storage, as a supplementary precaution.

The compartments can also be removed completely and a plastic band installed to permit the individual freezing of filleted herring, which reportedly will then be vacuum-packed in transparent plastic bags. The fillets will drop from the plastic band at the end of the tunnel. They are pushed by plates mounted on the belts along the smooth bottom of the tunnel to the discharge chute at the tunnel's front.

The freezer tunnel is equipped with four steel laminar evaporators with an evaporating surface of 295 square

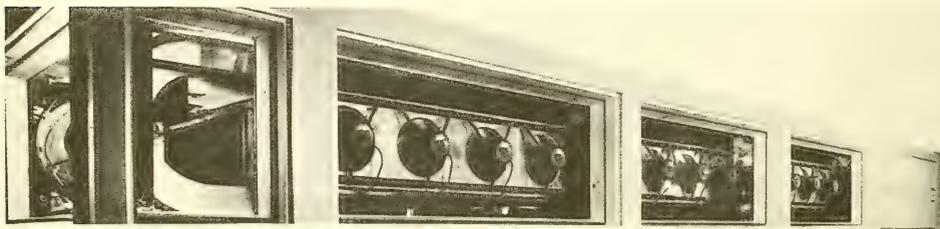


Fig. 1 - Over-all view of freezer tunnel for the continuous freezing of fish aboard factory trawlers.

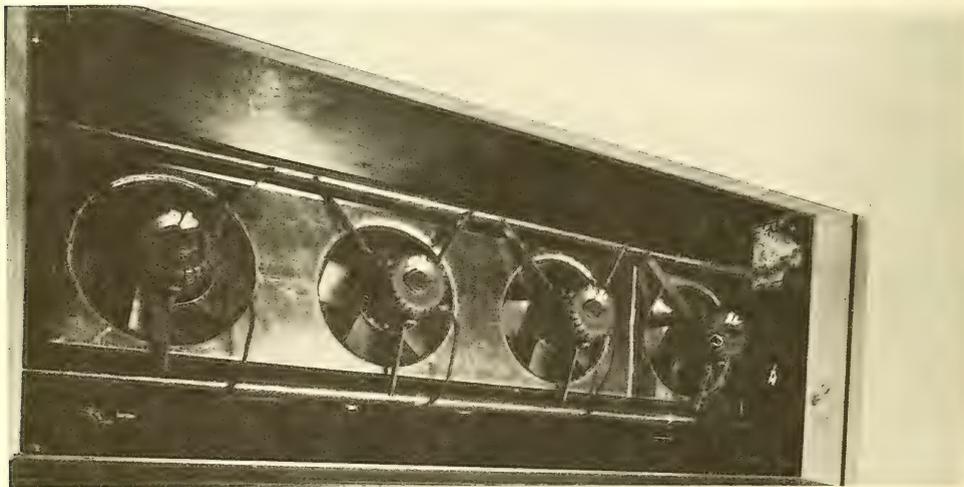


Fig. 2 - Close-up of one section of freezer tunnel.

German Federal Republic (Contd.):

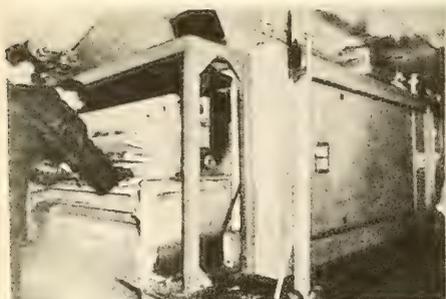


Fig. 3 - Inserting fish in removable aluminum plate compartments.

meters each, capable of reducing the air temperature in the tunnel to -30°C . (-22°F .). Four electric fans with a capacity of 7,100 cubic meters (250,737 cubic feet) per hour (required power 1,6 kw.) installed in front of the evaporators circulate the cold air around the belts carrying the fish. The maximum freezing capacity of the new equipment is stated to be 0,85 metric ton (about 1,874 pounds) of fish per hour, based on reducing the temperature in the core of the fish to -10°C . (14.3°F .).

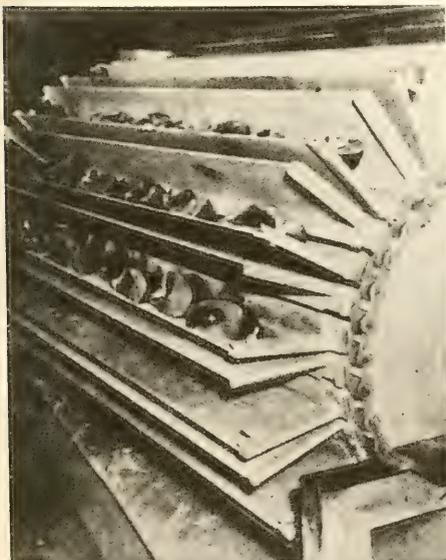


Fig. 4 - Viewed from the side, the compartments have the form of a square-corned V.

The West German company attaches much importance to the fact that the new equipment can be adapted to the freezing of herring fillets because it will permit the use of factory trawlers in the herring fishery. Previously, the trade held the conviction that factory trawlers could be operated profitably only in the white fish fishery in distant waters. Employing the new method of freezing filleted herring, however, factoryships will reportedly be able to land about 500 metric tons of high-quality herring fillets. The factoryship trawler has the added advantage of being able to process herring so fast through two filleting machines (at the rate of about 1.2 tons of round herring per hour) that it must be supplied part of the fish caught by other fishing boats.

The German company states that the cost of the new machine is about DM 330,000 (US\$82,500), and that its installation aboard a trawler should amount to approximately 8 percent of the construction cost. The firm has applied for a patent on the freezer. (United States Consulate General, Bremen, April 12, 1961.)

* * * * *

DEVELOPMENTS IN FROZEN FOODS MARKETING:

At the annual meeting of the German Frozen Food Institute held April 18-19, 1961, in Wiesbaden, the growing importance of food preservation through freezing was discussed. The individual working committees of the Institute discussed some of the pending problems, and prepared drafts on: (a) directives on the handling of frozen food at all trade levels; (b) directives on temperature control in frozen food storage installations; (c) foundation of a voluntary quality control committee which will supply information and advice to the frozen food trade as well as to consumers (committee will receive financial support from the German Federal Food and Agriculture Ministry); (d) extension of advertising and public relation work; and (e) establishment of quality grades and standards for frozen food products.

From experiences in the German frozen food market during recent years, future market and consumption trends predicted by the market research experts of the Frozen Food Institute were:

1. The increase in frozen food sales is no longer in conformity with the growth in the number of frozen food cabinets in stores. That means sales are now growing faster than the number of cabinets available. This development resulted from increased advertising, growing popularity, and improved and enlarged displays of frozen food products in the shops. The distribution of frozen food cabinets in store is presently undergoing a change.

German Federal Republic (Contd.):

The early development stage, when more and more retail stores newly installed one smaller or larger display and sales cabinet, is now being followed by the second stage where the shops with already existing installations are increasing their frozen food storage and display space by setting up second and third cabinets. The increased space will be primarily

"heat'n eat" products. (U. S. Foreign Agricultural Service Report, Bonn, May 4, 1961.)

* * * * *

FISH MEAL PRICES, MAY 7, 1961:

Prices reported at Hamburg Commodity Exchange as of May 7, 1961, for fish meal delivered ex-Hamburg warehouse, or c.&f. West German sea port were as follows:

Type of Fish Meal	Protein Content (%)	Delivery	DM/Metric Ton	US\$/Short Ton
German fish meal.....	50-55	prompt/June 1961	500	113.40
" " ".....	55-60	" " "	520	117.94
" " ".....	60-65	" " "	540	122.47
" " " Std. brands	60-65	May "	597.5	135.51
Icelandic cod meal.....	65-70	" "	615	139.48
Peruvian fish meal.....	65-70	" / "	530	120.30
" " ".....	65-70	June-July "	540	122.47
" " ".....	65-70	Aug.-Dec. "	550	124.74
Danish herring meal.....	72-75	May "	610	138.35
" " ".....	72-75	June-Sept. "	602.5	136.65
Angola fish meal.....	65-70	May "	547.5	124.17

Note: Values converted at rate of 4.0 deutsche marks equal US\$1.

used for the necessarily larger supply of poultry.

2. A new development is also in sight with regard to the shipping and distribution of frozen food within Germany. A number of potential enterprises have now specialized in the general transport of frozen food and special fast plant-to-store deliveries.

3. Fish consumption is expected to increase further. With the growing capacity of vessels with deep-freeze installations aboard, more domestic first-quality, sea-fresh fish products will become available in areas far away from the coast. In addition to the growing German production, it is expected that frozen fish imports from the Scandinavian countries will increase considerably.

West Germany consumed 5,100 metric tons (5,622 short tons) of frozen fishery products valued at DM10 million (US\$239,800) in 1960 as compared with 3,000 metric tons (3,307 short tons) valued at DM6 million (US\$143,900) in 1959.

4. Market developments for precooked, ready-to-serve products are hard to predict. These food items are fairly new in the German market, particularly in frozen form. However, an increased number of firms has recently taken up the production of frozen

As compared with April 7, 1961, fish-meal prices on the Hamburg exchange on May 7, 1961, were up sharply for domestic and Peruvian fish meal.

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SUPPLY, DISTRIBUTION, AND PRICES OF FISH MEAL, 1959-1960:

Despite a 12-percent decrease in West Germany's total fish meal production in 1960 as compared with 1959, the supply and distribution increased. This was due to a 21-percent increase in imports (see table 1).

Foreign Trade: Imports of Peruvian fish meal increased to 133,000 metric tons in 1960--about one-half more than in 1959. This amount represented more than two-thirds of total fish meal imported in 1960. Total fish meal imports increased from 156,000 tons in 1959 to 197,000 tons in 1960.

From 1959 to 1960 total fish-meal exports remained small and were mostly to the Soviet Zone of Germany.

Consumption: Consumption of fish meal in Germany increased by 14 percent in 1959, 17 percent in 1960, and is expected to increase additionally in 1961. Favorable prices have induced German hog and chicken producers to use fish meal in feed rations.

German Federal Republic (Contd.):

Table 1 - West Germany's^{1/} Supply and Distribution of Fish Meal, 1959-1960

Year	Supply				Distribution			
	Beginning Year Stocks	Total Production	Production ^{2/}	Imports	Total Supply	Exports ^{5/}	Consumption	End Year Stocks
1960:	6	82	78	197	285	7	277	1
Cod meal		3/13						
Fish meal		3/52						
Herring meal		3/13						
Other meal		4/4						
1959:	2	93	89	156	251	8	237	6
Cod meal		3/15						
Fish meal		3/53						
Herring meal		3/21						
Other meal		4/4						

1/Includes West Berlin; Saarland since July 1959.

2/Production in plants with more than 10 employees.

3/Requirements:

	Minimum Percent		Maximum Percent		
	Protein	Ca Phosphate	Fat		Salt
Cod meal	60	18	3		3
Fish meal	55	15	8		5
Herring meal	55	8	12		8

4/Including production from shrimp.

5/Including exports to Soviet Zone: Approximately 4,000 metric tons in 1960; approximately 7,000 metric tons in 1959.

Prices: With the exception of the latter half of 1958, Peruvian fish meal undersold German fish meal at Hamburg from mid-1957 through early 1961 (see fig. 1). Prices for both German and Peruvian meal fell sharply after May 1959, recovering briefly in late 1960, only to decline again early in 1961.

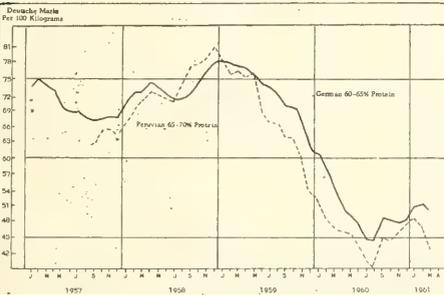


Fig. 1 - Prices of West German and Peruvian Fish Meal at Hamburg, Germany, 1957-March 1961.

Raw material available for fish meal production decreased by 14 percent from 1959

Table 2 - West Germany's^{1/} Use of Whole Fish and Waste in Production^{2/} of Fish Meal and Fish Oil, 1959-1960

Item	1960		1959
	. . . (Metric Tons)		
Whole fish	106,770	145,323	
Herring waste	68,375	72,354	
Other waste	170,045	176,178	
Total	345,190	393,855	

1/Includes West Berlin.

2/Production by plants with more than 10 employees.

to 1960. Whole fish, herring waste, and other fish waste are used to produce German fish meal (see table 2).

Note: Also see *Commercial Fisheries Review*, August 1960 p. 49.

FOREIGN TRADE, PRODUCTION, AND SUPPLY OF MARINE OILS, 1959-1960:

Foreign Trade: Imports of edible marine oils increased from 121,900 tons in 1959 to 127,700 tons in 1960. During that period, total imports of industrial marine oils decreased from 23,100 to 17,000 tons. But total imports of both edible and inedible oils remained constant at about 145,000 tons. The amount of all marine oils imported from the United States declined from 22,900 tons in 1959 to 16,300 tons in 1960 (see table 1). This total has steadily decreased since 1956, when it

Table 1 - West Germany's^{1/} Imports of Edible and Industrial Marine Oils^{2/}, 1959-1960

Year & Product	Edible	Industrial	Total	Imported from U. S. ^{2/}		
				Quantity	Percentage of Total	Value
. . (1,000 Metric Tons) . .				1,000		
				Metric Tons		US\$1 Million
1960:						
Whale	69.8	9.8	79.6			
Other	57.9	7.2	65.1			
Total	127.7	17.0	144.7	3/16.3	11.3	2.6
1959:						
Whale	67.8	12.2	80.0			
Other	54.1	10.9	65.0			
Total	121.9	23.1	145.0	3/22.9	15.8	4.0

1/Includes Saarland since July 1959, and West Berlin.

2/Excludes fish-liver oils.

3/Mostly edible menhaden oil.

German Federal Republic (Contd.):

amounted to 39,000 tons. Germany's imports of marine oils from Peru have increased from 8,833 tons in 1959 to 19,200 tons in 1960. Due to the small catch of winter herring (the smallest in years), imports from Norway fell off in 1960. However, Norway was the greatest single source of liver oils in 1960, supplying 678 tons out of a total 1,510 tons. A total of 79,610 tons of whale oil and fat valued at US\$16 million was imported by Germany in 1960; Japan, The Netherlands, and Norway supplied 76 percent of the imports.

	Quantity Metric Tons	Value	
		Deutsche Mark, 1,000	US\$ 1,000
LIVER OILS:			
Imports:			
Norway	678	685	164
Other	832	746	179
Total	1,510	1,431	343
Exports:			
Denmark	646	559	134
Switzerland	409	379	91
Other	1,015	967	232
Total	2,070	1,905	457
WHALE OIL AND WHALE FAT:			
Imports:			
United States	298	233	56
United Kingdom	341	346	83
Iceland	733	634	152
The Netherlands	14,515	11,788	2,826
Norway	13,951	11,718	2,809
Portugal	1,096	815	195
Soviet Union	7,489	6,260	1,501
Union of South Africa	1,150	821	197
Guayana, British	694	554	133
Peru	1,225	885	212
Japan	31,961	27,012	6,476
Australia	5,172	4,462	1,070
New Zealand	772	671	161
Other	213	378	91
Total	79,610	66,577	15,962
Exports:			
	171	218	52
OTHER MARINE FATS AND OILS:			
Imports:			
United States	16,021	10,874	2,607
Denmark	2,921	1,873	449
United Kingdom	1,039	649	156
Iceland	1,355	889	213
The Netherlands	3,253	1,691	405
Norway	5,869	4,472	1,072
Portugal	2,578	1,505	361
Angola	5,332	3,244	778
Union of South Africa	1,334	924	221
Canada	2,252	1,629	391
Chile	1,606	995	239
Peru	19,200	12,154	2,913
Other	2,358	1,340	321
Total	65,098	42,239	10,127
Exports:			
Denmark	790	534	128
The Netherlands	2,795	1,742	418
Norway	12,126	7,856	1,883
Sweden	5,544	3,719	892
Other	429	359	86
Total	21,684	14,210	3,407

^{1/}Includes West Berlin. Excludes Soviet Zone of Germany.
Note: Values converted at rate of 4,171 DM equal US\$1.

Germany also imported 216 tons of spermaceti valued at DM 211,000 (US\$50,587) and exported 23 tons valued at DM 70,000 (USR16,783). An additional 65,000 tons of other marine fats and oils were imported with a value of US\$10 million (see table 2).

Germany's total exports of marine oils declined somewhat, from 27,400 tons in 1959 to 24,900 tons in 1960. During that period, exports of edible oils decreased from 26,000 to 20,900 tons, but exports of industrial oils increased from 1,400 to 4,000 tons (see table 3).

Year & Product	Edible	Industrial	Total
	. . . (1,000 Metric Tons) . . .		
1960:			
Whale	-	3.2	2/ 3.2
Fish	20.9	0.8	21.7
Total	20.9	4.0	24.9
1959:			
Whale	-	0.1	0.1
Fish	26.0	1.3	27.3
Total	26.0	1.4	27.4

^{1/}Includes West Berlin.

^{2/}This disagrees with amount shown in table 2.

In 1960, exports of liver oils from Germany amounted to 2,070 tons, valued at US\$457,000; Denmark and Switzerland were the main buyers. Germany's exports of whale oil were small in 1960, amounting to only 171 metric tons. A total of 21,684 tons of other marine fats and oils were exported, valued at US\$3 million.

Production: Western Germany's production of edible marine oils from domestic sources stabilized at 14,000 metric tons for both 1959 and 1960--no change is anticipated for 1961. A total of 106,000 tons of edible marine oils was used in the production of margarine and cooking oil in 1960. Of the total amount, 77 percent was used for the production of cooking oil (table 4).

Item	Margarine Production	Cooking Oil Production	Total
 (1,000 Metric Tons)		
Whale oil	8	53	61
Fish oil	16	29	45
Total	24	82	106

^{1/}Refined oil equivalent.

^{2/}Includes West Berlin.

Production of inedible marine oils amounted to only 1,000 tons in 1959 and 1960--no change is expected in 1961. Domestic production of total inedible marine fats and oils has remained small, accounting for only 6 percent of the total supply of those oils in 1960.

German Federal Republic (Contd.):

Total West German output of edible and inedible fish and marine oils declined from 24,325 tons in 1959 to 21,192 tons in 1960.

Supply and Distribution (Inedible Oils):
Western Germany's total supply and distribution of industrial or inedible marine oils,

Imports of fishery products in 1960 totaled 30,000 tons and included 8,000 tons of frozen fish, 12,000 tons of salt cod, 6,000 tons of herring, and 4,000 tons of canned fish.

Apparent per capita consumption of fishery products in 1960 amounted to 14 kilos or about 31 pounds. (Alieia, April 1961.)

Table 5 - West Germany's/ Supply and Distribution of Industrial or Inedible Marine Oils Only, 1959-1960

Year	Beginning Year Stocks	Production	Imports	Total Supply	Distribution		
					Exports	Consumption	End Year Stocks
1960	1,0	1,0	17,0	19,0	4,0	14,0	1,0
1959	1,0	1,0	23,1	25,1	1,4	22,7	1,0

(1,000 Metric Tons)

Includes Saarland since July 1959, and West Berlin.

used mostly (80 percent) for finishing leather, declined generally in 1960 as compared with 1959. Stocks were unchanged, while imports and domestic consumption dropped off. But exports increased (see table 5). (United States Embassy, Bonn, April 14, 1961.)

Note: See Commercial Fisheries Review, February 1961 p. 48.

TWELVE LARGE STERN-TYPE TRAWLERS NOW FISHING:

Twelve large modern West German stern-type trawlers are now fishing, according to the April 21, 1961, issue of Dansk Fiskeritidende, a Danish fishery trade periodical. Six have their home port in Bremerhaven, four in Cuxhaven, and two in Kiel. The stern trawler in increasing degree will prevail in the West German vessel-building program. Stern trawler number 12, the factoryship Munchen (960 gross tons), is equipped with two filleting lines and a quick-freezing plant. The vessel's bow is constructed so as to keep the forward portion as high as possible over the waves in high seas in order to protect both the crew and equipment. Of the 11 newly ordered trawlers, 9 will operate from Bremerhaven and 2 from Kiel.



Greece

FISHERY LANDINGS, IMPORTS, AND CONSUMPTION, 1960:

Fishery landings in Greece in 1961 amounted to 90,000 metric tons. Of this amount, 8,000 tons was frozen fish landed by trawlers, 7,000 tons was canned or salted, and the balance of 75,000 tons was consumed as unprocessed fresh fish.

SPONGE LANDINGS, 1960/61 SEASON:

During the 1960/61 sponge fishing season that ended in Greek waters on March 31, 1961, a total of 162,700 pounds were landed. The landings included 131,174 pounds from Cynrenacian waters, 25,353 pounds from Greek waters up to November 30, 1960, and 6,173 pounds from Greek waters during the December-March 1961 winter sponge fishing season. (Alieia, a Greek fishery periodical, April 1961.)



Greenland

NEW SHRIMP FISHING GROUND FOUND:

In the waters off Narssaq in South Greenland a new large shrimp fishing ground has been found. Greenland fishermen are enjoying record shrimp fishing, according to Dansk Fiskeritidende (March 24, 1961, issue). The cutters are landing up to 2,000 pounds of large deep-water shrimp daily, and an announcement over the Greenland radio directed all the shrimp cutters in North Greenland to Narssaq. Similarly, it has been necessary to hire additional shoreworkers in the shrimp plants to process the increased production. (Fiskets Gang, April 13, 1961.)



Iceland

ATTITUDE REGARDING THE COMMON MARKET AND EUROPEAN FREE TRADE ASSOCIATION:

Two interviews with Iceland's Minister of Commerce published by the newspaper Althyðubladid in February 1961 show that Iceland has not reached any final conclusion as

Iceland (Contd.):

to whether she will join the European Common Market or the European Free Trade Association (EFTA). The Minister of Commerce pointed out that the very existence of these trading groups poses an increasingly serious problem to Iceland which depends very much on trade for its livelihood. He declared that Iceland's trading position would inevitably deteriorate if it continued to remain outside either group.

As the Minister explained in the interviews, many matters relating to trade in fish have not yet been definitely decided upon within either the Common Market or the EFTA. He believes Iceland should exert what influence it can within one of these organizations to obtain the freest possible trade arrangements for seafood products.

Although the growth of international trade has been far faster within the Common Market area and the population is greater than in the EFTA, the Minister pointed out that the practical possibilities for joining would be easier in the case of the EFTA than the Common Market.

He cited the fact that Icelandic Manufacturing industries are now run in large measure under the protection of high tariffs. Within the EFTA there was established a precedent for the protection of industry in small nations when Portugal received protectionary concessions upon joining the EFTA. No such precedent exists within the Common Market, however. Likewise in the case of Finland there was a precedent established for a country with a large Soviet Bloc trade in its association with the EFTA, despite its trade with the Eastern Bloc. Such an exception would likewise be necessary in the case of Iceland.

Once a member, the existence of majority rule within the Common Market and voting in proportion to size would mean that Iceland would have practically no influence within that organization. He said this was why countries such as Denmark and Norway did not want to join the Common Market. A more flexible organization like the EFTA, therefore, would appeal more to Iceland.

The Minister, in reply to a question, pointed out that in March 1957, representatives of 6 European states signed the Rome Treaty on the establishment of a Common

Market. Parties to this treaty were France, Germany, Italy, Belgium, Holland, and Luxembourg. According to this treaty, all import duties and restrictions on trade among the member states are to be abolished in 12 to 15 years and a common import duty is to be set up in regard to other states. The objective of this Common Market or federation is, however, not only to create a big market, but also to promote political cooperation among the member states, it being provided that the leadership of the federation shall be able to make decisions, by a simple majority, which will be binding on individual member states.

To the question: What will be the effect of this Common Market on the foreign trade of Icelanders? The Minister stated that: "It is difficult to realize this fully as yet, because those rules which have been adopted bear first of all upon trade in manufactured goods. Agricultural produce and fish products are considered to be specially placed in many ways. It is anticipated that before the 12- or 15-year period is over, the Six-powers will have agreed upon a common policy in their agricultural and fishing matters." He pointed out that it is not yet known what that will be, but until this occurs one cannot say for sure what effect the Common Market will have on those countries which supply it with agricultural produce and fish products. The Common Market's common duty on fishery products has already been determined, and in general, is considered to be very high. Iceland's exports to the Six-power area are, chiefly cured saltfish and stockfish to Italy, iced fish to Germany, and frozen fish to France. The common duty will cause a considerable increase in the import duty to Germany, Belgium, and Holland, but a decrease in the duty to France. The import duty on saltfish and stockfish to Italy will increase. The main thing in connection with this change in duties is that Iceland's position to compete with producers in the Common Market area will deteriorate greatly, as they will be able to sell duty free within the area. Iceland and the countries outside the Common Market will have to bear a high duty. This is especially applicable to markets for frozen fish in those countries as the demand is expected to increase with expansion of frozen foods distribution. This will also be of considerable importance with respect to Iceland's saltfish exports to Italy.

With regards to the EFTA, the Minister stated that shortly after representatives of

Iceland (Contd.):

the six countries signed the treaty of Rome, discussions began within the OEEC, at the initiative of Britain, to the effect that all member states of the OEEC ought to set up a so-called European Free Market. But the main difference between a Free Market and a Common Market like the one the Six-powers established is that in a Free Market the member states only abolish duties and restrictions in their mutual trade, but do not set up a common duty in regard to other countries; on the contrary, the duties remain unaltered in regard to countries outside the Free Market. These Free Market discussions within the economic cooperation organization broke up at the end of 1958; France and Britain could not agree. France did not want to weaken the strong position it had acquired within the Common Market and Britain did not want to sacrifice its autonomy in commercial matters in the measure that France considered necessary, doubtless not at least in view of its ties to the Commonwealth. As soon as discussions within the OEEC ceased, discussions began among seven European states on the establishment of a free market among themselves; i.e., Britain, Sweden, Denmark, Norway, Switzerland, Austria, and Portugal. The delegates of those states signed a treaty on the establishment of a Free Trade Association in November 1959. The establishment of the European Free Trade Association is no doubt to be considered as a counter move to the establishment of the Common Market, and possibly the objective was to force the Six-powers to resume talks and to make some kind of agreement. But the European Free Trade Association is much smaller than the Common Market. The inhabitants of the Seven-powers are 110 millions, but the inhabitants of the Six-powers are 168 millions. On the other hand, the national income and foreign trade per capita of the Seven-powers are much greater than that of the Six-powers.

In reply to the question: What effect does the establishment of the European Free Trade Association have on the foreign trade of Icelanders? The Minister replied, "the duties of the Free Market countries on fishery products are not very high, but they are lower than those of the Common Market countries. The problems of agriculture and fishing within the European Free Trade Association are the same as those within the Common Market. They are considered as being of a special character, and decisions

have not yet been made regarding arrangements to be adopted for the trade with fishery products other than meal, oil, canned fish, and frozen fillets, but the duties and restrictions on trade in those products will be abolished the same as for industrial goods. A decision on trade in other fishery products is still uncertain. This decision will largely depend on what differences there will be in the relation of producers within and without the European Free Market to trade in the area. Although the Free Market provisions are considered to apply to trade in frozen fish, it was pointed out that Great Britain did not commit itself to permitting imports of more than 24,000 tons a year at the lower duty, and reserved the right not to let the decrease in duty apply to frozen fillets if a basic change should take place in the position to compete, for example, owing to increased fishery jurisdiction."

The Icelandic Minister of Commerce stated that it could be said that the establishment of the European Free Trade Association has an unfavorable influence on Iceland's export trade, especially its exports to Great Britain of frozen fish, and iced fish, if they were resumed, and on its exports of saltfish to Portugal. He said it was difficult to make an exact statement until it is known what rules will apply to trade in all fishery products within the European Free Market. It is obvious, however, that the position of those who stand outside will always be worse than that of those who are within such combinations as the European Free Trade Association and the Common Market.

The Minister pointed out that originally it was expected that in the beginning of 1970 the Six would, in general, have abolished duties and restrictions on their internal trade and have established common duties externally. When the European Free Trade Association was established in September 1959, it set itself a corresponding goal as far as the abolition of duties and restrictions is concerned. But after the establishment of the European Free Trade Association, the Six decided to accelerate the abolition of duties and restrictions. On July 1, 1960, the European Free Trade Association countries decreased duties on manufactured goods by 20 percent and then adopted special rules to ensure that finished goods shall not get into the European Free Trade Association from countries outside the area, where duties are the lowest. At the same time, the internal import quota was increased by 20 percent. Then gradually duties are to

Iceland (Contd.):

be lowered and restrictions abolished according to certain rules so that the trade in the European Free Trade Association area will become entirely free by the beginning of 1970. The decision on accelerating decreases in duties and abolition of restrictions on the same lines as had been decided in the Common Market, meant the member states of the European Free Trade Association have surely intended to facilitate agreement between the trade federations, but the decision to hasten the decrease in duties and the abolition of the restrictions within the Common Market has no doubt increased the tension. Last January 1, the Six effected an internal duty reduction of 10 percent which, according to the original agreement, was not to be effected until January 1, 1962. At the same time the first alteration in duties was made, looking towards the eventual common outside tariff. At a meeting in Switzerland last October, ministers from the European Free Trade Association countries discussed the possibilities of hastening the implementation of the decrease in duties and the abolition of restrictions, in harmony with the plans of the Common Market. Britain and Sweden were probably of the opinion that this was necessary, but Denmark and Norway were against it. The ministers will meet again in February 1962 and it is not unlikely that they may determine to hasten the next 10 percent decrease in duties and to let it take place July 1, 1962.

The reason for these measures of the Six is, no doubt, not only that they wanted to fortify their position in relation to the Seven, but also that they wanted to accelerate the political unification of the countries, which is of no less importance in the cooperation of the Six than in commercial cooperation. Another primary reason is that a great investment has taken place in the Common Market area and the sooner the Common Market becomes a reality, the sooner this great investment will start to yield profits.

The Minister stated that neither market has as yet made any final decision on those items which are of the greatest concern to the commercial interests of Iceland; i.e., what rules shall apply to trade in fishery products. It is to the best interests of Iceland that trade in fishery products be as free as possible and that its products be sold where buyers need not pay higher duty on them than on the same kind of fishery prod-

ucts already on the market. The Common Market is bigger, but Iceland exports to the Free Trade Association have been greater. The mutual duty of the Common Market will be higher than the present duties of the Free Trade Association countries. Iceland's trading position could be improved more by joining the Common Market than the European Free Trade Association, but on the other hand, one should not regard these matters from the viewpoint of trading interests alone. The character of the Common Market is entirely different from that of the European Free Trade Association, as there is in the Common Market not only the question of a business cooperation, but also cooperation in many other fields as well.

The reorganized OEEC, now known as Organization for Economic Cooperation and Development, in Paris, to which the United States and Canada have now become parties, will no doubt become a center for discussing the problems which arises from the formation of the trade federations. When the new organization was founded last December, a decision was made to set up a special committee within the organization to deal with fishing; this will greatly facilitate promotion of Icelandic interests in this field within the new organization. As regards our facilities to influence other nations to lower their duties on fish products, I would mention, the Minister said, that Icelanders are not members of the international duty alliance, GATT. At the same time as we look into the possibilities of our joining the trade federations of Western Europe, we must also consider the possible advantage of becoming parties to international decreases in import duties on fishery products. (United States Embassy, Reykjavik, March 24, 1961.)

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FISHERY LANDINGS IN 1960 LOWER:

Icelandic fishery landings in 1960 for all species were about 10 percent less than in 1959 despite a considerable increase in 1960 in the number of new fishing vessels and heavy investment in gear and equipment. Total landings amounted to 513,744 metric tons in 1960, compared with 565,618 metric tons in 1959. The cod catch however, increased slightly over 1959, and the 1960 haddock landings were nearly double those in 1959. Ocean perch landings in 1960 were down to only about one-half the 1959 landings. The 1960 summer herring season failed, and yielded 50,000 tons less than in 1959.

Iceland (Contd.):

The over-all decline in 1960 over 1959 in the value of the fish catch was about 13 percent. However, the actual value of fish exports was somewhat higher because of the large carry-over of fish stocks from 1959 into 1960. Fish exports for 1960 were valued at 2,326 million kroner (US\$61.2 million), compared with 2,256 million kroner (US\$59.4 million) for 1959. The purchase of 5 new trawlers and 53 smaller fishing vessels during 1960, the relatively poor fishing season, and the decline in world prices of fish meal and oil were particularly difficult for the country's balance of payments position.

The impact of investment in new vessels as against lack of adequate return on investment was particularly felt in the trawler industry which experienced its worst year since the postwar rebuilding of the trawler industry in 1949. The difficulties of the trawler industry stemmed, in part, from its adjustment to abolition of the subsidy and compensations system scrapped in February 1960, and partially to the poor ocean perch catch which in 1959 contributed more than 60 percent of the total trawler landings. As a result, the trend in landings by the motorboat fleet as a substitute for trawler landings was further marked during 1960.

	1960	1959	1958
	. (Percentage of Total)		
Motorboats	69.8	59.1	50.4
Trawlers	30.2	40.9	49.6
Total	100.0	100.0	100.0

The voluntary ban which Icelandic vessel owners imposed on landings of iced fish in the United Kingdom ports, until the fishery limits question with Great Britain was settled, was another difficulty affecting the trawler fleet. The voluntary ban continued during the fourth quarter of 1960. However, a number of Icelandic trawlers were able to obtain reasonably good prices for fresh fish landed in German ports. The decline in the availability of quality herring for salting, along with the drop in ocean perch landings contributed directly in 1960 to a heavy decline in exports to the Soviet Bloc countries, as compared with 1959.

The increase in the cod, haddock, and flatfish landings, however, boosted the value of exports to countries other than the Soviet Bloc compared with 1959. Partly offsetting this trend was the decline in prices of fish oil and meal. However, by September 1960,

all carry-over stocks of those commodities had been contracted for. Production of quick-frozen fillets dropped considerably when compared with previous years. In 1960, Iceland's frozen fillet production totaled 53,000 metric tons; 1959, 95,000 tons; and 1958, 97,000 tons. In 1960, Iceland exported 64,436 tons of frozen fish worth about 896 million Icelandic kroner (US\$23.6 million), compared with 70,000 tons, worth 964.5 million kroner (US\$25.4 million) in 1959. (United States Embassy, Reykjavik, May 3, 1961.)

Note: See Commercial Fisheries Review, April 1961 p. 59.

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FISHERY LANDINGS FOR JANUARY-MAY 1961 DROP:

Iceland's fishery landings during the main fishing season (January-May 1961) will be down about 30 percent from those in the same period of 1960, the Director of the Icelandic Fisheries Association, predicted late in April. He also predicted that the value of the January-May 1961 landings would drop about 350-400 million (US\$9.2-10.5 million) as compared with the same period of 1960.

The area affected most by the decline was the Westman Islands, an important production and processing center, because of a general strike earlier this year that brought fish production and processing to a standstill.

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TRAWLERS LAND CATCHES IN ENGLAND DESPITE LABOR TROUBLE:

Trawler officers at both Hull and Grimsby, England, have been refusing to leave for the fishing grounds in protest against landings in England by Icelandic trawlers. The fishing vessel officers at Hull ended their tie-up on April 10, but those at Grimsby remained firm in their demand that Icelandic landings be prohibited. However, five Icelandic trawlers are reported to have landed trips at Grimsby without incident since the controversy started.



India

EXPERIMENTS WITH FISH MEAL BISCUITS:

Fish biscuits with 12.5 percent fish meal have been made in India for trial purposes with a specially prepared shrimp meal. The finished product is reported to be very tasty, soft in texture, and rich in protein. Careful-

India (Contd.):

ly prepared shrimp meal contains as high as 70 percent protein. This was mixed with flour, butter, sugar, baking powder, vanilla essence, eggs, lemon juice, milk, and salt, and beaten well. It was then rolled and cut into shape, using moulds, and baked at 175° to 190° C. (347°-374° F.) for 30 to 45 minutes. In one set of experiments, fried fish meal was used, and in another set, fresh fish meal was used. The product was similar in color, flavor, and consistency to the usual biscuits, and the fish flavor was not at all predominant. The taste of sugar, and the flavor of lemon and vanilla completely hid the fish odor, and organoleptically the fish biscuits were indistinguishable from the usual grain flour biscuits. The product was presented to the public at several exhibitions and consumer acceptance was reported to be good. Although the experiment was only in the laboratory stage, it was expected that there should be no difficulty in expanding operations on a commercial scale. While the experiments were done with shrimp meal, any fish meal carefully prepared will be satisfactory for making such biscuits. Sardine meal, mackerel meal, silverbelly meal, and other types fish meal, were later investigated, and the biscuits prepared from them were found to be very tasty. No complicated technique or apparatus is involved, and the fish meal used in this preparation is inexpensive and easily produced. It was reported that even small bakery owners can produce fish flour biscuits on a large scale, and the finished product will be only as costly as the ordinary brands of biscuits sold in Indian markets. (Fisheries Station Report and Year Book, Department of Fisheries, Madras, India, 1955-1956, printed in 1959).

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INDO-NORWEGIAN FISHERIES PROJECT TO BE EXTENDED:

Extension of the Indo-Norwegian fisheries project in the State of Kerala to other maritime states of India has been under discussion in New Delhi between a visiting five-member Norwegian delegation and the Indian Government.

The move to extend the project reflects its increasing success as a means of improving the living standards of the fishing village population of a small area in Kerala through a broad approach, including vessel



"Chinese lift nets" used by fishermen of India at Cochin Harbor. This is a traditional fishing method in India.

construction and mechanization, development of improved fish handling and marketing methods, fisheries research, and health, sanitation and water supply projects. (United States Embassy, New Delhi, May 18, 1961.)



Japan

BERING SEA BOTTOMFISH FISHERY CONTROLS IMPOSED:

To control the bottomfish fishery (long-line, gill net, and trawl) in the Bering Sea, the Japanese Fishery Agency early this year announced the establishment of six fishing areas in the Bering Sea and the allocation of these areas to fishing fleets on the basis of historical record and fishing objectives. The Agency's announcement also covered restrictions on vessel sizes and catches.

Following the success of four Japanese long-line fleets operating off the Olyutorski coast in 1960, fishing companies began announcing intentions of engaging in that fishery. At one time a total of 37 fleets, with a total catch target of 660,000 metric tons of fish (66,000 metric tons of fish meal and 175,000 tons of frozen fish), indicated plans to engage in the Bering Sea bottomfish fishery. Thus, the Fishery Agency was compelled to impose controls to prevent confusion on the fishing grounds.

As of March 29, 1961, ten fleets had submitted official applications, and the consensus was that by mid-April when all formal applications were expected to be in, the number would total 27 or 28 fleets.

The Fishery Agency has classified the Bering Sea bottomfish fishing fleets into two general groups: (1) fish meal factories and flatfish freezer factoryships, and (2) mothership-type long-line and gill-net fleets. Fish meal factoryships (limited to four) and flatfish freezer factoryships with previous records of operation in the Bering Sea, with the exception of the Tenyo Maru, which is classified as a fish meal-oil fac-

Japan (Contd.):

torship, have been assigned fishing grounds to the east of 175° W. longitude. Tenyo Maru is licensed to fish in a triangular area extending to as far west as 180° longitude. Freezer factoryships which have not engaged in the Bering Sea fishery in previous years are restricted to grounds lying between 170° E. and 170° W. longitude. Mothership-type long-line and gill-net fleets are restricted to the area lying between 170° E. and 180° longitude.

Vessels over 3,000 tons are classified as motherships and only catcher vessels over 50 tons gross are being permitted to engage in the fishery. Catch restrictions are placed on halibut, herring, and king crab but the taking of those species is not entirely prohibited. Salmon cannot be taken at all.

The king crab factoryship Tokei Maru, 5,386 gross tons, departed Hakodate on April 1 for Bristol Bay and was expected to arrive at the fishing grounds about April 10. Her target for 1961 is 80,000 cases of king crab. The three trawlers assigned to fish with this factoryship departed Hakodate on March 29. The fleet is expected to be on the fishing grounds for 100 days and is scheduled to return home in mid-July. (Shukan Hokkai Suisan, April 3, 1961.)

The king crab freezer factoryship Shinyo Maru, 5,630 gross tons, departed Hakodate on April 5 for Bristol Bay. Her catch target for 1961 is 1.5 million crabs and 3,000 tons of frozen fish. According to latest available information, Shinyo Maru's fleet consists of 13 trawlers and that in addition to king crab she expects to pack 1,500 tons of frozen herring. (Shukan Hokkai Suisan, April 10; Shin Suisan Shimbun Sokubo, April 5, 1961.)

The freezer factoryship Kaiko Maru, 2,940 gross tons, departed Hakodate on April 7 for the fishing grounds off the Olyutorski coast. Her fleet consists of seven catcher vessels equipped with trawl, gill-net, and long-line gear. This fleet was expected to arrive on the fishing grounds around April 20. (Shukan Hokkai Suisan, April 10, 1961.)

The stern trawler No. 50 Akebono Maru, 1,470 gross tons, is presently fishing in the Bering Sea. Akebono Maru reported that on March 20 she sighted a Russian trawl fleet of about 60 vessels in the 250-300 ton class and in the 600-ton class. The Russian fleet was sighted about thirty miles northwest of Unimak Island. (Suisan Keisai Shimbun, April 2, 1961.)

The Japanese research vessel No. 19 Taiyo Maru, 276 gross tons, departed Kushiro, Hokkaido, on March 28 to locate new bottom fishing grounds along the northern section of East Kamchatka. Chartered from a large Japanese fishing company, she will be at sea for about three months. (Suisan Keisai Shimbun, April 5, 1961.)

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TWENTY-SIX FLEETS TO ENGAGE IN BERING SEA BOTTOMFISH FISHERY:

A total of 26 Japanese fishing fleets have officially announced their intentions to engage in bottomfish operations in the Bering Sea in 1961. This includes 11 vessels which recently departed for the fishing grounds or are already engaged in fishing.

The total 1961 catch target for the 26 Japanese fleets to fish in Bering Sea bottomfish fishery (in metric tons): flatfishes 398,000, halibut 34,000, cod 19,000, Alaska pollock 40,000, gin dara or silver cod 11,000, rockfish 25,000, shrimp 9,000, herring 41,000, others 8,000; total 585,000 metric tons.

In addition to flatfishes, the Japanese fleets will fish for halibut, cod, rockfishes, and herring. The fleets of two firms are also planning to fish for shrimp, and one company's factorship, Einin Maru, is reported to be equipped with one shrimp canning line. Although three firms had



Fig. 1 - Japanese factory mothership operating in Bering Sea bottomfish fishery. Processes both fish and crabs.

Japan (Contd.):

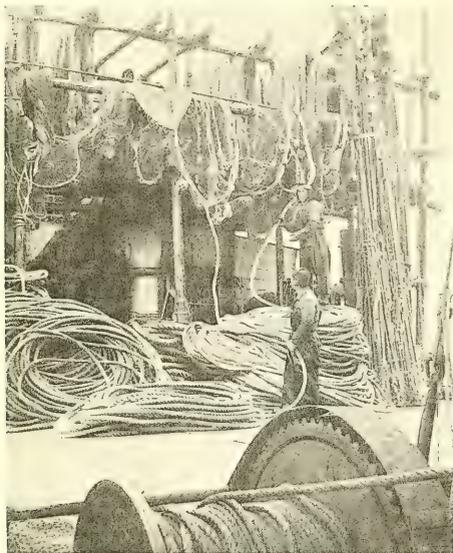


Fig. 2 - Stowage of nets and lines aboard the Japanese factory mothership Shinyo Maru.

investigated shrimp resources in northern waters for two years and were reported to be formulating plans early this year to fish commercially for shrimp, it appears now that only two are following through on their original plans.

The factoryship Einin Maru is being allowed by special permission to fish in the Bristol Bay area which the Fishery

Agency had reserved for factoryships with previous records of operation in Bristol Bay. Einin Maru is permitted to fish in the area under a clause in the Fishery Agency's bottomfish fishing regulations which reads, "Freezer factoryships without previous records of operation in the Bering Sea shall be permitted to fish in Areas D and E under special conditions." Einin Maru's "special conditions" are assumed to be her intentions to fish for shrimp. (Suisan Keizai Shimbun, April 29 and March 31; Suisan Tsushin, April 24; Nippon Suisan Shim-bun, April 10 and February 24, 1961.)

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FIRM HOPES TO FISH SOUTH OF ALEUTIAN ISLANDS:

A large Japanese fishery firm is reported to have obtained informal approval from the Japanese Fishery Agency to conduct experimental fishing operations for herring and bottom fish south of the Aleutian Islands. For the purpose, the firm plans to purchase a 2,000-ton vessel and convert it to a refrigerated vessel.

Two other major fishing companies have been planning to develop fishing grounds in waters south of the Aleutian Islands for some time. The Fishery Agency has not yet taken a firm stand on this matter, according to newspaper reports. (Suisan Tsushin, April 21, 1961.)

Editor's note: The above news item appears to conflict with earlier press releases. Nippon Suisan Shimbun, March 6, 1961, stated that the Japanese Fishery Agency does not intend to permit dragging in the area south of the Alaskan Peninsula. But the latest news article refers to the area south of Aleutian Islands, and states that the Fishery Agency



Fig. 3 - A Japanese trawler fishing bottomfish for the mothership Shinyo Maru in the Bering Sea.

Japan (Contd.):

has not taken a definite stand to prohibit fishing in that area.

The Japanese Fishery Agency often licenses vessels to operate on an experimental basis.

BERING SEA BOTTOM FISHING FLEET'S CATCH TARGET FOR 1961:

According to Japanese newspaper reports, 28 mothership fleets with 375 catcher vessels will engage in the Bering Sea bottom fishery this season. The following catch targets by fishing area for 24 of the mother-

king crab freezer vessel (catch target--180 tons of king crab) is reported to have caught 473 tons of flatfish, 9.5 tons of cod, 183 tons of herring, and 50 tons of king crabs. (Suisan Keizai Shimbun, May 11 and 18, 1961.)

EXPORTS OF CANNED PET FOOD WITH FISH DROP IN 1960:

Japan's exports of canned pet food (with fish as an ingredient) in 1960 were less than half the 1959 exports, the Japanese Canned Food Exporters' Association reports. Only 273,837 cases were shipped in 1960. Of this total, the United States received 272,487 cases, Canada 100 cases, Switzerland 250 cases, and Hong Kong 1,000 cases.

Catch Targets of 24 Japanese Bering Sea Bottom Fishing Fleets by Fishing Areas 1/, 1961

Species	Fishing Areas 1/						Total
	AB	ABC	ABCD 2/	BCD	DE	F 3/	
	..... (Metric Tons)						
Flatfish	-	100	-	-	355,914	42,640	398,654
Halibut	8,240	8,885	5,568	13,198	-	2,000	37,891
Cod	3,700	6,993	3,133	5,488	2,940	-	22,254
Alaska pollock	-	100	-	200	31,266	1,230	32,796
Gindara 4/	1,807	4,388	1,134	4,482	550	1,120	13,981
Rockfish	877	2,319	2,362	3,698	9,653	6,760	25,669
Shrimp	-	-	180	1,770	8,000	-	9,950
Herring	7,530	10,135	5,141	18,239	1,900	-	42,945
Misc.	50	220	2,350	1,898	3,897	-	8,415
Total	22,204	33,640	19,868	48,973	414,120	53,750	592,555
1/Key to fishing areas: Area A: Between 170° E. and 175° E. longitude. Area B: Between 175° E. and 180° longitude. Area C: Between 180° and 175° W. longitude. Area D: Between 175° W. and 170° W. longitude. Area E: Area east of 170° W. longitude. Area F: Triangular area formed by line extending from Cape Navarin to Aleutian Islands along 180°, east along Aleutian chain to Cape Sarichef, Unimak Island, and back to Cape Navarin.							
2/Catch targets listed under this area represent target of one mothership fleet (<u>Shikishima Maru</u> , 9,700 gross tons) only.							
3/Catch targets listed under this area represent target of one mothership fleet (<u>Temyo Maru</u> , 11,581 gross tons) only.							
4/Literally translated means silver cod.							

ship fleets were published in Suisan Keizai Shimbun, May 11, 1961.

BRISTOL BAY MOTHERSHIP FISHERY TRENDS, MAY 1961:

The two Japanese fish meal factoryships operating in Bristol Bay, Renshin Maru (14,094 gross tons) and Kinyo Maru (9,373 gross tons), as of May 18, 1961, produced a combined total of 4,128 metric tons of fish meal, 1,048 tons of fish solubles, 10,224 gallons of fish oil, and 780 tons of frozen fish. Shinyo Maru (5,630 gross tons) which was licensed to fish on an experimental basis as a

The lower exports were due to unusually poor skipjack tuna and mackerel-pike fishing. Pet food packing is a byproduct operation, and the scarcity of fish adversely affected this industry. Also, Japanese packers were faced with quality claim problems from buyers during the year which caused them to lose interest. Also, the drop in the 1960 canned pet food exports was in part attributed to the more extensive sale of canned tuna flakes on the Japanese home market during the year.

Japan (Contd.):

**CANNED FISHERY
PRODUCTS EXPORTS,
FISCAL YEAR 1960:**

The Japan Canned Food Exporters Association reported for fiscal year 1960 (April 1, 1960 to March 31, 1961) that total exports of canned agricultural, dairy, and fishery products decreased somewhat from the previous year and amounted to 13,199,419 cases.

Fishery products made up 67 percent of total canned products exports and amounted to 8,746,314 cases. Compared to 1959 exports of fishery products, which totaled 9,828,024 cases, 1960 exports showed a decline of over a million cases. This decline is primarily the result of smaller packs of canned salmon and canned crab meat. (Nippon Suisan Shimbun, May 5, 1961.)

Japanese Exports of Canned Fishery Products, Fiscal Year 1960	
Product	Actual Cases
Canned tuna:	
In oil	1/ 1,401,294
In brine	2,035,192
Others	104,822
Canned tuna total	3,541,308
Canned saury:	
In tomato sauce	339,631
Natural	472,367
Others	227,764
Canned saury total	1,039,762
Canned sardine:	
In tomato sauce	701,517
Natural	2,492
Others	14,636
Canned sardine total	718,645
Canned jack mackerel	472,378
Canned Pacific mackerel	188,168
Canned salmon	1,671,897
Canned crab:	
King crab	279,323
Kegani	163,256
Others	46,516
Canned crab total	489,095
Canned oysters:	
Smoked	190,019
Natural	156,192
Broiled	170
Canned oyster total	346,381
Other fishery products	278,680
Grand total	8,746,314

1/Export Canned Tuna Producers Association reported exports of canned tuna in oil in fiscal year 1960 at 1,033,816 cases.

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CANNED SARDINE SALES IN 1960:

Canned sardines received by the Japanese sales company during fiscal year 1960 (April 1960-March 1961) and their sales are reported (Suisan Tsushin, April 22, 1961) as follows:

Type	Carryover from 1959	Receipts	Sold
		(Cases)	
Oval No. 1 can, 48/cs.	7,836	179,848	183,020
" No. 3 " 96/cs.	12,558	164,932	162,160
Small No. 1, 100/cs.	3,727	97,155	100,308
No. 4 can, 48/cs.	1,334	5,391	6,480
Square No. 8 can, 96/cs.	-	5,415	5,388
Special No. 7, 96/cs.	1,500	47	4,607
Anchovy	47	3,181	948
Others	190	227	650
Total	27,192	456,196	463,561

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**DELEGATION TO STUDY TONGA
ISLANDS AS POSSIBLE OVERSEAS
FISHING BASE:**

Earlier this year it was reported that Shizuoka Prefecture was sending a delegation of four members to study likely sites for establishing overseas fishing bases in the South Pacific and Indian Ocean areas. Another delegation is making plans to go on a similar mission to the South Pacific. This delegation is to be composed of two Diet members from the Democratic-Liberal Party (one from Hokkaido; the other from Fukushima Prefecture) and one former Diet member from the Socialist Party. The group will leave Japan in June and spend one and one-half months studying facilities, potential resources, and fishing conditions in the Tonga Islands.

Tonga, a British possession, is situated south of Samoa and southeast of the Fiji Islands. Waters in that area are reported to abound with yellowfin, big-eyed tuna, sardines, octopus, shrimp, sperm whales, etc. Island natives are reported to be unfamiliar with fishing techniques. Awareness of Tonga as a possible overseas fishing base came about following the commencement of Japanese fishing operations in the nearby Fiji Islands.

The Socialist Party member in the delegation is reported to be interested in establishing an overseas base in Tonga as a means of revitalizing the sagging distant-water fishing fleet of Kagoshima Prefecture. (Suisan Keizai Shimbun, April 16, 1961.)

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**EARLY SEASON KING CRAB
CATCH IN BRISTOL BAY:**

The Japanese king crab mothership Tokei Maru's catch for the ten-day period April 12-22, was reported to be 104,570 crabs (5,951 cases). Tokei Maru encountered bad weather

Japan (Contd.):

Japanese king crab mothership Tokei Maru.

er until April 17 but the weather improved after that date and fishing was reported to have picked up considerable. Tokei Maru was operating in the vicinity of 56° N. latitude, 163° W. longitude. (Suisan Keizai Shim-bun, April 26, 1961.)

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MONTHLY FISH MEAL PRICES, 1960 AND JANUARY-MARCH 1961:

Average monthly wholesale prices for various types of domestic fish meal in Japan

for 1960 and January-March 1961 are found in table. (United States Embassy, Tokyo, May 23, 1961.)

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FISH MEAL FACTORYSHIP COMPANY AGREES TO DELIVER 14,000 TONS OF MEAL:

The Japanese fishery firm which hopes to produce about 26,000 metric tons of fish meal with its two fish-meal factoryships, Renshin Maru and Kinyo Maru, presently operating in

Japanese Domestic Fish Meal Wholesale Prices, 1960 and January-March 1961

Year and Month	Protein 65%				Protein 45%	
	Saury	Atka Mackerel	Launce	Jack Mackerel, Sardine, and Mackerel	Factoryship Flatfish	Cod and Pollock Waste
	(US\$ Per Metric Ton)					
1960						
January	153.33	152.78	-	-	-	109.44
February	143.33	143.06	-	-	-	108.89
March	135.83	133.33	-	-	-	94.17
April	123.72	123.61	-	-	-	81.11
May	131.39	123.61	132.50	126.39	-	81.11
June	-	-	132.50	126.39	-	83.06
July	-	-	132.50	120.56	-	87.78
August	119.17	-	-	-	-	89.44
September	121.94	111.11	-	-	-	91.11
October	139.17	129.17	-	-	147.22	96.39
November	157.50	145.23	-	-	147.22	116.67
December	158.06	151.11	-	-	154.72	116.67
1961						
January	161.67	-	-	-	156.94	125.00
February	165.00	-	-	-	-	123.61
March	168.06	165.23	165.83	-	-	123.61

Source: Japan Aquatic Oil Association.

Japan (Contd.):

Bristol Bay, has signed an agreement with the Japanese National Federation of (Animal Feed) Purchasers Association to sell 14,000 metric tons of its production to the Federation. The price will depend on the market price of Peruvian fish meal at time of delivery and will be adjusted on the basis of 43,000 yen (US\$119.44) per metric ton for Peruvian fish meal and 52,000 yen (US\$144.44) per metric ton for Japanese factoryship fish meal. Should Peruvian fish-meal prices increase, as they have already, then Japanese factoryship fish-meal prices will be raised accordingly on the basis of these two base prices.

The 43,000 yen is the price paid in late 1960 for Peruvian fish meal delivered to Japan. Peruvian fish-meal imports now run about 57,000 yen (\$158.33) per metric ton, delivery Japan. (Suisan Tsushin, May 1, 1961.)

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FISH SOLUBLES IMPORTS CLASSIFIED UNDER ANIMAL FEEDS:

The Japanese Ministry of International Trade and Industry (MITI) announced on April 28, 1961, that henceforth fish solubles will be placed under the category of animal feed. This means that those who wish to import fish solubles must now submit applications for import licenses to the joint panel composed of the Fishery Agency and Bureau of Animal Husbandry which acts on all requests to import items covered under animal feed, such as fish meal, instead of submitting them to MITI.

The Ministry has been flooded with a number of requests for licenses to import fish solubles and has instituted this new procedure for license application to eliminate further confusion in handling such requests. (Nippon Suisan Shimbun, May 3, 1961.)

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FISHERY AGENCY APPROVES CONSTRUCTION OF 496 FISHING VESSELS:

For January 1 to April 24, 1961, the Japanese Fishery Agency has approved the construction of 496 fishing vessels, most of which are vessels under 40 gross tons.

Tuna long-line vessels approved for construction total 87. This figure does not in-

clude a number of vessels, almost all under 40 gross tons, which plan to fish for tuna and other types of fish. (Shin Suisan Shimbun, January 1 to April 24, 1961.) Breakdown by size of the 87 vessels is as follows:

General Size Range	Specific Range or Size	Number of Vessels
<u>Gross Tons</u>		
Under 40	All 39 gross tons	38
41 to 100	All between 65 to 99 gross tons	9
101 to 200	179 gross tons	1
201 to 300	All between 239 to 289 gross tons	24
301 to 400	All between 309 to 389 gross tons	11
401 to 500	408, 434 & 480 gross tons	3
Over 1,000	1,495 gross tons	1

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FISHERY COOPERATIVE TO SHIP FISHERY PRODUCTS WITHIN JAPAN BY VESSEL RATHER THAN RAIL:

The Japanese National Federation of Fishery Cooperatives and a Japanese fishing firm have exchanged memorandums concerning the transportation of items such as frozen fish and fish meal within Japan. According to the memorandums, the fishing firm agrees to use its vessels to transport frozen fish and fish meal to different points in Japan from October to December at rates comparable to or lower than existing rail freight rates. October to December are slack months for the fishing firm and it plans to use its two freezer vessels, Seifu Maru, 8,693 gross tons, and Shichifuku Maru (size unknown) as carriers. These two vessels will be engaged in the Bering Sea/bottom fishery during the summer of 1961.

The National Federation of Fishery Cooperatives benefits from this arrangement since its member cooperatives will be able to ship commodities, mainly saury products, at rates equivalent to or lower than existing rail freight charges. The Japanese Government recently raised rail freight rates and this association hopes to check the rise in saury meal prices by resorting to this new shipping arrangement. (Suisan Keizai Shimbun, April 28, 1961)

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NEW FISH SAUSAGE PLANT COMPLETED:

The completion of a new fish sausage-ham plant in Nagoya in Central Japan was the subject in the Japanese periodical Suisan Keizai Shimbun of April 23 of two full pages. The firm operating the plant is affiliated with the largest Japanese fishery firm, and the new sausage plant is reported to be the largest of

Japan (Contd.):

its kind in Central Japan. The plant is equipped with up-to-date machinery capable of producing an equivalent of 100,000 fish sausages a day.

Daily productive capacity of all fish sausage companies affiliated with the large Japanese fishery firm now totals 1,590,000 pieces of sausages. Compared to this, daily productive capacity of the second largest fishing company's sausage plants is said to total 700,000 pieces of fish sausages a day.

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SOVIETS SAY JAPANESE SHOULD REDUCE NORTH PACIFIC SALMON CATCHES:

The chief Soviet negotiator at the fifth meeting of the Japanese-Soviet Commission for Northwest Pacific Fisheries on April 29, 1961, said that there was "no reason why the Soviet Union alone must be concerned with the preservation of salmon resources" in the face of Japan's "excessive" fishing.

The statement was made at a special interview with Kyodo News Service held at the Soviet Embassy in Tokyo. He indicated that he gave the interview in view of the continued impasse in the fishery talks, which opened in early February in Tokyo.

The Soviet side has increased its planned salmon haul for this year by 10,000 metric tons to 80,000 tons and demanded that the Japanese side reduce its catch correspondingly, although 1961 is a cyclically rich year for salmon migration, he said.

The Japanese, through "excessive" fishing outside the restricted zone off Kamchatka, are yearly increasing their over-all hauls, he claimed.

The 10,000-ton increase in the Soviet haul should be covered by an equivalent cut in the Japanese haul, he insisted.

The Soviet negotiator had earlier proposed a 50,000-ton ceiling for the Japanese North Pacific salmon catch this year in the area covered by the Convention, or 17,500 tons less than in 1960. The Soviet negotiator said he was opposed to a "political compromise" through channels outside the fishery talks.

Meanwhile, the chief Japanese delegate to the fishery talks charged that the Soviet negotiator was considering only the interests of his own country.

The Soviet negotiator has "deliberately distorted" the conclusion of the scientific and technical subcommittee to the effect that the salmon migration this year is better than last year but not as good as in 1959, the Japanese delegate said. In addition, he said the Japanese side has at least agreed to discuss the problem of restriction of Japanese fishing outside the present controlled areas, as the Soviets proposed, "in view of the importance of the free area for conservation of the salmon resources."

But the Japanese have not yet agreed to expansion of the restricted zone, the Japanese delegate insisted. The Soviet negotiator has twisted this Japanese stand too, he added. (The Japan Times, April 30, 1961.)

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THIRD LARGEST FISHING FIRM BUILDS SALMON MOTHERSHIP AND OTHER VESSELS:

The third largest Japanese fishing firm in Japan has constructed its first postwar salmon mothership (Meisei Maru, 8,335 gross tons). The vessel has an over-all length of 502 feet, a beam of 65 feet, and is equipped with three canning lines, two of them high-speed lines capable of packing 240 cans a minute.

The same company also has under construction one 1,500-ton trawler to be used in the Bering Sea bottomfish fishery and scheduled for completion in July 1961; one freezer factoryship of 5,500 gross tons (scheduled for completion in November 1961) for use in winter whaling and the summer Bering Sea bottomfish fishery; and 2 freezer-carriers of 1,500 gross tons each to serve as carriers for salmon and bottomfish fishing fleets and scheduled for completion in June and August 1961.

Other fishing vessels owned and operated by the same company include 17 tuna fishing vessels (total of 9,144 gross tons), 3 salmon motherships (total 24,400 gross tons), 2 king crab motherships (10,900 tons), a freezer vessel (1,400 tons), 9 trawlers (4,242 tons), and 4 miscellaneous vessels (396 tons). (Suisan Keizai Shimbum, April 29, 1961.)

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AGREEMENT CONCLUDED FOR EXPORT OF FROZEN TUNA TO CZECHOSLOVAKIA:

A subsidiary of a large Japanese trading firm together with an exporting firm recently concluded an agreement with Czechoslovakia to export 1,050 metric tons of tuna to that country. Plans call for exporting the amount between late June and September via Hamburg, West Germany. Price is \$285 a ton delivered at Hamburg.

Czechoslovakia is represented by the Czechoslovakian Government's trading corporation handling agricultural and marine products. In view of this, Japan hopes to have an arrangement, such as that already in effect with Yugoslavia, whereby all exports to Czechoslovakia would be funneled through one Japanese firm.

Czechoslovakia, by concluding the trade agreement, now ranks as the third largest importer of frozen tuna in Europe.

Annual consumption of tuna in Czechoslovakia is not known but the fact that Czechoslovakia is importing over 1,000 tons at one time shows that a great latent demand exists in that country. However, the Czechoslovakian trading firm is expected to withhold concluding further trade agreements until the first shipment of tuna is brought in the country and the products carefully inspected.

Trade between Japan and Czechoslovakia is on a barter basis. Japan has imported more products from Czechoslovakia than she exported to that country so no difficulties are foreseen in exporting Japanese products to Czechoslovakia at

Japan (Contd.):

the present time. However, in view of the fact that Czechoslovakia has few commodities to export, she will probably not be able to rapidly increase her imports under the present system. Czechoslovakia is reported to have imported small amounts of tuna from Norway and Yugoslavia in the past, most of which were canned and a small portion smoked. (Suisan Tsushin, April 19, 1961.)

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FROZEN TUNA PRICE TRENDS:

The market for Japanese exports of frozen tuna to the United States has firmed considerably, with albacore selling for \$300 a short ton and yellowfin selling for \$250 a ton and up f.o.b. Japan.

In a March 31 issue of Nippon Suisan, a Japanese periodical, the following prices f.o.b. Japan for frozen tuna for export to the United States were shown: Line-type products: yellowfin \$260 a short ton, albacore \$280 a ton; high-seas-type products: yellowfin \$230 a ton, albacore \$270 a ton. This same issue listed the price of tuna for export to Yugoslavia as \$280 a metric ton for yellowfin and \$290 per ton for albacore, both c.i.f. prices.

Small amounts of summer albacore were being landed in April at Shimizu and Yaizu by the Japanese domestic tuna fleet. Due to scarcity of fish, albacore was reported selling for around \$350 a metric ton ex-vessel price and are all being canned. Frozen tuna buyers are unable to compete at present high prices, which are expected to prevail for some time, and buyers are not expected to compete for fish until mid-May when the albacore season reaches its peak. (Suisan Shimbun Sokuho, April 13; Nippon Suisan Shimbun, April 7 & March 31, 1961.)

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FROZEN YELLOWFIN TUNA EXPORTS TO SPAIN APPROVED:

The Japanese Fishery Agency recently approved the application of a large Japanese fishery firm to export about 500 metric tons of frozen yellowfin tuna to Spain by June through an Italian firm. The Italian firm will sell the tuna to Spanish canners.

Exports of frozen tuna to Spain have not been licensed in the past since Spanish canned tuna in brine competed directly with Japanese products sold on the United States

market. However, the Spanish Government has given its assurances that canned tuna produced from Japanese-caught tuna will not be exported to the United States, and it is with this understanding that the Japanese Fishery Agency has authorized exports to Spain. (Suisan Tsushin, May 1, 1961.)

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EXPORTS OF CANNED TUNA IN OIL FOR FISCAL YEARS, 1958-60:

Data from the Japanese Export Canned Tuna Producers Association shows that exports of canned tuna in oil for 1960 (April 1, 1960 to March 31, 1961) amounted to 1,083,816 cases. This represents a reduction of 393,300 cases for the same period in 1959 when ex-

Destination	1960	1959	1958
	(Cases)		
Germany	438,906	484,808	220,224
Canada	151,754	160,385	137,365
Lebanon	70,260	114,744	40,941
Switzerland	63,573	36,918	28,783
Netherlands	62,999	85,863	59,258
Belgium	53,197	92,360	63,743
England	18,489	105,135	41,291
Italy	15,337	26,584	71,668

ports totaled 1,477,116 cases. Exports in 1958 totaled 803,814 cases. (Suisan Tsushin, April 24, 1961.)

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CANNED WHITEMEAT TUNA PACKERS FACE PROBLEMS IN 1961:

A gloomy picture of the Japanese canned albacore tuna industry, as it faces the 1961 canning season, is presented in an article which appeared in the Japanese fisheries newspaper Suisan Keizai Shimbun (Fisheries Economic News), dated April 14, 1961. Canners face two major problems in 1961, according to this article. They are: (1) high ex-vessel prices and (2) labor shortages.

The high cost of fish is due to a shortage of fish, a condition which has prevailed for three years. It does not appear that canners will get any relief from this problem until the summer albacore season is well under way, for according to recent information, small amounts of albacore are now being landed in the principal Japanese tuna ports but these fish are selling at premium prices of 140 yen a kilogram (US\$353 a short ton). The price which canners can pay for raw ma-

Japan (Contd.):

terial and yet realize a profit is in the range of 110 yen a kilogram (US\$277 a short ton). If so, this then means that albacore canners are presently operating in the red.

The labor shortage which has developed is due to the wave of general economic prosperity which is reported to be sweeping Japan. In the fishing industry, this wave of prosperity has been reflected in the upsurge of new vessel construction, new plant construction, and plant expansion programs over the past six months. Japanese firms are reported to be offering various kinds of inducements to attract new employees, and tuna canners are hard put to compete with offers made by other industries.

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FISHERY AGENCY ANNOUNCES NEW REGULATIONS FOR TUNA MOTHERSHIP FISHERY:

On April 18, 1961, the Japanese Fishery Agency announced new separate regulations for tuna motherhips employing regular catcher vessels and tuna motherships fishing with portable catcher vessels. Significant features of the new regulations are the establishment of two categories of tuna motherships; increase in catch quota to 22,900 tons for the "regular" tuna motherships; and elimination of restrictions on the carrying of portable vessels.

Regular Tuna Motherships: This term applies to motherships over 3,000 gross tons employing regular catcher vessels. Under the new regulations, vessels which have engaged in mothership-type tuna fishing for the past two years fall under this category. They include four fleets of three of the largest fishery firms in Japan.

In the past, mothership fleets have been allowed to augment their total catch quota of 13,600 metric tons with an additional 9,300 metric tons by agreeing to lay up tuna fishing vessels for specified lengths of time. These two catch figures, 13,600 and 9,300 tons, have now been combined into one over-all quota of 22,900 tons, which will be distributed to each of the four fleets on the basis of past records. However, the old system of augmenting the established quota by agreeing to lay up fishing vessels for specified lengths of time is still in effect. The primary difference is that more teeth have been put in this clause. Tuna mothership fleets, if they wish to augment their regular quota, must make definite arrangements to actually take out fishing vessels from the tuna fishery. Length of time that a particular fishing vessel would be laid up would depend on its size, and the equivalent amount of tuna which that vessel theoretically could catch but did not because of being laid up would represent the amount by which that tuna motherhip fleet could increase her established quota.

Fishing areas are the same as before. Fleets are restricted to the following areas: North of the equator--area east of 170° W. longitude; equator to 25° S. latitude--area east of 170° E. longitude; and south of 25° S. latitude--area east of 160° E. longitude. However, in the authorized fishing area lying to the west of 170° W. longitude, which would be the area below the equator, only two fleets will be allowed to operate at any one time.

As before, medium-class tuna vessels (over 40 gross tons but less than 100 gross tons) and distant-water fishing vessels

less than 200 gross tons are permitted to engage in this fishery. However, motherships fishing in the area to the east of 170° W. longitude can employ catcher vessels up to 240 gross tons. Use of portable fishing vessels is not permitted for motherships in this category.

Motherships are required to report their daily noon position and daily total landings (catch by species, pieces, and pounds for the fleet), as well as numbers of vessels which landed fish during the day, to the Japanese Fishery Agency Director without delay. Catcher vessels must submit daily reports to the Fishery Agency inspector on board the mothership showing their noon position, effort (amount of gear set), and catch (by species, pieces, and pounds).

Portable-Vessel-Carrying Tuna Motherships: Motherships in this category are limited to authorized distant-water tuna fishing vessels which will be allowed to carry two or more portable fishing vessels of not more than 20 tons each. For each portable vessel one distant-water fishing vessel must be withdrawn from the fishery and for every two portable vessels 50 tons of distant-water fishing vessel rights must be put up as replacement. The unused tonnage of distant-water fishing vessels withdrawn from the fishery for replacement purposes can be used to enlarge medium and distant-water fishing vessels. It is believed that this unused tonnage available for replacement purposes will help accelerate the conversion of medium-class tuna fishing vessels to larger distant-water fishing vessels. Even if motherships in this category carry only one portable fishing vessel, they must still retire one distant-water fishing vessel and put up 50 tons as replacement.

Under the old regulations, distant-water fishing vessels were allowed to carry only one portable fishing vessel. Such vessels as may have operated with portable fishing vessels in the past are covered under special provisions whereby they are required to retire one distant-water fishing vessel from the fishery and put up 25 tons of this vessel for a second portable vessel. The unused tonnage would be disposed of in the manner stated earlier. According to the Fishery Agency, about 15 vessels are affected under this ruling. Tuna motherships in this category will be permitted to fish in the Atlantic Ocean, Indian Ocean, and Eastern Pacific (east of 130° W. longitude). Catch cannot be transported by vessels other than the mothership itself, and applications to engage as portable-vessel-carrying tuna motherships must be submitted by May 15. Use of portable fishing vessels is expected to greatly increase the efficiency of distant-water fishing vessels, as was clearly shown by *No. 21 Kuroshio Maru*, which was specially licensed to fish on an experimental basis for tuna with six portable fishing vessels. Special regulations will likely be drafted for *Kuroshio Maru* since the new regulations do not fit that vessel.

Nippon Suisan Shimbun, April 24, states in its editorial that it is very possible that the elimination of restrictions on portable vessels might well herald a day in the future, possibly two years hence, when tuna motherships will be carrying as many as 17 or 18 portable fishing vessels. It is interesting to note that on April 6 even before the new regulations were announced, one of the large Japanese fishery firms was proceeding with plans to construct a 3,800-ton portable-vessel-carrying tuna motherhip and eight portable fishing vessels in the ten-ton class. Construction was to have begun on April 1; target date of completion is September 15. (*Nippon Suisan Shimbun*, April 24; *Suisan Keizai Shimbun*, April 19-21; and *Suisan Tsushin*, April 6, 1961.)

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TUNA LANDING AT YAIZU, JANUARY-APRIL 1961:

April tuna landings at Yaizu, a major Japanese tuna port, amounted to 13,417 short

Japan (Contd.):

tons valued ex-vessel at over 1,226,850,000 yen (US\$3,407,917). Landings for January to April 1961 totaled 43,193 tons valued at over 3,840,520,000 yen (\$10,668,111). This represents a decline in landings of 3,524 short tons from the same four-months period in 1960, but an increase in value of over 679,560,000 yen (\$1,887,667).

Tuna Landings and Ex-Vessel Values at Yaizu, April 1961				
Species	Landings	Values		
		¥1,000	US\$	US\$
	Short Tons			Avg. Price/Short Ton
Bluefin	265	90,077	250,214	942
Indian bluefin	4,529	357,853	994,936	219
Big-eyed	1,037	91,437	253,992	245
Yellowfin	1,346	135,171	375,475	279
Albacore	1,339	137,403	381,675	285
Skipjack	2,122	214,749	596,525	281
Pacific mackerel	1,489	75,352	209,311	141

Bluefin, yellowfin, and big-eyed tuna landings made up over half of the total landings for April, and amounted to over 7,000 tons. Albacore landings totaled slightly over 1,300 tons, about 300 tons more than in the same period a year ago. Skipjack and Pacific mackerel landings were down compared to April 1960 and continued to bring high prices. (Suisan Keizai Shinbun, May 7, 1961.)

FIRST SUMMER ALBACORE LANDED:

The first landing of summer albacore was reported at the Japanese port of Shimizu on March 27. One-pole-vessel Kotohira Maru (120 tons) of the prefecture landed 3.5 metric tons of large albacore and 11 tons of large skipjack, which were caught around Nishinoshima, Bonin.

On about the same date, a landing of summer albacore was also reported at the port of Yaizu. Japanese differentiate between winter and summer albacore on the basis that the albacore live in greater depths during the winter and in the summer rise closer to the surface layer. (Japanese periodical dated April 10, 1961.)

COASTAL SKIPJACK AND ALBACORE TUNA FISHING TRENDS, APRIL 1961:

Skipjack and albacore tuna fishing in areas near Japan started 10 days later than usual. Fishing began in mid-April. Fishing for skipjack was concentrated around 20 or 30

miles off the coast of the central part of Honshu, and the principal fishing ground for albacore was also in nearby waters. It was reported that 7-10 metric tons a day was the average catch of each vessel fishing.

The schools of skipjack appeared in the fishing area after April 15. Fish of 3-4½ pound size were being caught by hook-and-line boats. The biggest haul was more than 20 tons a day and the daily average 7-10 tons.

The number of vessels fishing for albacore was still small in April and some of them were reported to have caught some 40 tons a day. Good fishing was expected.

Off the coast of the Izu Peninsula where bait is sought by fishing vessels of Yaizu and Shimizu, poor sardine fishing was experienced this year, and the small sardine used for skipjack hook-and-line fishing could not be found. Some of the boats had to go to the southern part of Kyushu to get their bait.

Towards the end of April, 121 tons of skipjack were landed by 9 vessels and 43 tons of albacore by 2 boats at the Yaizu market, and ex-vessel prices were reported maintaining their high level. Processors and canners have been complaining about the shortage of raw tuna for processing. (Fisheries Economic News, April 26, 1961.)

SKIPJACK TUNA FISHERY LANDINGS IMPROVED IN APRIL 1961:

Japanese skipjack tuna fishing, which had been erratic since the beginning of the fishing season, was reported to have picked up considerably in the latter weeks of April 1961. New schools of skipjack were located off Wakayama and Mie Prefectures in Central Japan in late April and about 30 vessels from Mie Prefecture were reported concentrated in that area. The vessels were reported catching from 4 to 7 tons per day, with a high of 20 tons a day, of fish averaging 2.2 pounds in the area 32°30' N, and 136°40' E. Most of the fish were landed in Yaizu, and the vessels averaged 20 to 30 tons per trip.

Fishing vessels from Shizuoka Prefecture, numbering over 20, were reported to be concentrated on the fishing grounds near the Ogasawara Islands (27° N., 142° E.). The vessels were also making excellent catches of 3- to 4½-pound fish, catching from 5 to 10 tons of skipjack per day.

Japan (Contd.):

Due to increased landings, the price of skipjack for the last ten days of April on the Tokyo Central Fish Market fell 20 to 30 percent from the previous ten days and sold for as low as 80 to 120 yen per kilogram (US\$202-303 per short ton). During this same period, Pacific mackerel sold for 53 to 60 yen per kilogram (\$133-\$152 a short ton); jack mackerel for 50 to 60 yen per kilogram (\$126-\$152 a short ton); and sardines, due to their poor quality, for 40 to 53 yen per kilogram (\$101-\$133 a short ton). (Nippon Suisan Shimbun, May 3 & 5, 1961.)

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THREE NEW CANNED TUNA PRODUCTS TO BE MARKETED:

A Japanese firm is reported to have completed experiments on three new kinds of canned tuna products which are to be sold in competition with the canned "Tender Tuna" placed on the market during 1960.

The three new products packed in vegetable oil with additional ingredients are called: (1) "curry tuna" which contains curry powder as an ingredient, (2) "vegetable tuna" to which tomato soup and potatoes have been added, and (3) "sandwich tuna," a paste for sandwiches.

The new products were scheduled to appear on the market the latter part of April 1961. Packed in flat No. 2 or half-pound cans, they will sell at retail for ¥60 (16.7 U. S. cents) a can. Production of the new tuna products at this time is planned on a trial basis only. (Suisan Tsushin, April 19, 1961.)

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TUNA MOTHERSHIP FLEET SAILS FOR SOUTH PACIFIC:

The Japanese tuna mothership Tenyo Maru No. 3 (3,700 tons) and its catchers sailed from Tokyo for the South Pacific fishing ground as this year's first mothership-type tuna fishing fleet. The fleet consists of 45 catchers and 8 carriers and its catch target is 8,000 metric tons from which 7,150 tons of products are expected to be processed. Operations were to begin immediately after the fleet's arrival at the fishing ground around May 2, and at the end of August it will leave the sea area for a Japanese port, arriving there in mid-Septem-

ber. (Fisheries Economic News, April 24, 1961.)

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METHOD DEVELOPED FOR EXTENDING "SHELF-LIFE" OF TUNA SASHIMI:

A Japanese from Kesennuma, Miyagi Prefecture, is reported to have developed a method of preserving tuna sashimi (thinly-sliced raw tuna) for a period of over a week. Ordinarily sashimi does not last more than 2 or 3 days when the weather is mild but his product is said to retain its freshness for over a week. He has achieved this by slicing tuna into sashimi size and treating it with a desiccant (substance for drying food). Each slice is packaged separately and flavored lightly with soybean sauce. The product can be eaten directly as is and can be taken along on long trips or served at parties. The Japanese developer has had considerable success in food-drying techniques with saury, oyster, Pacific mackerel, etc., which he sells commercially. He hopes to improve the quality of his "instant sashimi" by conducting further experiments to improve its flavor. (Nippon Suisan Shimbun, May 5, 1961.)

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ANTARCTIC WHALING PRODUCTION FOR 1960/61 SEASON SETS NEW RECORD:

The seven Japanese Antarctic whaling fleets during the 1960/61 season set a new production record with 238,801 metric tons of whale oil and meat, exceeding that of the previous year by 37,000 tons. Fish whale oil production amounted to 101,225 tons; frozen whale meat, 121,211 tons; and other products, 16,365 tons. (Suisan Tsushin, April 6, 1961.)

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NORTH PACIFIC WHALING OPERATIONS BEGUN IN MAY:

Whaling operations in the North Pacific by the Japanese began about May 21, 1961, with the departure of two mothership fleets. Operations are to be centered in the vicinity of the Aleutian Islands and both north and south of the Alaskan Peninsula. There is a quota of 1,800 sperm whales for the sperm whale fleet and 800 blue-whale units for the baleen whale fleet. The two mothership fleets will be operated jointly by five Japanese fishing companies.

Japan (Contd.):



Typical Japanese whaling vessel operating in North Pacific.

The season will end for the sperm whale fleet with the return of the sperm whale mothership Kinjo Maru (11,000 tons) on August 13 and the blue whale mothership Kyokuyo Maru (11,500 tons) on August 26. (United States Embassy in Tokyo, May 19, 1961.)



Liberia

TUNA FISHERY TRENDS:

An agreement (announced in Taipei on March 30, 1961) between the Republic of China and Liberia provides for technical cooperation on agriculture, fisheries, and industry.

For fisheries, according to the agreement, China will send to Liberia a team of specialists to work out a plan for the two countries to establish a joint tuna long-line fishing industry. Liberia is interested in the employment of "skilled and proficient" Chinese crews to help develop trawling and purse-seine fisheries.

A Liberian periodical of March 20, 1961, reported that Japanese fishing interests under the firm name of "The Fishing Company of Liberia" completed an agreement with the Liberian Government to fish for tuna and construct a freezing plant at the Free Port of Monrovia.

Until the freezing plant is constructed, the firm will use a ship equipped with freezing facilities for storage of fish at the Free Port. Already six fishing vessels have arrived and according to company officials up to 20 additional vessels will be brought in consistent with the planned expansion of this enterprise (United States Embassy in Monrovia, May 3, 1961.)



Malaya

TUNA CANNING FACILITIES IN PENANG:

The Fisheries Department of the Federation of Malaya reports that there is only one fish cannery in the Federation of Malaya. Other facilities are very small village-type operations and include shrimp paste operations and fish salting.

The one cannery, located in Penang, is a joint Malayan-Japanese venture. The cannery was organized in 1959 with pioneer status from the Government and began operations in February 1960. It is reportedly considering the establishment of another cannery in the Federation of Malaya. Its present output is limited to tuna products. The main canning line is 5,000 cases of tuna in soybean oil, 10 percent of which is flakes and 30 percent chunks. It also produces about 400 pieces of tuna sausages per day. The company has

Malaya (Contd.):

leased the facilities of two other canneries in Penang. Those two canneries are under contract to process the tuna output of the Malayan-Japanese firm at least until the new canning facilities are erected. The two leased factories, however, are believed to be engaged in the canning of their own products, chiefly fruits, in part of their facilities and on their own account.

All of the pack of the Malayan-Japanese firm is sold for export to European countries. The management reports that it has not been successful in developing a market for tuna products in the Federation of Malaya. (U. S. Embassy, Kuala Lumpur, April 24, 1961.)



Morocco

FISHERY TRENDS, FIRST QUARTER 1961:

The first quarter of the year is not a particularly active time for the Moroccan fishing industry. During this period in 1961, a law defining maritime terms and regions was published, and various groups met to discuss Moroccan fishery problems. Efforts to increase fishery products exports appeared to meet with some success as indicated by the higher 1960 exports.

Morocco's 1960 marine fish catch amounted to 161,680 metric tons^{1/} valued at 61 million dirhams (US\$12.1 million). The catch increased 10 percent over the previous year, but was less than the 1958 production. The leading species was sardines, of which 119,250 metric tons were landed, compared with the 1959 catch of 103,880 tons. Safi was the leading port with sardine landings of 77,290 tons. The species which followed in importance on the basis of value were mackerel and tuna. Landings in Agadir dropped 40 percent due

to the earthquake that destroyed most of the city in February 1960.

As in the past, about 70 percent of the commercial fish catch was canned. Most of the remainder was processed into byproducts, except for small amounts frozen for export. Only about 9 percent of the total catch was consumed on the local market.

Exports of fishery products in 1960 showed general improvement as compared with previous years, but were lower for fish meal and tuna. (See table.)

A law published in February 1961 modified the basic maritime and fishery regulations by setting up nine coastal districts, and by defining types of navigation according to ports called and distances traveled. These modifications have little significance except that it is anticipated that they will form the basis for later regulations.

Two groups interested in the fishing industry met during the first quarter of 1961. A Casablanca committee of fishing boat operators met with Government officials in February to discuss topics of current interest. The percentage of foreigners in the crews was to be kept at an absolute minimum; and it was asked that fishing vessels aiding boats in distress be paid more to compensate for the catch lost. It was recognized that the outfitter had the right to choose the captain of the vessel. A meeting of all groups in the country concerned with fisheries met at the end of March. Among the problems discussed were the price of fuel, and the modification of the contracts between the boat owners and the factories.

Efforts to expand exports, particularly of canned fish, are continuing through trade agreements and publicity. Canned fish have figured in the bilateral trade agreements concluded during the quarter, including one made with Cuba. In addition, a publicity campaign to help sell sardines in the United States is being con-

Moroccan Fishery Products Exports, 1958-1960

	QUANTITY			VALUE					
	1960	1959	1958	1960		1959		1958	
	..... (Metric Tons)			1,000 Dirhams	US\$ 1,000	1,000 Dirhams	US\$ 1,000	1,000 Dirhams	US\$ 1,000
Fresh fish	14,437	14,755	11,952	14,956	2,956	14,542	2,874	11,377	2,248
Fish meal	14,587	17,143	21,795	6,231	1,231	14,587	2,883	11,065	2,187
Fish oil	5,047	4,074	3,818	2,931	579	5,047	997	2,784	550
Canned fish:									
Sardines	34,070	29,907	26,653	93,668	18,515	71,704	14,171	62,401	12,332
Tuna	2,867	3,215	3,175	10,126	2,001	9,950	1,966	10,218	2,019
Others	5,408	3,665	2,042	8,436	1,667	4,094	809	2,230	441
Totals	76,416	72,759	69,435	136,348	26,949	119,924	23,700	100,075	19,777

^{1/}Revised.

Morocco (Contd.):

ducted, although shipments fell off from 50,875 cases in 1959 to 46,196 cases during 1960. With the high price received for Moroccan sardines in France under a duty-free quota system, lower prices on sardines shipped to the United States can be accepted. Also, when foreign currency is earned, the Moroccan Government grants licenses for the import of United States goods which generally bring higher profits. (United States Embassy in Rabat, April 27, 1961.)



Norway

COD FISHERY TRENDS,
JANUARY-APRIL 1961:

Norway's landings of mature and young cod this year through April 22 totaled 97,212 metric tons as compared with 87,839 tons in 1960. Most of the landings were dried unsalted, with the balance sold fresh or salted.

Norwegian Landings and Utilization of Mature and Young Cod				
Utilization	1961 to 4/22	1960 to 4/23	1959 to 4/25	1958 to 4/19
	..... (Metric Tons)			
Drying (unsalted)	51,513	41,155	70,895	47,120
Salting	24,686	29,810	15,877	27,811
Fresh market and for fillets	21,013	16,874	22,284	14,882
Total Landings	97,212	87,839	109,056	89,813

The Lofoten cod fishery season ended officially on April 24 with 41,664 metric tons with an ex-vessel value estimated at about Kr. 45 million (US\$6.3 million). This was considerably better than in the 1960 season when fishermen landed a total of 37,387 tons.

At the height of the season only 8,878 men took part in the Lofoten fishery. This is the lowest participation since the State inspection service was started in 1880. Only once before, in the record year of 1947, have crews on fishing vessels received a larger share per man, mainly because of a surprisingly big catch, record high prices, and low participation.

The Lofoten season provided a good start for producers of sun-dried cod. With continued good landings, exports of sun-dried cod this year may reach a value of Kr. 39 million (\$5.4 million).

The spring season off the coast of Finnmark looked quite promising in April. The

catch from that fishery through April 24 was well over 27,000 tons, including 24,000 tons of cod. At the same time last year the catch was less than 20,000 tons of which cod accounted for 16,000 tons. (News of Norway, May 11, 1961; Fisket Gang, April 27, 1961.)

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EXPERIMENTAL TUNA FISHING
OFF WEST AFRICA FAILS:

The six Norwegian fishing vessels which left Alesund last fall for West African fishing grounds to attempt tuna fishing on a large scale, have abandoned their project and returned home.

The fleet included the fisheries research vessel Johann Hjort, and the refrigerated transport vessel Caribia.

It is learned that the voyage, which was a trial run guaranteed by the Norwegian Government to owners and crew, was a failure.

Tuna were scarce and the owners expressed themselves as "disillusioned as to the prospects."

The Government guarantee has therefore been terminated. (Fishing News, April 7, 1961.)

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FIRST FACTORYSHIP
TRAWLER DELIVERED:

Norway's only factoryship trawler, the M/S Havkvern II, was delivered in December 1960 to her owners in Bergen.

Built in Holland during the last war for the German Navy, the ship was sunk, salvaged after the war, converted for trawling, and given the name of Kelt. After an engine breakdown the trawler was sold to her present owners and has now been completely reconstructed into a modern factoryship trawler. The vessel is 202.4 feet over-all in length, has a 30.0-foot beam, and a depth of 15.8 feet.

Havkvern II is a starboard trawler and equipped with a 4-stroke, 8-cylinder Diesel engine, developing 1,250 hp. at 325 r.p.m. In addition, two auxiliary engines have been installed, plus a hydraulic winch and a steering engine. The trawler has two echo sounders, radar, and navigator. It is also equipped with machinery to manufacture fish meal and oil.

Norway (Contd.):

The factoryship trawler has a fresh-water generator and a skinning machine.

The freezing equipment (Freon 22) makes it possible to reach low temperatures with one stage. In the brine-cooled fillet freezers a temperature of -40° C. (-40° F.) is used, while the refrigerating room is based on direct evaporating and holds a temperature of -20° C. (-4.0° F.). The refrigerating room has a capacity of 125 metric tons of fish fillets. (Norwegian Fishing and Maritime News, vol. 7, no. 4, 1960.)

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GOOD PROSPECTS FOR DEVELOPING TUNA FISHERY:

Considerable shoals of bluefin tuna visit Northern European waters for about three months every summer. Details of recaptured specimens originally tagged in Norwegian waters indicate that the schools come from the Mediterranean, and that their visit to northern waters is merely a wild hunt for food. There migratory tuna prey on schools of fish like herring, sprat, and mackerel, and are also a dangerous enemy of the salmon.

Norway catches most of the tuna landed by North Sea countries. According to the Food and Agricultural Organization's fisheries statistics, Norway's landings were 3,004 metric tons in 1958, while Denmark landed 200 and Germany 400 tons.

Before 1947, the Norwegians caught about 200 tons of bluefin a year by harpoon hand-guns. In 1948, successful experiments with tuna purse seines persuaded several fishermen to take up this method, which resulted in landings of 2,563 tons in 1949. The bright reports of good earnings encouraged many skippers, and a record gross take of 11,480 tons was landed in 1952, while a record value was reported in 1955, when 352 purse-seine outfits divided 10,423 tons and almost £850,000 (US\$2.4 million) between them. The peak period, which ended in 1955, was succeeded by a decline which has been due to the peculiarities of tuna behavior rather than scarce stocks.

The following table showing Norway's rather short tuna fishing history suggests it might be relatively simple to maintain a stable tuna fishery.

Norway's Tuna Landings, 1949-1960				
Year	Landings	Value		Outfits Making Landings
		Metric Tons	1,000 Kroner		US$ 1,000
1960	3,240	6,000	839	86
1959	2,491	4,136	578	97
1958	3,004	4,307	602	157
1957	5,009	8,188	1,145	218
1956	4,135	6,899	965	244
1955	10,423	16,971	2,374	433
1954	9,451	14,725	2,059	1/
1953	7,951	9,707	1,358	1/
1952	11,480	16,126	2,255	1/
1949	2,563	3,707	519	1/

1/ Data unavailable.

Differing results between vessels are common to all fisheries, but in Norway, tuna fishing has been subject to violent fluctuations. The table shows a decrease in participation from 433 outfits in 1954, to 86 in 1960. (An "outfit" consists of the three boats necessary for tuna purse-seining.) Persevering owners have, however, bought several of the big seines for repair with the result that no new tuna purse seines have been made in recent years.

Since 1955, the weather has been a limiting factor, as the shoals have remained in the open sea instead of driving into sheltered waters as they did during the peak period. The main difficulty is, however, the behavior of the tuna itself.

The tuna usually arrive in Norwegian waters in July. They appear anywhere within the 800 nautical miles between Haugesund and Tromsø, where the shoals may stay in an area for a day, moving on again the next--faster than any vessel can steam.

Considering the impossibility of hunting the fish over such a vast field, and also because of the idle days due to bad weather or no fish, the fishermen have found it best to operate from central bases. The experience gained during these years shows that certain areas offer better possibilities than others, and it may be mentioned the tuna catch off Sogn og Fjordane and Hordaland amounted to 65 percent of the total landings in 1958, and 90 percent in 1960. The fishing north of this area has, with a few exceptions, been generally poorer, and in the south, along the Skagerrak coast and in Oslofjord, it has been only incidental. Several schools have, however, been seen every year.

In 1960, 86 purse-seine outfits landed 3,240 tons of tuna; 9 were without any catch

Norway (Contd.):

at all. Of the mentioned outfits, 34 were based south of Stad, or in the vicinity of the season's main fishing field. Their average catch was 56 tons valued at \$14,560, which indicated reasonable average earnings, but the catch varied between boats--one had less than 5 tons. The most successful outfit caught 240 tons valued at US\$61,600. After deduction of operational costs, the crew were entitled to 50 percent of the proceeds which means that each member would receive \$2,800--a good income for less than 3 month's work. (The 1960 season began on July 16 and ended on October 8.)

To get within fishing distance of the schools is a difficult part of tuna purse-seining. The fish are always moving at a speed governed by the type of food for which they are hunting. They are said to swim comparatively slow when after herring, faster for mackerel, and the fastest when their prey are few, or none. The end of the season is usually characterized by the virtual impossibility of getting within fishing range. This is a natural phenomenon as in the autumn the bait shoals are few and take to deep water because their food source--the plankton of the surface layers--is exhausted.

The Norwegians use a tuna purse-seine net of about 350 fathoms in length, 40 fathoms in depth on the wings and 50 fathoms in the center of the bag. Mesh size is 7.9 inches. An outfit consists of a deck purse-seine vessel of 60 to 70 feet, and an auxiliary vessel of about 50 feet, with a powerful engine. The purse seiner has also an open motor boat ("arm" or "ear" boat) for making the purse, and the auxiliary's task is to hold the purse seiner against the wind or clear of the net. The complement for both the vessels is 10 to 12 men.

Speed and precision are highly essential in shooting and hauling the net. The difficulties end when the net has been retrieved since the shoals can only swim in the bag.

As all tuna scouting is by eyesight, the purse seiners are fitted with a foremast lookout nest. A plane is also chartered for scouting and costs the fishermen only about a fraction of a cent per pound landed. (World Fishing, December 1960.)

Note: Kroner values converted at rate of 7.15 kroner equals US\$1.

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MULTIPURPOSE FISHING VESSELS PLANNED:

A new type of combined stern trawler-mid-water trawler-purse seiner is to be built in Norway after nearly two years' research in cooperation with fishermen, the Trondheim model testing tank, and a Scottish firm, pioneers of stern-type factory-trawlers. For purse-seining, the vessel will be fitted with power blocks.

These triple-purpose vessels will be 151 feet long over-all, with a moulded beam of 28 feet and loaded draught of 14 feet 6 inches. Fish hold capacity will be 10,000 cubic feet, meal tanks 2,000 cubic feet, and 30 tons of fish oil will be carried in the double bottom. Two continuous decks will provide sheltered space for sorting, cleaning, and gutting the catch, and there will be access to all parts of the vessel without crossing the open deck. A crew of 20 will be accommodated in single or double cabins, and facilities will include two large drying rooms for the crew.

The vessels will be fitted with a variable pitch propeller encompassed by a nozzle rudder. Estimated cost of building these vessels in Norway is about US\$497,000. (Australian Fisheries Newsletter, March 1961.)



Peru

FISH OIL PRODUCTION AND EXPORTS, 1955-60:

If Peruvian fish oil production in 1961 reaches 67,000 short tons, as tentatively forecast, almost 60,000 tons will be available for export this year.

Exports of a record 38,584 tons in 1960 were twice the previous record of 18,921 tons in 1959 and 7 times the 5,503-ton average of 1955 through 1959. Data on 1960 exports by destination are not available. In prior years, however, Western Europe received practically all of Peru's fish oils.

Year	Production	Exports
		(Short Tons)
1960	44,000	38,584
1959	26,120	18,921
1958	11,322	1,811
1957	8,454	4,781
1956	3,338	1,897
1955	1,354	102

Peru (Contd.):

The rapid rise in exports of fish oil reflects a similar increase in production. Domestic consumption has increased but more slowly than exports. In 1960, domestic consumption was estimated at about 8,000 tons against 1,200 tons in 1955. (Foreign Crops and Markets, U. S. Department of Agriculture, April 10, 1961.)

FISH MEAL INDUSTRY TRENDS, FIRST QUARTER 1961:

The improvement in fish meal prices was the most important development in Peru's fishery industry during the first quarter of 1961. From an average of about US\$56 per short ton in January f.o.b. Peruvian ports, prices rose to nearly \$72 in March. There were reports that so-called "floating parcels"--shipments en route to Europe, whose buyers were willing to sell--were being quoted at \$117 a ton in early April. There were also rumors that speculative elements of the fish meal trade which made forward sales of Peruvian fish meal at the low 1960 prices were having difficulty covering their contracts.

A Peruvian marketing organization, whose membership consists of fish meal producers representing approximately 90 percent of the total Peruvian fish meal production, began operations on February 15, 1961. All fish meal exports from Peru except those of the non-member producers are handled by the newly formed organization on a quota basis, and the recovery of prices would appear to indicate that its operation has exercised a favorable, steadying effect on the industry. Information has not been made public regarding quotas assigned to each producer, nor the quarterly division of the 600,000 metric ton limit placed on Peru's fish meal

exports for the current year as a result of the international meeting of fish meal producers in Paris last October. It is understood that the quarterly quota is related to the seasonal availability of anchovy, that is, it would be larger during a season of heavy fishing. Further, quarterly quotas for individual producers, particularly during the initial period of the organization, are understood to be flexible enough to take care of forward contracts.



Fish-reduction plants.

Two new fish meal processing developments have occurred in Peru. Two producers, one at Supe, the other at Chimbote, are using steam-drying equipment in new installations, which

Table 1 - Peruvian Exports of Fishery Products, 1960 and 1959

Product	1960			1959		
	Quantity	Value ^{1/}		Quantity	Value ^{1/}	
	Metric Tons	Million Soles	US\$ 1,000	Metric Tons	Million Soles	US\$ 1,000
Frozen Fish:						
Skipjack tuna	10,527	28.1	1,029	7,928	23.9	871
Other tuna	7,053	21.0	769	17,466	53.3	1,942
Swordfish	137	1.7	62	347	4.4	160
Shrimp (langostinos)	132	3.2	117	88	2.0	73
Total frozen fish	17,849	54.0	1,977	25,829	83.6	3,046
Canned Fish:						
Bonito	14,202	142.8	5,231	16,745	174.2	6,346
Tuna	797	7.9	289	776	6.4	233
Total canned fish	14,999	150.7	5,520	17,521	180.6	6,579
Fishery Byproducts:						
Fish meal	507,042	1,056.4	38,696	277,600	860.5	31,348
Fish oil	35,008	99.2	3,634	17,165	44.7	1,628
Sperm oil	13,500	46.3	1,696	10,004	33.9	1,235
Whale meal	2,783	4.7	172	3,317	9.7	353
Total byproducts	558,333	1,206.6	44,198	308,086	948.8	34,564
Grand Total	591,181	1,411.3	51,695	351,436	1,213.0	44,189

^{1/}F.o.b. values, converted at rate of 27.30 soles equal US\$1 in 1960, and 27.45 soles equal US\$1 in 1959.
Source: Statistical Department, Callao Customhouse.

Peru (Contd.):

is considered to result in a better product than that from flame-drying equipment. A large new plant on the shore just north of Callao, which installed equipment to recover residues from stickwater, previously wasted, is now making "whole" fish meal-dry solubles are added to ordinary fish meal to increase protein content to a guaranteed minimum of 70 percent. The producer is preparing to have the product tested in actual use in poultry and animal feeds.

Peruvian fish meal producers are not without their problems at this time. Air pollution from plants in the Lima metropolitan area has been a perennial problem for a number of years, and it has intensified as the number of plants has increased. The odors which are particularly noticeable under certain atmospheric conditions, have caused many complaints, some of which have even resulted in alleged illness. Numerous governmental and municipal actions have been taken in recent months to require plants to install deodorizing equipment, and many have done so. One governmental action prohibited operations between 5 and 9 a.m., so as to reduce the volume of fumes emitted. About mid-March, the Government took action to fine and/or close plants which had not complied with the regulations requiring the installation and operation of deodorizing equipment. Moreover, there has been a proposal to relocate the approximately 35 fish meal plants in the Lima-Callao area. Employed by a Government-appointed industry committee, a French expert was brought to Peru early in April under a \$7,000, 90-day contract to attempt to locate a site for a fishing port to which the plants may be moved. The search for a solution to the problem is being continued. It is understood that the temporary closing of a number of plants had no significant effect on fish meal production. Many of the plant closures took place during a period of reduced fishing.

In third position among Peru's leading exports during the first nine months of 1960, fish meal was displaced by sugar which ranked third for the full year, as a result of increased sugar exports in response to the expanded United States sugar quota. For the full year of 1960, fish meal exports of 507,000 metric tons were valued at 1,056.4 million soles (\$38.7 million), an 83-percent increase in quantity and a 23-percent increase in value over 1959. The 1960 exports of other fishery products varied in comparison with 1959. There was a 33-percent increase in exports of frozen skipjack tuna, but a 60-percent drop in shipments of other frozen tuna. Peru's shrimp exports increased 50 percent, but canned bonito was down 15 percent. (United States Embassy in Lima, April 11, 1961.)



Philippines

U. S. FRESH-WATER FISHERY EXPERT TO ASSIST IN ORGANIZING LIMNOLOGICAL LABORATORY:

The Chief of the Lake Erie Fishery Investigations for the U. S. Bureau of Commercial Fisheries was at the Food and Agriculture Organization (FAO) headquarters during March 1961 for briefing before beginning a year's assignment as an FAO fishery expert in the Philippines. He was scheduled to leave for Manila early in April.

As a limnologist, he will assist the Philippine Government in organizing the work for a limnological laboratory which is under construction. He will also conduct fishery and limnological investigations of inland Philip-

pine waters. Limnology is the study of the physical, chemical, and biological conditions of fresh waters.



Portugal

FISHERIES TRENDS, FIRST QUARTER 1961:

By April 15, 1961, practically all of Portugal's cod hand-line sail and motor vessels had departed for the Newfoundland Banks. Most of the cod trawlers had left in late January and early March. Preliminary reports received from the trawlers on the Banks indicated that fishing may be better this year than in the 1960 season.

Sardine fishing was in its closed season from January 15 to April 15. Exports of canned sardines during January-February 1961 were about 20 percent less than in the first two months of 1960, with Portugal's three principal customers, the United States, Germany, and the United Kingdom, all taking less. Total canned fish exports also fell off, although exports of anchovies showed some improvement in both quantity and price.

Product	January-February 1961			January-February 1960		
	Qty.	Value 1/		Qty.	Value 2/	
	Metric Tons	1,000 Escudos	US\$ 1,000	Metric Tons	1,000 Escudos	US\$ 1,000
Sardines	6,886	113,427	3,929	8,593	121,512	4,221
Anchovies. . . .	806	20,046	694	717	17,027	591
Tuna	224	5,123	177	211	4,769	166
Other	178	2,956	102	251	3,429	119
Total	8,094	141,552	4,902	9,772	146,737	5,097

1/Values converted at rate of 28.87 escudos equal US\$1 for Jan.-Feb. 1961.
2/Values converted at rate of 28.79 escudos equal US\$1 for Jan.-Feb. 1960.

Landings in 1960 of sardines and anchovies, and production and exports of canned fish reflected a good production year for sardines, but production of anchovies fell off from 1959. Exports of canned sardines in 1960 declined from the 1959 level, but prices paid were higher. Anchovy exports in 1960, as compared with 1959, declined in both quantity and value.

Exports of canned tuna from Portugal have been increasing in the past few years, but remain small, 221 metric tons exported in January-February 1961 as compared with 211 tons during the first two months of 1960.

An innovation in the Portuguese sardine canning industry will be the introduction of aluminum cans within the next year or so. Two Portuguese canneries and a Canadian aluminum company are establishing a plant near Matosinhos which will have an initial production of 12 million cans. The new firm is capitalized at US\$35,000. The aluminum sheet for these cans may eventually come from a rolling mill to be built near Lisbon.

Late in 1960 Lisbon's new fishing dock (now under construction at Pedroucos) was leased to a new firm. Some further details on this dock, recently published, give the total enclosed area as 17,940 square yards, of which 8,372 will be for sorting, displaying, and salting of fish and the remainder for commercial, administrative, and other installations. A separate covered area of 1,435 square yards will be for unloading sardines and other fish. The unloading quay running in front of the building will eventually be 622 yards long and there will be an additional 837 yards of quay for other purposes. The cost of installations at the dock is estimated at US\$1.4 million and the number of personnel to be employed is estimated at 700-800. (United States Embassy in Lisbon, April 17, 1961.)

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South-West Africa

FISHERY TRENDS FOR 1960:

South-West Africa's 1960 fishing season at Walvis Bay and Luderitz was very successful. The total pilchard and maasbanker catch quota of 310,000 short tons landed in 1960 yielded 55,122 short tons of fish meal, 14,905 long tons of fish oil, and a record pack of 4,713,474 cases (48 lbs. each) of canned pilchards. The total value of the 1960 production at the manufacturers' level was estimated at over 25 million S. A. rands (US\$35 million), compared with an estimated 16.6 million rands (\$23.2 million in 1959). The entire 1960 fish meal and fish oil production was sold. Fish meal production, however, still is not profitable due mainly to Peruvian competition, but profits from the sale of fish oil were reported to closely balance the fish meal losses. The real profits in 1960 came from the canneries. The year 1961 is expected to be another good year in sales of canned fish.

Table 1 - South-West Africa's Production of Sardine (Pilchard) and Spiny Lobster Products, 1959-1960

Item	Production	
	1960	1959
	... (Short Tons) ...	
Pilchard:		
Canned	114,034	41,943
Fish meal	55,122	60,852
Fish oil	16,694	19,377
	... (1,000 Lbs.) ...	
Spiny lobster:		
Canned	399.4	502.7
Frozen tails	1,060.0	2,478.3
Meal	2,029.4	2,386.5

The South-West African pilchard industry is not affected by the drop in world fish meal prices to the same extent as the pilchard industry in the Union of South Africa. The reason is that the fish are caught so close to the factories that they can be landed with very little spoilage, and are of good enough quality for canning. By contrast, in the Union of South Africa, the fish are caught so far from the factories that by the time they are landed, only a small amount of the catch is suitable for canning, and the bulk is processed into meal and oil.

The 1960 spiny lobster season was not as good as the previous year. The canned and frozen spiny lobster production for 1960 was down 51 percent as compared with 1959. In addition to the pilchard-maasbanker catch, about 15,000 tons of spiny lobster, snoek, and other fish was landed. The whitefish catch amounted to only 2,700 tons valued at

230,000 rands (\$322,000), or less than 1 percent of the total catch. The most important single species was snoek of which 1,043 tons was landed. The 1960 spiny lobster catch amounted to 4,324 short tons. Prices paid to the boats in 1960 are shown in table 2.

Table 2 - South-West Africa Ex-Vessel Prices of Selected Species, 1960

Species	Rands/ Short Ton	US\$/ Short Ton
Pilchards/maasbanker	9.20	12.88
Snoek	100.00	140.00
Spiny lobster	92.00	128.80
Cape hake	50.00	70.00
Soles	250.00	350.00
Kabeljou	67.27	94.18
Kingklip	250.00	350.00
Steenbras	67.27	94.18
Shark, skate, & others	55.00	77.00

The South-West African 1961 quota for pilchard and maasbanker was set at 275,000 tons, and it is expected that as much as 100,000 tons more will be added as a supplementary quota for the year.

The sixth pilchard cannery at Walvis Bay was scheduled to start operations during May 1961. (United States Consulate, Cape Town, March 30 and May 29, 1961.)

Note: One South African rand equals about US\$1.40.



Spain

BILBAO FISHERIES TRENDS, FIRST QUARTER 1961:

Landings were so heavy during the anchovy fishing season which opened March 1, 1961, in the Bilbao area of northern Spain that members of the fishermen's association agreed to limit their catches, and insisted on minimum prices which ranged from 1.75 pesetas a kilogram (about 1.3 U. S. cents a pound) in Guipuzcoa and Vizcaya to 3.75 pesetas a kilogram (about 2.8 U. S. cents a pound) in Oviedo.

The problem stemmed from inadequate preserving and processing facilities. During the 1960 fishing season, many anchovies were dumped back into the sea when the price threatened to drop below one peseta per kilogram (75 U. S. cents a 100 pounds). It was hoped that a new fish-meal processing plant with a capacity of 50 tons a day will be completed next year near Bermeo in time to alleviate the situation. Additional plants and refrigeration facilities are needed, however.

Spain (Contd.):

General dissatisfaction was reported among the Bermeo fishing fleet on its return in March 1961 from the tuna fishing grounds off Dakar. Catches ran from 65 to 125 tons per boat, but the fish brought low prices because of their smaller average size. Reports were that the fleet may not return next year unless more satisfactory handling methods can be developed, and refrigerator fishing vessels were used. (United States Consulate dispatch from Bilbao, April 19, 1961.)

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UNITED STATES AND JAPANESE
TROPICAL ATLANTIC TUNA ACTIVITIES
AFFECT TUNA CANNERS:

An article "The Paradox of Spanish Tropical Tuna," which recently appeared in two fishing industry trade journals, Industrias Pesqueras and Industria Conservera, deals with the concern of the Spanish tuna interests over recent activities of the Japanese and United States tuna interests in exploitation of the Atlantic tropical tuna. The article describes reported attempts by the Japanese to operate directly in Spain and recent United States purchases of tuna from Spanish fishing vessels as prejudicial to the Spanish fish-canning industry.

According to recent news items, a large United States canning firm with headquarters in California purchased during the winter of 1960/61 the catches of the Spanish tuna fleet fishing in West African waters. Normally the fleet's catches are purchased and processed by Spanish canning plants in the Canary Islands. These sales to the United States firm are regarded as representing a loss to Spain of potential wealth from exclusive Spanish exploitation of these tuna catches.

A translation of the article published in the Spanish fishery publication Industrias Pesqueras, April 1, 1961, follows:

"The increase in the production of species of the tuna family is a phenomenon of our times. The development of the tuna industry--fishery and processing--which started about twenty years ago with the spectacular operation of California tuna clippers in the equatorial zone, has been on the increase. World War II, when the United States (fishing) fleet became temporarily inactive, helped the

development of the Peruvian fleet, which had overlooked its privileged position near the Galapagos--an inexhaustible source of supply. At the end of the war, the resumption of operations by the Japanese contributed to the development of the tuna industry in the Balboa Ocean which has reached an undreamed-of level.

"Unexpected also were the reactions of the consumer to the increased supply of canned tuna. The United States market for canned foods underwent a great change, and the results were highly satisfactory for the development of the new industry. Consumers in the United States, Cuba, Switzerland, welcomed the new food product.

"This movement has affected almost exclusively Pacific tuna. The Atlantic industry, mainly the European industry, kept to its traditional routine for over 15 years after the start of the development of United States and Japanese tuna fisheries. The importance of the massive resource and its future possibilities have been grasped only after a long time, and the Atlantic tropic included in the usual fishing zones.

"However, quality was represented by white meat tuna, which roams our coasts. There were no large-scale operations, so much to the United States taste, but there was always the possibility of increasing consumption, in the event of increasing catches. It seems that this moment has arrived, and it is a good idea to foresee the possible turn of events.

"For some years now the Japanese have been trying to introduce themselves into the area of Atlantic tuna. Their fleet based in Recife (Brazil) is one of the more evident results of the Japanese industrial development, in a field that seemed to be reserved to Western countries. It is no secret that an important Japanese firm has contacted the Consorcio Almadrabero and other Spanish industrial groups in connection with the use of modern units in the capture of tropical tuna and to process it in factories in the South of Spain.

"These first Eastern steps have not been overlooked by the large United States canneries. The latter control most of the Californian fleet, and buy in advance their landings of frozen tuna, but they have not abandoned the Atlantic and since 1954 have extended their plants to Puerto Rico, considering no doubt the convenience of obtaining close

Spain (Contd.):

to the source of supply catches of tuna from the Caribbean and the Gulf of Mexico.

"The Puerto Rican canning industry is now receiving important supplies of tuna catches off Dakar by Spanish 'tuna clippers.' And the large United States firms, with which the Spanish canneries should compete on the basis of quality, have started an intensive publicity campaign on the product processed from the raw material bought from the Spanish fleet from Bermeo, at prices and in conditions agreed upon at the beginning of the last fishing season.

"This episode should not be ignored. Its economic importance cannot be denied, both now and in the future. The Spanish canning industry has reasons to feel uneasy about this situation.

"Tropical tuna, which was captured during the fall-winter period by the small tuna boats from the Cantabrian, used to be absorbed by the fish canning plants in the Canaries. These plants were for the most part branch factories of plants established in the Peninsula (Spain).

"Foreign competition started at the beginning of the present season, and the large United States canners secured a new source of supply for Atlantic tuna. At the same time they forced Spanish canneries in the islands into inactivity by depriving them of a source of supply that they could not replace.

"There is no doubt that a difference in prices influenced this change. Perhaps the possibility of foreign competition in the na-

tional market should have been foreseen. In any case, it is now a question of considering the consequences that a recurrence of this situation in future years might have on the interests of the Spanish fish canning industry.

"It is true that the Americans pay in dollars and pay higher prices than those paid in other years by the canneries in the islands. But we cannot ignore that the difference is not insurmountable from the point of view of the income of ship owners and crew members. Even less, the fact that the dollar income for the Public Treasury would be much greater if, instead of selling tuna in its original state, the finished product were exported. The latter would, in addition, provide other advantages such as a greater employment, the use of national raw materials, etc.

"It will be seen that the subject is an interesting one from the point of view of the Spanish industry. Because, whatever the eventual advantage to the fishermen, other interests should also be kept in mind since they represent worthwhile enterprises."

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VIGO FISHERIES TRENDS, JANUARY-MARCH 1961:

Fish Exchange: Landings at the Vigo Fish Exchange for the first quarter of 1961 amounted to 14,387 metric tons, an increase of 2,419 tons over the first quarter of 1960. The value of the catch was 156,191,000 pesetas (US\$2,603,000), an increase of 14 percent over the value for the corresponding quarter of 1960. Catches for the fourth quarter of 1960 were 19,141 metric tons with a value of 170,647,000 pesetas (US\$2,844,000). The average price per kilo for the first quarters of 1961 and 1960, and for the fourth quarter 1960 were 10.84 (8.2 U.S. cents a pound), 11.63 (8.8 U.S. cents a pound), and 8.90 pesetas (6.6 U.S. cents a pound), respectively.

The sardine catch, which represented the largest landings in the fourth quarter of 1960 with 7,026 metric tons, was minimal during the first quarter of 1961 because of a closed season

Table 1 - Vigo Landings and Average Ex-Vessel Prices for Selected Species

Species	1961			1960					
	January-March			January-March			October-December		
	Qty.	Avg. Price		Qty.	Avg. Price		Qty.	Avg. Price	
	Metric Tons	Pesetas/ Kilo	US\$/ Lb.	Metric Tons	Pesetas/ Kilo	US\$/ Lb.	Metric Tons	Pesetas/ Kilo	US\$/ Lb.
Small hake	4,519	16.81	12.7	2,498	20.28	15.3	2,434	24.00	18.1
Pomfret	1,984	7.46	5.6	3,248	8.45	6.4	72	9.30	7.0
Faneca (Phycis phycis)	879	6.29	4.8	604	7.16	5.4	648	6.73	5.1
Hake	91	60.63	45.8	85	58.74	44.4	125	70.35	53.2
Horse mackerel	753	5.88	4.4	1,198	5.57	4.2	3,430	3.66	2.8

Spain (Contd.):

during half of the quarter. Pomfret landings increased substantially after the disappointing level of the fourth quarter in 1960 but did not approach the level of the previous year. The past winter's low landings were, in some instances, attributed to the system of catch division between vessel owners and the crew known as "a la parte." Under this system the individual crew members keep for themselves, in addition to their share of fish netted, all they catch with lines individually. It was reported that during the previous fishing season, individual landings by crew members amounted to 80 percent of the total pomfret landings which made it uneconomical for the vessel owners to send out the fleet for this species. According to those sources, the crews, having made relatively good money during the earlier albacore season, felt no economic pressure to agree to vessel owners' demand for a change in the catch division system in a manner more favorable to the owners.

Small hake prices, as indicated in table 1, were substantially lower than those in the previous quarter because of very plentiful supplies. Industry requests for permission to export frozen small hake to relieve the downward trend of domestic prices were reportedly refused. It was understood that the Government prefers that plentiful fish supplies continue to result in lower fish prices to counteract consumer pressure from causing price rises in meat.

Fish Canning and Processing: The first quarter of 1961 was a period of seasonally light activity for the fish canning industry as is normal between the end of one sardine season in December and the beginning of the next in April. Recent price increases of 15 to 20 percent for most species of canned fish sold in the domestic market have reportedly further reduced sales, already feeling the effects of consumer resistance to high prices. Cannery claim, however, that higher raw material costs--principally for imported tinplate, but

from competing among themselves for export markets, while another organization regarded such a step as contrary to principles of free trade and to current international tendencies against price-fixing. While there was general agreement as to the importance of some sort of single export organization, there still existed a wide range of views within the canning industry as to how far such an organization should go in attempting to market under a single brand name, or whether its activities should be limited to advertising to gain acceptance of Spanish canned fish. (United States Consulate, Vigo, April 19, 1961.)

Note: Values converted at rate of 60 pesetas equal US\$1.



Sweden

FUNDS ALLOTTED FOR ADVERTISING OF FISHERY PRODUCTS:

The Swedish Central Office for Fish Propaganda has been granted 100,000 crowns (US\$19,300) for advertising fish during the fiscal year beginning July 1, 1961. Import fees levied on fishery products will be used to obtain the money. The fund will be administered by the Swedish Board of Agriculture.

The Board of Agriculture originally proposed that the money be paid out direct to

Table 2 - Distribution of Landings at Vigo, First Quarter 1961, and First and Fourth Quarters 1960

	Shipped Fresh to Domestic Markets	Canning	Other Processing (smoking, drying, fish meal, etc.)	Local Consumption
	..... (Metric Tons)			
1st Quarter 1961	10,637	1,045	1,888	817
4th Quarter 1960	10,336	4,601	3,179	1,025
1st Quarter 1960	9,821	829	389	929

also for some species of fish and shellfish and for olive oil--made the increased prices mandatory.

Exports of Canned Fish: A questionnaire concerning fish products exports was circulated during the first quarter by the Ministry of Commerce to various organizations with an interest in the subject. Replies submitted from Galicia recommended various measures to develop Spanish exports, including: (1) renovation of the coastal fishing fleet which supplies most of the species processed; (2) adoption of modern fishing methods common in other countries; (3) importation of up-to-date equipment for the fleet including nylon nets, electronic sounding devices, mechanical net haulers; (4) modernization of canning plant and equipment; (5) formation of a single exporting-organization; (6) importation of such species as tuna for the canning industry when domestic landings fall short of the industry's needs; and (7) establishment and enforcement of regulations for both containers and quality control. Also included in the responses was acknowledgment of the need for a thorough study of the fishery products industry in Spain as a basis for any Government assistance and export promotion program.

Although there was general agreement among the responses to the questionnaire as to what general measures should be taken, there was some disagreement as to certain specific steps. For example, one reply recommended the establishment of minimum export prices to prevent Spanish exporters

the Central Office for Fish Propaganda from the price regulation fund. This plan, however, was not supported by the Council of State, the United States Consulate in Goteborg reported on May 8, 1961.

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SHRIMP PRICES DROP DUE TO INCREASE IN LANDINGS:

Prices for shrimp in Sweden have for some time been declining. The reasons are: (1) increased supplies in late years; and (2) imports of shrimp from Norway.

During the past two years shrimp fishing has been intensified and carried out in a completely different way than formerly. The vessels are larger and more powerful and the equipment has been improved.

Sweden (Contd.):

In addition, the number of vessels engaged in shrimp fishing has increased considerably. For example, in the Gravarne district on the west coast, there were about 25 shrimp trawlers two years ago; there are now 54 trawlers. In the Smogen area there were previously about 45 shrimp trawlers compared with 63 at present. With one exception all of the trawlers in the Smogen district now fish for shrimp. This same tendency is also apparent in the Gravarne district, where more and more herring trawlers are changing over to shrimp fishing.

The result of this trend has been that by reason of the increased capacity of the vessels, shrimp fishing has been extended farther out to sea and to a greater depth. Consequently, landings of shrimp have grown in number and quantity and prices have dropped.

There is a control, however, which prevents shrimp fishermen from landing as much shrimp as they might be able to or wish to land. A vessel with a 2-man crew may land a total quantity of 270 kilos (about 595 pounds) of cooked shrimp per week, while a vessel with a 3-man crew is limited to 375 kilos (about 827 pounds) of cooked shrimp per week, and a vessel with a 4-man crew is restricted to 480 kilos (about 1,058 pounds).

In the case of raw shrimp for industrial canning purposes, a 4-man vessel may land a maximum quantity of 600 kilos (about 1,323 pounds) per week; a 3-man vessel may land 450 kilos (about 992 pounds); and a 2-man vessel 300 kilos (about 661 pounds). A maximum of 50 percent of the fixed weekly quantity may be landed during one fishing trip.

Despite these limitations, as much as 20 metric tons of cooked shrimp were landed recently in one week at the Gravarne fish auction. Only a couple of years ago a weekly supply of 9 tons was considered very large.

Total landings by Swedish fishermen of shrimp in Sweden in 1960 amounted to 3,563 tons valued at 15,387,000 crowns (US\$2,970,000). Import figures covering shipments of shrimp from Norway are not available at this time.

An indication of the relative importance of the Swedish centers is gained from the following statistics relating to Swedish shrimp landings in 1960: Stromstad leads with 1,168 tons of shrimp valued at 5,041,000 crowns (US\$973,000), followed by Smogen

with 968 tons valued at 4,141,000 crowns (\$799,000), and Gravarne with 768 tons worth 3,396,000 crowns (\$655,000).

The growing importance and attraction of shrimp fishing is evident when it is realized that out of the 88,700,000 crowns (\$17,119,000) worth of fish landed in 1960 by Swedish fishermen on the west coast, shrimp accounted for one-fifth of the total value.

There are no minimum or guaranteed prices for cooked shrimp. For other shrimp there is a minimum price of 1.75 crowns per kilo (15.3 U. S. cents a pound).

Shrimp are no longer considered a table luxury in Sweden, according to fish auction officials. Consumers have discovered they can buy this delicacy at a reasonable price and sales are increasing.

Despite this wider and growing market outlet, imports of Norwegian shrimp are worrisome to Swedish shrimp fishermen.

At the annual meeting of the Gravarne division of the West Coast Fishermen's Central Association, it was stated that difficulties for Swedish shrimp fishermen have arisen out of the European Free Trade Association (EFTA) in the form of the large quantity of shrimp imported from Norway. It was also asserted that Norwegian shrimp are cheaper because of a high subsidy. A decision was made at the meeting to introduce a motion at this year's fisheries congress pointing out that Norwegian shrimp imports should be restricted for the benefit of the Swedish shrimp catch, and that Norwegian shrimp sells at lower prices with the result that prices of Swedish-caught shrimp drop accordingly.

Recent cooked shrimp prices at the Gravarne fish auction have fluctuated between 2.90 crowns and 4.75 crowns per kilo (25.4-41.6 U. S. cents a pound). At the Smogen auction, prices have ranged between 2.50 crowns and 6.75 crowns (21.9-59.1 U. S. cents a pound). This latter variation, however, was partly due to the poor quality of a large part of the offerings. (United States Consulate, Goteborg, April 19, 1961.)

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STEEL TRAWLERS PURCHASED FROM EAST GERMANY:

As of May 1961, a total of 13 steel trawlers were on order with a Brandenburg, East

Sweden (Contd.):

Germany, shipbuilding yard, according to a statement made by the Managing Director of a newly established Goteberg agency firm. The Swedish firm said it had sold the 7 trawlers which are to be delivered in 1961, and that while no definite sales have been made of the other 6 trawlers scheduled for delivery in 1962, interest in these was indicated from a number of sources.

The reported cost of an East German-built steel trawler is approximately 450,000 kroner (\$86,900). These trawlers are about 102 feet long and 22 feet wide. They measure 263 gross registered tons, and will carry about 94.5 metric tons of fish. The motor is a 560 hp. Diesel engine giving the trawler a calculated speed of 10 knots. It is reported that some 450 of these series-built steel trawlers have been constructed for Soviet Russia.

At a press conference which the East German delegation to the Goteborg Swedish International Trade Fair held on May 8, 1961, the East German Acting Minister for Commerce and the counselor of the Ministry of Commerce both emphasized the importance of fish in Sweden's trade with East Germany. In the 1961 trading arrangement, fishery products represent 18 million kroner (US\$3.5 million) of the total value of the trading list. Deliveries amounting to 11 million kroner (US\$2.1 million) in value have been made to date. The East German officials said that if fish deliveries over and above the remaining 7 million kroner (US\$1.4 million) were to be contracted, it would depend on whether East Germany could increase exports to Sweden, and that steel trawlers play an important role in those exports. In principle, they said, East Germany wishes to purchase from Sweden in order to balance their sales to Sweden, the United States Consulate in Goteborg reported in May 9, 1961.)



Thailand

COMMERCIAL FISH PRODUCTION INCREASES:

Fisheries are important in the economic life of Thailand since fish is the principal supplement to the people's rice diet, and constitutes the only important protein element in their food. The rivers are very produc-

tive and yield a considerable variety of fresh water species. In addition, the fishing grounds along the 1,500 miles of sea coast have sizable resources.

Thailand's commercial fresh-water fish production, which had been holding steady at about 50,000 metric tons a year through 1958, rose to 60,000 tons in 1959. All was used for home consumption. The total salt-water catch in 1959 was 150,000 tons, of which about 10 percent was exported, mostly as cured fish to Indonesia. The commercial catch of Pla-thu ("Rastrelliger" species), the common daily food of the poorer classes, is estimated at 50,000 tons a year. In addition to the commercial marine catch, there is a substantial catch by anglers for their own direct consumption.



Tilapia being netted from a pool in a Thai rice field.

In 1958, Thailand had a fishing fleet of about 2,200 boats with a total tonnage of 22,000 tons. The marine catch landed at Bangkok in recent years has been estimated at from 30,000 to 40,000 tons annually.

In addition to finfish, shrimp production has gained importance, particularly since the semigovernmental Cold Storage Organization has been providing cold-storage facilities at the port of Bangkok. The United States has become the largest customer for Thai shrimp since the first shipment to that country in April 1959. The 1959 United States imports of frozen shrimp from Thailand amounted to 176,000 pounds valued at \$180,000. Through April 1960, Thai shipments amounted to 220,000 pounds.



Union of South Africa and South-West Africa

LANDINGS SET NEW RECORD IN 1960:

As expected when the pelagic shoal fish catch at the end of July 1960 reached the outstanding figure of 453,387 short tons, the total Union of South African fish landings also reached a new record in 1960. In addition to the large pelagic shoal fish landings a record 135,206 tons was landed by trawlers, an estimated 30,000 tons from line-fishing boats, and 10,000 tons of spiny lobster. The catch soared from 491,717 tons in 1959 to 628,593 tons in 1960--the largest single rise in any year in the history of the Union of South Africa industry. This figure does not include 28,243 tons of mackerel and maasbanker caught during the special November-December season on the West Coast, which brings the total catch to 656,836 tons.

Combining Union of South Africa and South-West Africa catches, the landings in 1960 totaled 981,836 short tons--a record total almost 180,000 tons more than the 803,113 tons landed in 1959, and almost 300,000 tons above the 546,951 tons landed in 1958. The pelagic shoal fish industry contributed the bulk of the South-West and Union of South Africa total.

The South African shoal fishing season in 1961 opened with a January catch nearly three times higher than the best in the same month of any previous season. This was followed by landings in February which were expected to exceed 90,000 tons to set another record for the industry, and to produce 170,000 tons of pilchards, maasbanker, and mackerel in only two months' fishing. The brightest feature of this good fishing is that the shoals appeared in the area from which they had all but vanished 4 or 5 years ago--around St. Helena Bay. The fish were reported to be fine, fat and mature, good for canning (both because of their condition and because of the short haul to the factories), and with a high oil content. Most of the factories had, during February 1961, to call for a slow down in fishing so that plants could handle the fish. Despite this, one boat--the 69½-foot long Bellevanti, brought in 2,180 tons during the month. (The South African Shipping News and Fishing Industry Review, March 1961.)

Note: Also see South-West Africa in this issue on p. 87.



Union of South Africa

PILCHARD-MAASBANKER FISHERY, JANUARY 1961:

The Union of South Africa Cape west coast fish catch in January 1961 comprised 69,879 short tons pilchards, 6,745 tons of maasbanker (jack mackerel), and 3,821 tons mackerel. The total catch was 80,445 tons. This compares with 23,162 tons pilchards, 5,694 tons maasbanker, and 2,147 tons mackerel, a total of 31,003 tons in January last year; and with 10,452 tons pilchards, 49 tons maasbanker, and 6,139 tons mackerel, a total of 16,640 tons in January 1959.

The January 1961 catch yielded 17,286 short tons of fish meal, 1,342,460 Imperial gallons of fish body oil, 2,312,272 pounds canned pilchards, 1,763,416 pounds canned maasbanker, and 819,366 pounds canned mackerel. (The South African Shipping News and Fishing Industry Review, March 1961.)



U.S.S.R.

FACTORYSHIP TRAWLERS FISHING OFF SOUTH-WEST AFRICA:

Research and large factory trawlers of the Soviet fishing fleet, in their far ranging operations to boost the Russian catch to 4,626,000 metric tons in 1965, have been moving steadily south off the coast of Africa. For some months now there have been reports of trawlers off the Congo, Angola, and South-West Africa.

In February 1961, the research trawler Muksun (which had previously visited Cape Town) and the factory trawler Izumrud called at Walvis Bay for stores; and three more vessels, the Radichev, the Atiubinsk, and the Taras Schewtchenko, were sighted 3 to 4 miles off Pelican Point.

Some of these ships are among the largest and most modern of their type afloat. They are stern-trawling factoryships, freezing or canning their catch and producing fish meal. Their visit has caused some concern in the South African fishing industry. It has long been known that the U. S. S. R. has had a massive program for the building of factory trawlers. German yards have built 24 ships of the Pushkin class; the later Maikowski class is being built in a shipyard at Nikolajewsk on the Black Sea; and, at the Second World Fish-

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

ing Boat Congress held in Rome in 1959, a U. S. S. R. delegate stated that his country had been operating stern-chute factory trawlers since 1955. He also said that a further improved type of factory trawler had been designed for construction in Russia. He said emphasis had been placed on preserving catches by means of ice cooling and/or freezing.

Since that Congress, there have been indications that these latest trawlers have been developed for long-range operation in tropical or subtropical waters, disposing of their processed catch direct to export markets, and perhaps carrying part of it back to their home port of Kaliningrad in the Baltic.

It was predicted that the Russians would follow the example of the Japanese and find part of their huge yearly catch in west and southern African waters. A trawler of the Pushkin class had earlier been reported in South African waters about 100 miles offshore that had caught and processed tons of shoal fish. The fact that she was there was an indication of Russian "interest in those fishing waters and also of the wide range of the latest Russian fish factoryships."

In a report published early last year a Russian trade paper emphasized the importance of Atlantic fishing and said that, to help expand operations, more trawler-type exploratory and fishery research vessels should be made available. Kaliningrad, home port of the visiting ships, was mentioned as one of the bases allotted four research ships of the "Ocean" type.

The research trawler Muksun probably ranges ahead of the factoryships trying out trawling banks and locating large concentrations of fish. That she was in Cape Town indicates that Russian South Atlantic fishing may not stop at Walvis. There have been rumors in Walvis Bay since December of Russian vessels off the Angola and South-West Africa coast.

Muksun is a deep-sea trawler fitted with port and starboard side-trawling gallowes, Diesel-powered, 189 ft. 9 in. long with a 30-ft. beam, and a cruising speed of 10 knots. She was built in Britain in 1956 and is well equipped with fish-finding and navigational instruments, including radar. She carries

several scientists aboard and has been away from her home port of Kaliningrad for about a year.

Three days after the Muksun was berthed, the Majakowski class factory trawler Izumrud docked. The 3,700-gross ton stern trawler is powered by a Diesel and was built in the U. S. S. R. She is 269 ft. long between perpendiculars and has a 40-ft. beam. Built a little more than a year ago, she left Kaliningrad three months before calling at Walvis Bay. According to members of her crew of 94 men and 6 women, she fished in the North Atlantic and in the Gulf of Guinea before moving south. The vessel is a well-equipped modern factory with deep-freezing plant, refrigerated holds, gutting and cleaning rooms, and a fish meal and oil plant. (The South African Shipping News and Fishing Industry Review, March 1961.)

* * * * *

MOTHERSHIP FLEET PRODUCTION OF NORTH ATLANTIC HERRING, WINTER 1961:

The Soviet mothership Iokhannes Vares during three months in the North Atlantic herring fishery this winter processed 1,740 metric tons (about 3.8 million pounds) of herring, and serviced 100 fishing vessels with supplies and technical assistance. Of the processed catch, 4,000 five-kilogram (about 11 pounds) containers consisted of "special salted herring." After a short period in port, the mothership was scheduled to go to the banks off Newfoundland to take part in the ocean perch fishery, according to the March 14 issue of Sovjetskaja Estonija.

At the same time Sovjetskaja Litva stated that, in addition to the large freezer trawler Ljudas Gira and six medium trawlers, six other vessels, which had participated in the North Atlantic herring fishery, were ordered directly to the Newfoundland banks without first going into port. (Fiskets Gang, April 20, 1961.)



United Kingdom

FISH MEAL PRICES, APRIL 1961:

Fish meal prices reported by a British trade periodical on April 29, 1961, were as follows:

United Kingdom (Contd.):

Type of Fish Meal	Protein Content	Date Quoted	£/s./d. per Long Ton	US\$ per Short Ton
S. Africa (white fish)	65	4/29/61	50/7/6	125.94
Peru (branded)	65	4/29/61	46/0/0	115.00
Peru (average quality)	65	4/29/61	44/10/0	111.25
Iceland (white cod)	70-73	11/26/60	42/0-48/16	105.00-122.00
Iceland (herring)	70	4/29/61	51/12/6	129.06
Denmark (herring)	73	4/29/61	54/15/0	136.87
Domestic (white fish)	66	1/ 4/29/61	53/10/0	133.75
Domestic (herring) 2/	68-71	4/29/61	53/0/0	132.50

1/Effective March 1, 1961; in bags.
2/In bags ex-warehouse, 8-11 percent oil.
Notes: Imported fish-meal prices are c.i.f. current shipments, and domestic meal prices (net cash) are ex-plant, in 6 long-ton lots and bagged, unless otherwise reported.
Values converted at rate of £1 equals US\$2.80.

* * * * *

GRANTS AND LOANS FOR SCOTTISH FISHING VESSELS RESTRICTED:

The British White Fish Authority has decided to suspend until September 1961 approval of applications for the building of further trawlers for the Scottish fleet under their grants and loans program. A brake is also to be put on the expansion in numbers of inshore boats and the policy will be to maintain the seine-net fleet at its present strength. These decisions were made known to Aberdeen trawler owners at a meeting of members of the Aberdeen Fishing Vessel Owners' Association late in February this year.

Towards the end of 1960 the Scottish Committee of the White Fish Authority met the directors of the Aberdeen Fishing Vessel Owners' Association when the size and composition of the Scottish fishing fleet was discussed.

On February 9, this year, the chairman of the association and two other directors had consultations with the White Fish Authority in London, when they advised a temporary suspension of building so far as the Scottish fleet was concerned.

The Secretary of the Scottish Committee of the White Fish Authority states that the Authority has been giving considerable thought to their future policy regarding the administration of the grants and loans program.

At a meeting which took place on February 9 it had been tentatively agreed that in

view of the uncertainty over future international fishing limits, particularly at Faroe Islands; the substantial measure of replacement and modernization which had already taken place in the fleet; the present "crew-ing" position; and certain recommendations in the Fleck report, it seemed necessary to slow down to a considerable extent the rate of new building in order that a reappraisal of the whole situation might be made over the next 15 to 18 months.

The Committee had therefore decided to accept the Association's advice and decided to suspend the issue of any further approvals for near- and middle-water trawlers for Scotland until September 1961 when the position will be reviewed in consultation with the industry.

The Scottish Committee had taken note of the Aberdeen owners' request that appropriate allocation under the grants and loans program should be reserved against a possible resumption of building after September, and that the grants and loans should be issued under the same terms and conditions as applying at present.

The Committee added that the seine-net boats required under the Government's training program for the fishermen of the Outer Isles would not be affected by the standstill. Continued assistance would also be given for the re-engining of vessels and the provision of boats for creel fishing.

The owners would lose nothing by the standstill. Appropriate funds would be reserved in the interval for Aberdeen use. Thirty Aberdeen applications were pending

United Kingdom (Contd.):

approval by the authority and these were deferred until September. (Fish Trades Gazette, March 4, 1961.)

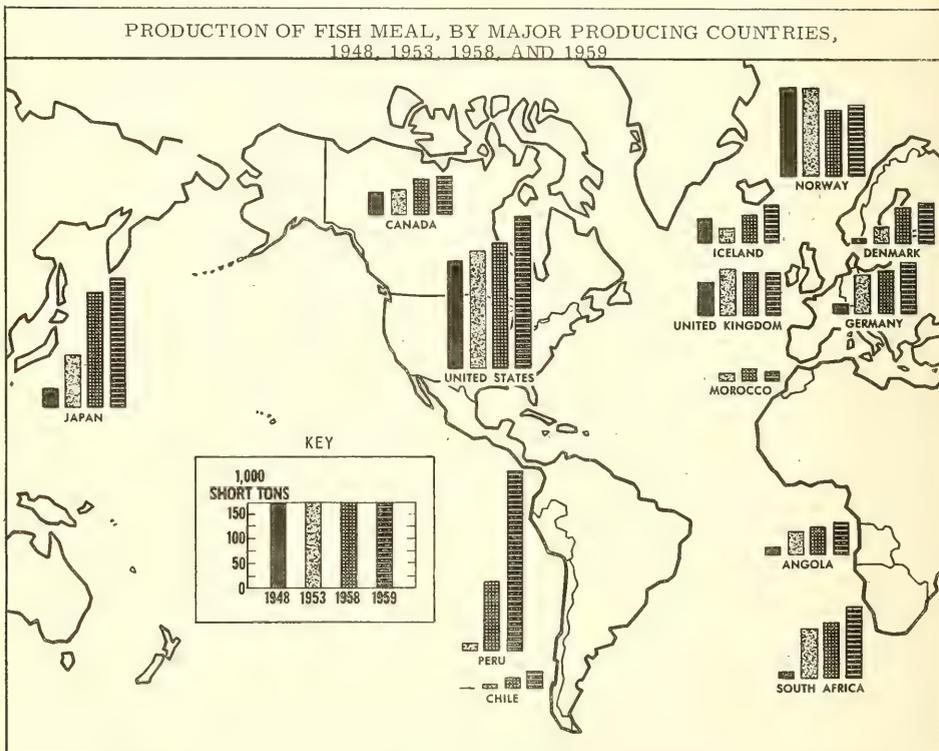


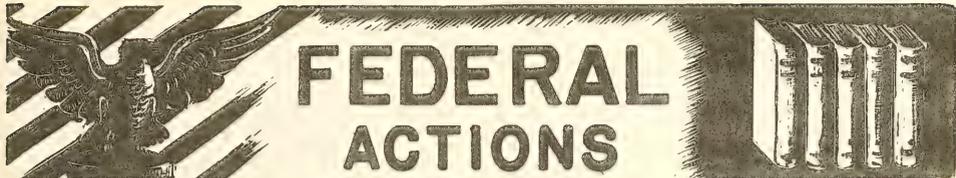
Yugoslavia

TECHNICIANS MAY GO TO JAPAN TO STUDY TUNA PROCESSING TECHNIQUES:

Yugoslavia has contacted Japanese tuna packers concerning a proposal to send two

technicians to Japan to study tuna processing techniques, including the utilization of tuna waste products. It seems Yugoslavia hopes to go into full-scale production of canned tuna, utilizing Japanese frozen tuna, and wants to learn all there is to know about tuna processing methods. (Shin Suisan Shimibun Sokuho, May 2, 1961.)





Department of Agriculture

AGRICULTURAL MARKETING SERVICE

PILOT FOOD STAMP PLAN INCLUDES FISHERY PRODUCTS:

Fish and fishery products are included in the list of products that can be purchased by needy families under the Pilot Food Stamp Project. Policies and general regulations for the Pilot Food Stamp Projects, to be operated in 8 pilot areas for the purpose of encouraging the domestic consumption of agricultural commodities and products thereof by increasing their utilization among low-income groups, were published in the Federal Register of May 13, 1961. The program is scheduled to be launched in the pilot areas on June 1. Originally fish and fishery products were not included among the items that could be purchased by the use of stamps. But the change in regulations have included fishery products, which will now receive the same consideration as other basic food products for human consumption.

The Pilot Food Stamp Projects will be operated in the Detroit, Mich. area; Franklin County, Ill.; Floyd County, Ky.; Va-Hibbling-Nashauk Area, Minn.; Silver Bow County, Mont.; San Miguel County, N. Mex.; Fayette County, Penn.; and McDowell County, W. Va. Under this program needy families will receive food stamps from the welfare agencies with which they can buy needed food for their families. The U. S. Department of Agriculture has not indicated how long the program is expected to be in effect, since this will depend upon the state of the Nation's economic condition.

The regulations as issued by the Department of Agriculture give the purpose and scope, definitions, administration, payments for certain costs of the certifying agency, certification of households as eligible, basis for issuing coupons to eligible households, methods of distributing and accounting for coupons and cash receipts, plans of opera-

tion, use of coupons by eligible households, participation of retail food stores, participation of wholesale food concerns, procedure for redeeming stamps, participation of banks, and miscellaneous provisions.

The definition for eligible foods reads: "Eligible food (s)' means any food or food product for human consumption except: Coffee, tea, cocoa (as such), alcoholic beverages, tobacco, and those products which are clearly identifiable from the package as being imported from foreign sources."



Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

AMENDMENT TO REGULATION ON SOURCES OF RADIATION USED IN FOOD INSPEC- TION AND CONTROLLING PROCESSING:

The Food and Drug Administration of the U. S. Department of Health, Education, and Welfare in the Federal Register of March 2, 1961, published a proposal to amend the regulation providing for the safe use of certain sources of radiation used for inspection of foods, package food, and for controlling food processing.

The amendment incorporates certain changes in wording in the interest of clarity and accuracy and, in addition, to permit the safe use of the isotopes krypton 85, cobalt 60, and radium 226 for inspection of foods and food packages and for controlling food processes. Since the Food and Drug Administration did not receive any comments within the 30-day period from March 2, 1961, the amendment to the regulation became effective on April 28, 1961. The amended

regulation as it appeared in the Federal Register of April 28, 1961, prescribes the conditions under which sources of radiation may be safely used for the purposes of inspection of foods, packaged food, and for controlling food processing. Also, it specifies the type of information that is to appear on the labels of the radiation units.

* * * * *

EXCEPTIONS FILED TO PROPOSAL TO RETAIN PROTESTED LABELING REQUIREMENTS IN STANDARD OF IDENTITY FOR CANNED TUNA:

On April 30, 1961, exceptions were filed to the proposed findings of fact which were issued by the Food and Drug Administration on March 31, on the labeling provisions of the standard of identity for canned tuna. The exceptions to the findings of fact and proposed order were with respect to the proposed requirement that "for water-packed tuna the name on the label should include the words 'in water'."

A Washington, D. C., attorney submitted exceptions on behalf of American Importers of Japanese Tuna, Inc., New York City; Agricultural and Marine Products Division, Japanese Chamber of Commerce of New York, Inc.; and the Tuna Packers Association of Japan, Tokyo.

In addition to filing exceptions to the findings of fact, the attorney requested "that the hearings be reopened to receive new evidence which was not in existence at the time of the hearings." According to the exception filed, the attorney's reference to the new evidence is contained in U. S. Fish and Wildlife Service Circular 88, entitled "Who Buys Canned Tuna, and Why?", published in June 1960.

An additional but similar exception was filed on April 21 by the vice president of an importing firm in New York City.

Note: Also see Commercial Fisheries Review, May 1961 p. 68.



Department of the Interior

FISH AND WILDLIFE SERVICE

SPECIAL ASSISTANT TO COMMISSIONER APPOINTED:

Thomas D. Rice, who has been executive secretary of the Massachusetts Fisheries

Association since 1945, has been appointed special assistant to the Commissioner of Fish and Wildlife, Secretary of the Interior Stewart L. Udall announced on May 11, 1961. Rice reported for duty May 9.



Thomas D. Rice

Rice has a long record with the domestic fishing industry. For eight years he was part owner of a fish processing and wholesale distributing firm in Boston. He has served at various times as special consultant on fishery problems for U. S. Senate committees and for two years

as a consultant for the National Shrimp Breeders Association.

Before entering the fishing industry, Rice was in the real estate business in Boston for seven years. He has also served as a deputy collector for the Internal Revenue Service and was a regional price specialist during World War II. He attended Boston College and Suffolk University in Boston. He was born May 8, 1902, in Boston, Mass.



THE PLACE of FISH

in diabetic diets
today's menu

lunch

BOILED SHRIMP - 10 small
Biscuits - 2 - 1" diam.
Broccoli - 1 cup
Cantaloupe - 1-6" diam.
Buttermilk made with whole milk

breakfast

HADDOCK, FRIED - 1 oz.
Grapefruit - 1
Cooked cereal - 1 cup w/milk
Toast with butter - 2 slices
Coffee with 1 tablespoon cream

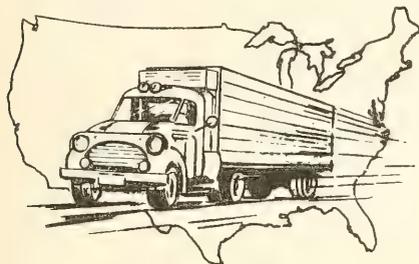
dinner

COD FILLETS - 2 oz.
Cornbread - 1 1/2" cube
Carrots, cooked - 1 cup
Butter - 1 tsp
Applesauce - 1 cup
Coffee, black

Interstate Commerce Commission

RULING CLAIMS MANY FROZEN PREPARED FISHERY PRODUCTS NOT EXEMPT FROM REGULATION FOR TRUCKS:

An ICC Examiner has reopened the question of the fishery exemption for trucks for many frozen prepared fishery products. In the W. W. Hughes "Grandfather" application (Proceeding No. MC-105782, Sub. No. 4), the ICC Examiner concludes "that deviled crabs, deviled clams, deviled lobsters, croquettes, codfish cakes, and other fish or shellfish products, which contain non-exempt ingredients (other than those which properly may be considered as incidental to the cooking process, such as seasonings, and also breading) are not within the exemption. These commodities are no longer fish or shellfish."



In the decision concerning the refrigerated trucking service ICC application, the Examiner says that the Bureau of Motor Carriers was wrong when it issued Administrative Ruling 110 on September 26, 1958, listing fish or seafood dinners, cod cakes, salmon croquettes, deviled crabs, clams, or lobsters as being exempt. The basis for the Examiner's opinion is that the amount of the basic fish ingredients in these products varies from 20 to 90 percent and the finished product includes many non-exempt ingredients. He reasons that the mixing of non-exempt commodities with the exempt commodities destroys the exempt status of the fish and seafood.

Efforts were made by fishing industry representatives in 1958 to have the fishery exemption clarified to finally establish that the fishery exemption extended to all frozen fishery products, whether breaded, cooked, or prepared. The fishing industry representatives will intervene in this case in an attempt to support Administrative Ruling 110. During the debate in the Senate on the Transpor-

tation Act of 1958, it was specifically declared that it was the intention of the Senate Commerce Committee in passing the bill to exempt "codfish cakes, deviled crab, fish with sauce, fish dinners, and similar seafood products." It was reasoned that the Senate Committee could not write into law all these various items which have seafood in them and that the criteria under the fishery exemption is perishability.

These informal rulings are tentative in the absence of authoritative decisions on the subject by the Commission. If the recommendation of the Examiner is adopted by the Commission, the informal interpretation of ruling No. 110 will be reversed.



Treasury Department

COAST GUARD

VESSELS WITH AUTOMATIC PILOTS WARNED TO MAINTAIN PROPER LOOKOUT:

The New Orleans office of the U. S. Coast Guard (Eighth Coast Guard District) in a letter dated April 5, 1961, to the Texas Shrimp Association requested that all fishing vessels operating on an automatic pilot maintain a proper lookout. For the sake of safety, this warning is applicable to all vessels. The letter points out:

"During the past year it has been necessary for this office to cite numerous Masters of fishing vessels for failure to maintain a proper lookout while their vessels were operating on automatic pilot. These violations come to the attention of this office as a result of investigations into collisions between fishing vessels while operating in the Gulf of Mexico.



"In most cases, the automatic pilot was placed in use and the Master, or the person in charge of the watch, left his station and either went below or went aft and engaged in duties which precluded his keeping a proper lookout while the vessel was under way, which resulted in collision with another fishing vessel.

"The failure to keep a lookout in the manner described above can only be interpreted as reckless and negligent operation and certainly creates a hazard to life and property. In cases of this kind, the Coast Guard is obligated to en-

force the navigation laws, but would rather see steps taken to prevent collisions under such circumstances. . . ."

The Coast Guard then went on to indicate that if owners and Masters of the vessels saw the necessity of keeping a lookout at all times while the vessel is under way, a great majority of the collisions now occurring between fishing vessels would be avoided.



U. S. Supreme Court

ALASKA TAX ON FREEZERSHIPS UPHOLD:

The United States Supreme Court on May 1 decided Alaska may levy an annual license tax on freezer-ships used in processing salmon and other fishery products caught in Alaskan waters.

The State of Alaska appealed to the Court after the United States Circuit Court in San Francisco ruled the freezing and cold-storage activities of freezer-ships as a part of interstate commerce. The Circuit Court held any state privilege tax on such activities is barred by the Constitution's commerce clause.

The Alaska levy fixes the annual tax at 4 percent of the value of fishery products frozen and put in cold storage. Alaska's appeal to the U. S. Supreme Court contended the freezer-ships were not engaged in interstate commerce but in business of a local nature.

The litigation originated in suits by Alaska to collect the tax from seven fishery firms.



Eighty-Seventh Congress

(First Session)

Public bills and resolutions which may directly or indirectly affect fisheries and allied industries are reported. Introduction,



referral to committees, pertinent legislative actions, hearings, and other actions by the House and Senate, as well as signature into law or other final disposition are covered.

CATCH TRANSFER AT SEA: On May 18 the Senate Committee on Commerce reported S. 1222, a bill relating to documentation and inspection of vessels of the United States with amendment (S. Rept. No. 277). This bill would permit vessels that are documented or licensed to engage in the fishery and are therefore fishing vessels of the United States, to take the catch of another fishing vessel of the United States aboard on the high seas and transport it free of charge to a United States port. Vessels documented and licensed as fishing vessels are exempt from inspection and manning requirements, and enactment of this bill would relieve a vessel that takes a transshipment from complying with the requirements that apply to cargo vessels. This proposal is especially important to shrimp fishing vessels in the Gulf of Mexico.

S. Rept. No. 277 Relating to Documentation and Inspection of Fishing Vessels (May 18, 1961, report from the Committee on Commerce, to accompany S. 1222), 5 pp., printed. This bill, as reported with amendment, permits a vessel enrolled and licensed, or licensed, as a fishing vessel of the United States, to take on board and carry to a port of the United States, without compensation, the catch of fish of another U. S. fishing vessel, and would exempt such transporting vessel from the inspection requirements of section 4426 of the Revised Statutes (46 U. S. C. 404). The report discusses the purpose of the bill and presents statements from the Departments of Interior, Treasury, and Commerce. Committee reported the bill favorably with amendment.

On May 26 the Senate proceeded to consider S. 1222. Amendment recommended by Committee was agreed to, bill was read the third time, and was passed. As passed, provides that a U. S. fishing vessel which occasionally takes on board on the high seas and transports to a U. S. port without payment, the catch of another U. S. fishing vessel shall not be considered to be engaged in the transportation of freight for hire.

S. 1222 was received by the House on May 29 and referred to the Committee on Merchant Marine and Fisheries.

CHEMICAL PESTICIDES COORDINATION ACT: On May 15 a resolution of the Kansas Academy of Science was received in the Senate, registering approval of H. R. 4668, a bill providing for advance consultation with the Fish and Wildlife Service and with State Agencies that are responsible for wise use of biological resources before the beginning of any Federal program involving the use of pesticides or other chemicals or devices designed for biological controls, and recommends its enactment.

Congressman John D. Dingell (Mich.) on May 23, 1961, presided over an informal discussion involving representatives of Federal Agencies and private conservation organizations relative to controversial chemical pesticide programs which have damaged fish and wildlife values and poses undetermined threats to human health. Congressman Dingell has introduced H. R. 4668 which would require coordination between Federal Agencies and between them and State Agencies on the administration of chemical pesticide control programs.

During the discussion, it was pointed out that a new "ad hoc" coordinating committee had been formed at direction of the Secretaries of the Interior and Agriculture. Represented on the committee are the Agriculture Research Service and U. S. Forest Service of the Department of Agriculture, the Fish and Wildlife Service and Bureau of Sport Fisheries and Wildlife of the Department of the Interior, the Food and Drug Administration and the Division of Water Supply and Pollution Control of the Department of Health, Education and Welfare, and the Department of Defense. There is a strong possibility that the committee, once an operating plan is developed and approved, will be formally established by an Executive Order.

Members of the Committee who participated in the discussion said these would be among the major objectives: (1) to review all plans and probable effects before any new federal pesticide program is initiated; (2) to begin a review of existing chemical pesticide programs. It was agreed that state wildlife agencies would be kept fully informed on all pest control programs. It also was understood that coordination committees on state and local levels, if federal funds and programs are involved, should include fish and wildlife representation.

COMMERCIAL FISHERIES CONFERENCE: H. Con. Res. 328 (Wilson of Calif.) introduced in House June 7, a concurrent resolution requesting the President to call a national conference on commercial fishing; to the Committee on Merchant Marine and Fisheries. Such conference to be conducted by the Secretary of the Interior acting through the Bureau of Commercial Fisheries. Such conference to explore ways and means of attaining freedom from such administrative and local restrictions which ignore the economic needs of the industry; to review and evaluate governmental activities that have the obligation to be responsive to the needs of the commercial fishing industry; to explore ways and means of attaining that economical atmosphere in which commercial fishing products and processing can prosper; and to explore ways and means of developing new fishery techniques, new fishing areas, new fishery products, and new fishery markets.

COMMISSIONER OF FISH AND WILDLIFE SERVICE: On May 25 the Senate received the executive nomination of Clarence F. Pautzke, of Washington, to be Commissioner of Fish and Wildlife Service, Department of the Interior. On June 7 the Committee on Commerce, in executive session, ordered the nomination favorably reported. On June 8 the nomination was confirmed by the Senate.

GULF OF MEXICO OUTER CONTINENTAL SHELF RESTRICTIONS: On June 5 the Subcommittee on Public Lands of the House Committee on Interior and Insular Affairs held a hearing on H. R. 6745 and H. R. 6849, bills to provide for the restrictions of certain areas in the Outer Continental Shelf for defense purposes. Various private and public witnesses were heard. Hearings were also held on June 7 and June 14.

IMPORT COMPETITION ADJUSTMENT: H. R. 7186 (Lane), introduced in House on May 18 a bill to provide for adjusting conditions of competition between certain domestic industries and foreign industries with respect to the level of wages and the working conditions in the production of articles imported into the United States; to the Committee on Ways and Means. Also H. R. 7214 (Garland) and H. R. 7226 (O'Neil) on May 22; H. R. 7337 (Fenton), on May 25; H. R. 7457 (Goodling) on June 5.

INTERIOR DEPARTMENT APPROPRIATIONS FY 1962: Interior Department and Related Agencies Appropriations for 1962 (Hearings before a subcommittee of the Committee on Appropriations, United States Senate, 87th Congress, 1st Session, on H. R. 6345), 1344 pp. Includes hearings on operations of the Fish and Wildlife Service, and its two bureaus: Bureau of Commercial Fisheries and Bureau of Sport Fisheries and Wildlife. Presents the statements and testimony given by the Commissioner of Fish and Wildlife and the two Bureau Directors.

On June 2 the Senate Committee on Appropriations, in executive session, marked up and ordered favorably reported (S. Rept. 294) with amendments H. R. 6345, fiscal 1962 appropriations for the Department of the Interior, and related agencies. As approved by the committee, the bill would provide a total of \$822,649,850, an increase of \$69,330,350 over the House-passed figure of \$753,319,000.

S. Rept. No. 294, Interior Department and Related Agencies Appropriation Bill, 1962 (June 2, a report from the Senate Committee on Appropriations, to accompany H. R. 6345), 37 pp., printed. The Senate Committee for fiscal year 1962 recommended funds for Interior Department somewhat higher than the sums included in House bill. For the Bureau of Commercial Fisheries, management and investigations of resources, the amount recommended by committee provides for all of programs set forth in the budget estimate, except that only \$75,000 for pay cast costs of the \$96,000 reduction by House has been restored. For management and investigations of resources the appropriation for 1961 was \$7,926,000 (includes \$100,000 in the 2d Supplemental Appropriation Act, 1961, and \$1 million for salmon research in the 3d Supplemental Appropriation Act, 1961); budget estimate, 1962 \$11,796,000 (reflects transfer in the estimates of \$1,915,000 from "operations and maintenance, general, Corps of Engineers," for the Columbia River fishery facilities and includes budget amendment increase of \$2,500,000 in H. Doc. 113); House allowance, \$11,700,000; and the Senate Committee recommendation, \$12,225,000. The increase of \$525,000 by the committee includes (1) research to improve efficiency of blue crab plant operations, \$100,000; (2) research on shrimp resources in Gulf of Mexico, \$175,000; (3) time-temperature tolerance study on frozen fish and shellfish, \$30,000; (4) investigations into effect control techniques have on shellfish \$30,000; (5) research on manufacture and use of fish protein concentrate (fish flour) \$50,000; fishery research program for rice areas, \$65,000; pay cast cost \$75,000. Committee concurred with House allowance of \$300,000 for purchase of foreign currencies to be used for research contracts in foreign areas, with a change in language of the bill, which the Committee believes will permit the Bureau to enter into research contracts in an amount not to exceed \$700,000 which will require longer than 1 year to complete, and at the same time will provide Congress with an opportunity to review contracts each year. The Committee concurred in House allowance of construction as set forth in budget estimate, \$7,561,000; subsidy payments for fishing vessels constructed in U. S. shipyards, \$750,000; general administrative expenses, \$482,000; administration of Pribilof Islands, \$1,981,000; provision authorizing use of funds available in fisheries loan fund for necessary expenses in administering the program, \$250,000.

For the Bureau of Sport Fisheries and Wildlife--the appropriation for 1961 was \$19,308,000; budget estimate, 1962 was \$23,300,000; House allowed \$23,000,000; Senate committee recommendation was

\$23,972,000. Increase included funds for a cooperative wildlife research unit, research on reservoir fish productivity, study of methods of eliminating undesirable fish from streams and lakes, establishment of a cooperative sport fisheries research unit, and for additional law-enforcement positions. For construction, the budget estimate for 1962 was \$4,067,000; House allowance \$3,770,000; Senate Committee increased the amount to \$5,350,650 for numerous improvements at fish hatcheries and wildlife refuges, completion of facilities, etc. For general administrative expenses, the Committee approved the full amount of budget estimate, \$1,071,000; House allowance was \$1,016,000 the same as 1961 appropriations.

For the Office of the Commissioner of Fish and Wildlife, the Committee approved \$364,000, the same as the amount allowed by the House, the budget estimate, and the 1961 appropriation.

On June 6 the Senate considered H. R. 6345, adopted all committee amendments en bloc, which were thereafter considered as original text for purpose of further amendment; Hayden amendment of a technical corrective nature respecting Columbia River fish sanctuary program; and Case (S. Dak.) amendment increasing funds for National Park Service. Votes on further amendments were deferred.

On June 7 the Senate passed H. R. 6345.

KING AND SILVER SALMON ADVISORY COMMITTEE: H. R. 7595 (Clem Miller), introduced in House June 12, a bill to establish an Advisory Committee on King and Silver Salmon, and for other purposes; to the Committee on Merchant Marine and Fisheries.

MARINE MAMMAL HIGH SEAS PROTECTION: On June 1 the House Committee on Merchant Marine and Fisheries, subcommittee on Wildlife Conservation and Fisheries met in executive session and ordered reported favorably to the full committee H. R. 777 (amended), for protection of marine mammals on the high seas. Identical bill, H. R. 7490 (Saylor), introduced in House June 6, to Committee on Merchant Marine and Fisheries.

METRIC SYSTEM STUDY: S. 2030 (Neuberger), introduced in Senate on June 7, a bill to provide that the Secretary of Commerce shall conduct a study to determine the desirability and practicability of the adoption by the United States of the metric system of weights and measures; to the Committee on Commerce.

NATIONAL SCIENCE ACADEMY: On May 23 and 24 the House Committee on Science and Astronautics, Subcommittee No. 3, held a hearing on H. R. 1, a bill to provide for the establishment, under the National Science Foundation, of a National Science Academy. Various public witnesses were heard.

NATURAL RESOURCES CONSERVATION: Resources and Conservation Act of 1961 (Hearings before the Senate Committee on Interior and Insular Affairs, 87th Congress, 1st Session, April 13, 1961, to accompany S. 239 and S. 1415, bills to declare a national policy on conservation, development, and utilization of natural resources, and for other purposes), 174 pp., printed. Contains text of, and reports on each bill; statements of U. S. Congressmen, officials of various wildlife and natural resources organizations; letters, resolutions, and other communications, from various public and private individuals, as well as the major U. S. Government agencies.

OCEANOGRAPHIC FUNDS FOR NATIONAL SCIENCE FOUNDATION: Independent Offices Appropriations for 1962--Part 2 (Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 87th Congress, 1st Session), 1353 pp., printed. Among others, includes appropriations for the National Science Foundation. A portion of the funds (\$8,500,000) for the foundation is allocated for oceanographic research vessels and shore facilities. The Foundation will build two 195-foot steam-powered vessels, and shore-side facilities for both physical and biological programs--a place where the oceanographic ships can be serviced and where research equipment can be taken care of.

OCEANOGRAPHIC RESEARCH PROGRAM: Marine Science (Hearings before the Committee on Interstate and Foreign Commerce, United States Senate, 87th Congress, 1st Session on S. 901 and S. 1189, bills to advance the marine sciences, March 15, 16, 17, and May 2, 1961), 209 pp., printed. Primary purpose of legislation is to enhance the national economy, security, and welfare by increasing our knowledge of the oceans, and the Great Lakes in all pertinent scientific fields, such as physics, biology, chemistry, meteorology, and geology. Contains text of both bills, statements and testimony of various oceanographers, marine biologists, government officials, and members of various fisheries commissions and associations.

On May 23 the full Senate Committee on Commerce met on S. 901, a bill to establish a 10-year program of oceanographic research and surveys. Bill was ordered favorably reported with amendments.

On June 5 the House passed H. R. 6845, a bill to amend title 14 of the United States Code to provide for an expansion of the functions of the Coast Guard. Amendment is insertion of the words "shall engage in oceanographic research on the high seas and in waters subject to the jurisdiction of the United States;" before the last clause of this section which reads "and shall maintain a state of readiness to function as a special-recon service in the Navy in time of war." A motion to reconsider was laid on the table. Bill sent to the Senate without amendment.

On June 6 the Senate Committee on Commerce submitted a report to the Senate on S. 1189, a bill to amend title 14 of the United States Code in order to authorize the Coast Guard to carry on certain oceanographic research (S. Rept. No. 295). Also, Senate received message from House announcing passage of H. R. 6845, an identical bill, and requesting concurrence of Senate.

S. Rept. No. 295 Coast Guard Oceanographic Research (87th Congress, 1st Session, June 6, 1961, report from the Committee on Commerce to accompany S. 1189), 5 pp., printed. Contains the amendment to United States Code relating to the Coast Guard, purpose of the bill, committee action, agency comments, and changes in existing law. Would enable the U. S. Coast Guard to conduct oceanographic research, either independently or in cooperation with other Government agencies, and thereby free the Coast Guard from statutory restrictions that limit its scientific marine studies to the Ice Patrol.

On June 12 the Senate passed H. R. 6845 with amendment, substituting the language in S. 1189. The House bill did not use language which would allow the Coast Guard to have as one of its primary duties engaging in oceanographic research on the high seas. Bill was referred back to House.

The subcommittee on Oceanography, of the House Committee on Merchant Marine and Fisheries held hearings June 19-23, on H. R. 4276, a bill to expand and develop the aquatic resources of the United States.

OYSTER PRODUCERS LOANS: H. R. 7336 (Downing), introduced in the House May 25, a bill to authorize the Secretary of the Interior to make loans to certain producers of oysters, and for other purposes; to the Committee on Merchant Marine and Fisheries.

SALTONSTALL-KENNEDY ANNUAL REPORT: On June 5 the House received executive communication 982, a letter from the Under Secretary of the Interior, transmitting the fifth annual report of operations conducted by or under contract with the Bureau of Commercial Fisheries of the Department of the Interior to encourage the distribution of domestically produced fishery products, pursuant to 70 Stat. 1119; to Committee on Merchant Marine and Fisheries. On June 7, the Senate received similar report.

On June 15, 1961, Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Commerce held hearings on S. 1230, to establish an additional fund for fisheries research programs. Testimony was received from Senators, Government officials, organizations, state officials, and others.

SCIENTIFIC RESEARCH AND DEVELOPMENT REPORT: On May 18 the Committee on Government Operations submitted a report to the Senate entitled: "Coordination of Information on Current Scientific Research and Development Supported by the U. S. Government--Administrative and Scientific Problems and Opportunities of Central Registration of Research Projects in Science and Engineering," (S. Rept. No. 263).

S. Rept. No. 263, Coordination of Information on Current Scientific Research and Development Supported by the United States Government--Administrative and Scientific Problems and Opportunities of Central Registration of Research Projects in Science and Engineering (May 18, 1961, report prepared for Committee on Government Operations, United States Senate, and its Subcommittee on Reorganization and International Organizations, pursuant to S. Res. 255, Sections 1-4, 86th Congress), 300 pp., printed. Contains 13 sections, 9 appendices, findings and recommendations, index, 18 tables, and 13 figures. The report points out that a "revolution in the science of information storage and retrieval has occurred. This report explores the question, "Has this revolution, as it affects the management of data on research still in process, been capitalized upon by Federal agencies for purposes of planning and administering science programs?" The Committee takes a look at what happens (or may not happen) during the long chain of events which precede the publication of scientific research results, and points out that the management of information during this prepublication stage is of vital significance. The study which makes up the report was developed in three phases: (1) A consultative analysis of the general problem of Federal coordination on prepublication research (comprising the bulk of the report). (2) A consultative analysis of a specialized case history of information on current Federal research (to be issued separately). (3) Continued review of certain phases of both the general and specialized areas by the subcommittee's own project director, so as to assist and complement the consultative analyses.

SHELLFISHERIES RESEARCH CENTER: On June 7 the Senate Committee on Commerce ordered favorably

reported S. 606, a bill providing for the construction of a shellfisheries research center at Milford, Conn.

S. Rept. No. 354, Shellfisheries Research Center at Milford, Conn. (87th Congress, 1st Session, June 7, 1961, report from Committee on Commerce, to accompany S. 606), 3 pp., printed. Contains purpose of bill, costs, and report from the Department of Interior. Would authorize the Secretary of the Interior to construct a research center for shellfisheries production at Milford, Conn., and to acquire such real property as may be necessary. Research center is to consist of research facilities, a pilot hatchery and a training school, and shall be used for the conduct of basic research on the physiology and ecology of commercial shellfish, development of hatchery methods for cultivation of mollusks, and to train persons in the most advance methods of shellfish culture.

On June 12 the Senate passed without amendment and cleared for House S. 606. Authorizes up to \$1,325,000.

SHRIMP IMPORT DUTIES: On June 2 a concurrent resolution of the Legislature of the State of Louisiana, was received in the Senate, to urge the U. S. Congress to adopt S. 1571 and H. R. 6212 which would amend the Tariff Act of 1930 to impose a duty on shrimp and provide for duty-free entry of unprocessed shrimp annually in an amount equal to imports of shrimp in 1960; to Committee on Finance.

On June 8 a resolution of the State of Florida was presented to the Senate and the House, memorializing and petitioning the Congress and the Departments of the executive branch of the Federal Government to exert their best efforts to bring about a measure of stability to the domestic shrimp market by a regulation of imports of shrimp so that the domestic shrimp industry may survive and prosper, giving employment to Americans, utilizing fully this valuable natural resource, and preserving and maintaining the individual and independent seamen and producers who wrest their living dangerously from the sea; to Committee on Finance.

STATE DEPARTMENT APPROPRIATIONS FY 1962: Departments of State and Justice, the Judiciary, and Related Agencies Appropriations for 1962 (Hearings before the Subcommittee of the House Committee on Appropriations, House of Representatives, 87th Congress, 1st Session), 1336 pp., printed. State Department appropriations include funds for the international fisheries commissions in the amount of \$1,959,000 (estimated). The projects or functions include the International Pacific Halibut Commission, International Pacific Salmon Fisheries Commission, Inter-American Tropical Tuna Commission, International Commission for the Northwest Atlantic Fisheries, International Whaling Commission, International North Pacific Fisheries Commission, Great Lakes Fishery Commission, North Pacific Fur Seal Commission, Tortugas Shrimp Commission, and expenses of the United States Commissioners. Gives the statutory authorization, a general statement, background, accomplishments of fiscal year 1960, program for fiscal years 1961 and 1962, explanations of increases, and basis for estimates for each organization.

H. R. 7371 (Rooney), introduced from Committee on Appropriations on May 29, a bill making appropriations for Departments of State and Justice, the Judiciary, and related agencies for the fiscal year ending June 30, 1962,

and for other purposes. Contains \$1,896,000 for International Fisheries Commissions, pursuant to treaties or conventions and implementing acts of Congress (H. Rept. No. 442). On June 1 the House passed H. R. 7371 by a record vote of 256 yeas to 71 nays, without amendment.

On June 2 H. R. 7371, was received in the Senate, read twice and referred to the Committee on Appropriations.

On June 16, the subcommittee of the Senate Committee on Appropriations continued its hearings on H. R. 7371.

SUBMERGED LANDS ACT: On June 16 a joint resolution of the Senate and Assembly of the State of California was received in the Senate, urging the Congress of the United States to enact H. R. 4390 into law. This legislation would establish and confirm the seaward boundaries of all coastal States to a line extending three marine leagues (nine geographical or $10\frac{1}{2}$ statute miles) from the coastline.

VESSEL MEASUREMENT: On May 18 the Senate and House received a letter from the Secretary of the Treasury, transmitting a draft of proposed legislation to simplify the admeasurement of small vessels (with accompanying papers); to the Committee on Commerce.

S. 1936 (Magnuson), introduced in Senate May 22, a bill to simplify the admeasurement of small vessels; to Committee on Commerce. Purpose of bill is to substitute for present complicated method of tonnage meas-

urement a new system which would permit the assignment of tonnages from a table on the basis of length and breadth only. The tonnage would be limited to self-propelled vessels of less than 500 gross tons and non-self-propelled vessels of not more than 997 gross tons.

WATER POLLUTION CONTROL: (Hearings before a Subcommittee of the Committee on Public Works, United States Senate, 87th Congress, 1st Session on S. 45, S. 120, S. 325, S. 571, S. 861, S. 1475, and H. R. 6441, amending the Federal Water Pollution Control Act to provide for a more effective program of water pollution control, May 8 and 9, 1961), 233 pp., printed. Contains text of each bill; statements from government and private individuals; and exhibits consisting of letters, news articles, maps, and graphs.

On May 31 the Senate Committee on Public Works ordered favorably reported S. 120, a bill to amend the Federal Water Pollution Control Act so as to provide a more effective program of water pollution control. (S. Rept. 353).

S. Rept. 353, Federal Water Pollution Control Act Amendments of 1961 (87th Congress, 1st Session, June 7, 1961, report from Committee on Public Works, to accompany S. 120), 24 pp., printed. Contains a general statement, discussion, major provisions of bill, changes in existing bill, a text of the act, and tables. Purpose of legislation, as amended, is to extend the authorization for grants to States and interstate agencies to assist them in meeting the costs of establishing and maintaining adequate measures for the prevention and control of water pollution.



COOKIES MADE WITH FISH FLOUR SERVED AT LUNCHEON

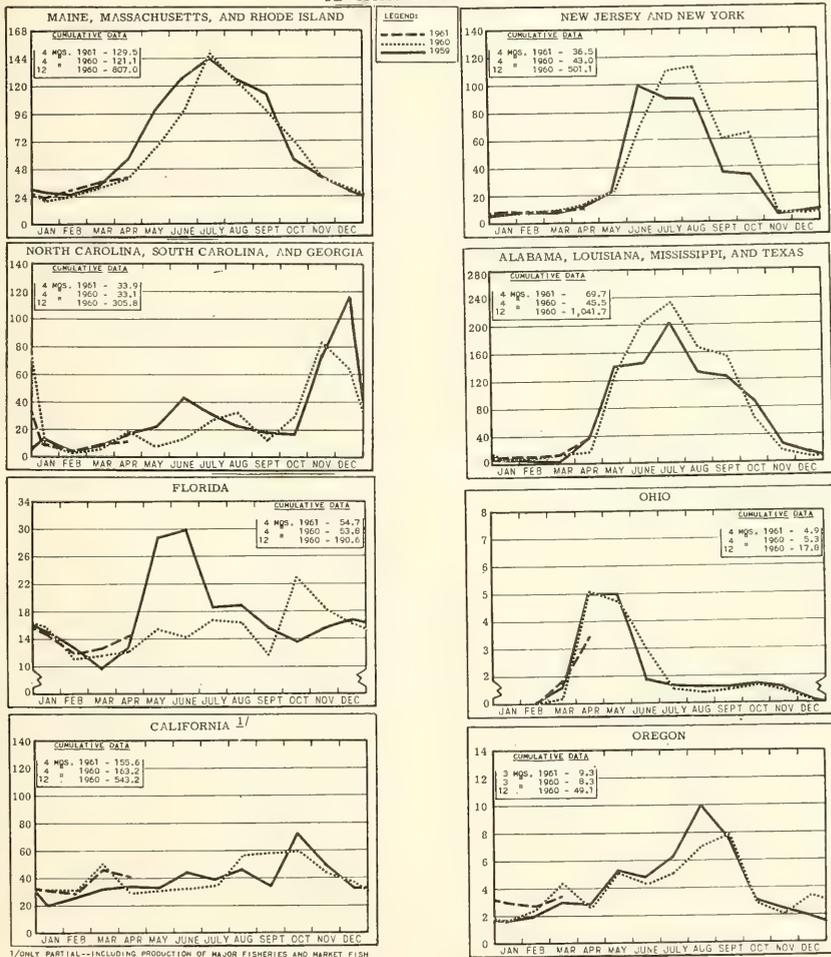
Toll house cookies containing 5 percent by weight of so-called "fish flour" were served to approximately 200 guests at a general luncheon held during the meeting of the Virginia Fisheries Association early in 1959. The use of the fish flour was experimental. It had been prepared approximately six months prior to the test and had not been stabilized to prevent onset of rancidity. The general acceptance of the cookies by the persons attending the luncheon attested to the fact that the flour had undergone no noticeable deterioration during storage. The flour was prepared from menhaden. Proximate analysis of the dry product was as follows: protein, 96.1 percent; ash, 4.8 percent; and oil, 0.08 percent. When normally packaged, the product picks up about 12 percent moisture with corresponding decreases in protein and ash.

However, several serious problems must be solved prior to commercial production of fish flour.

FISHERY INDICATORS

CHART I - FISHERY LANDINGS for SELECTED STATES

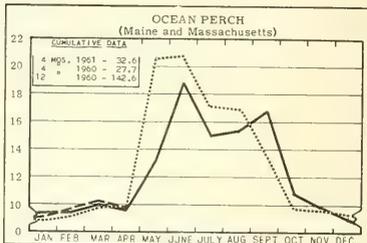
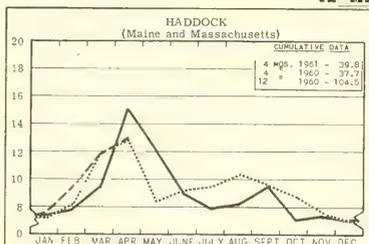
In Millions of Pounds



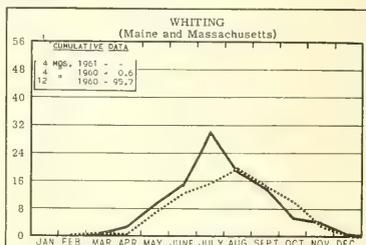
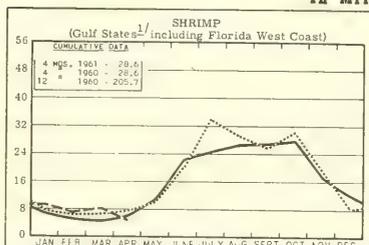
^{1/}ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

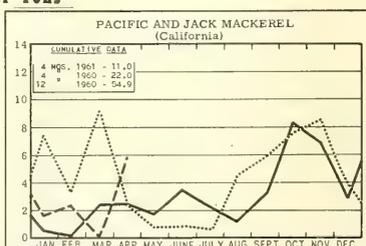
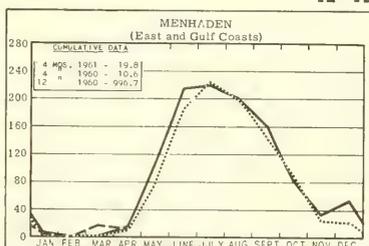


In Millions of Pounds



¹/A, A & A. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

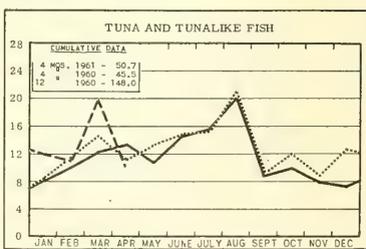
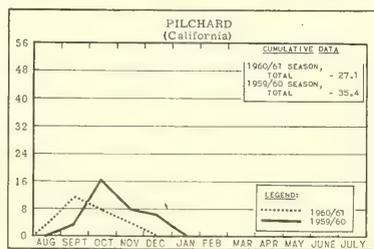
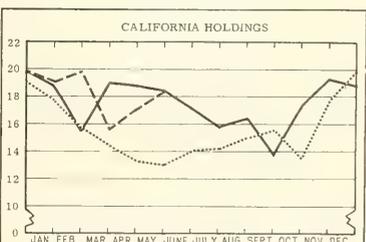
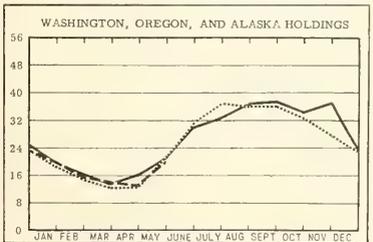
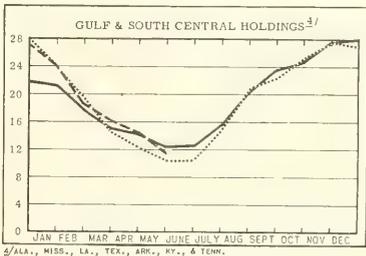
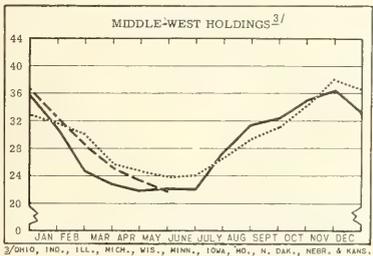
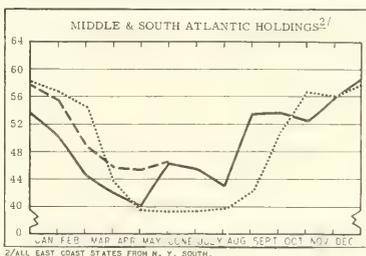
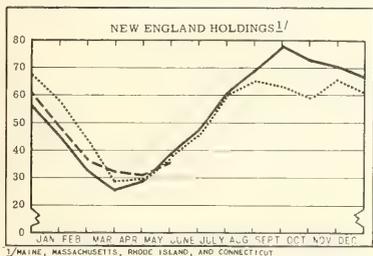
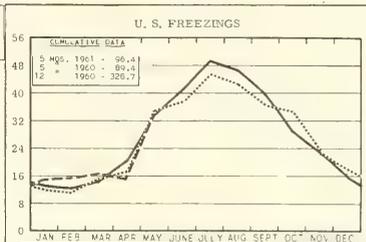
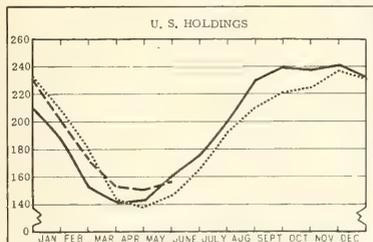


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

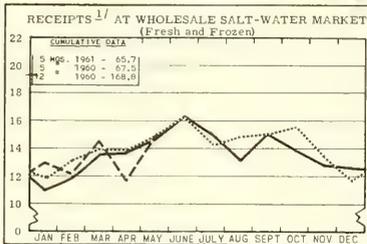
In Millions of Pounds



* Excludes salted, cured, and smoked products.

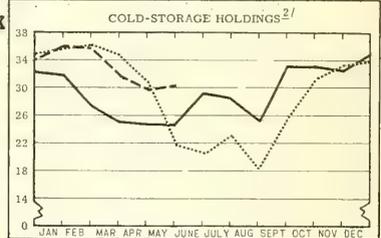
CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

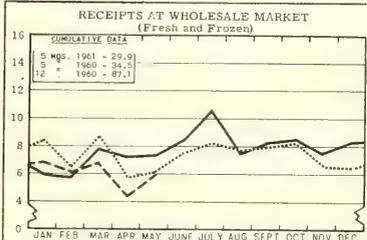


^{1/}INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

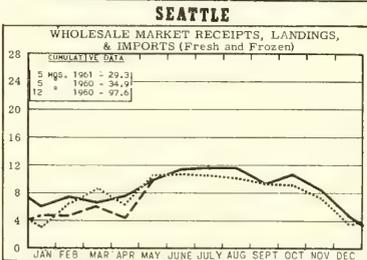
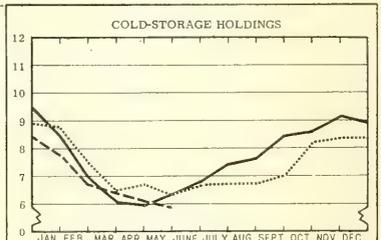
NEW YORK CITY



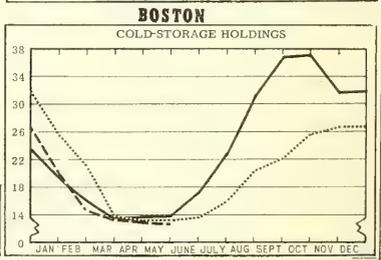
^{2/}AS REPORTED BY PLANTS IN METROPOLITAN AREA.



CHICAGO



SEATTLE



BOSTON

LEGEND:
 - - - 1961
 - - - 1960
 - - - 1959

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

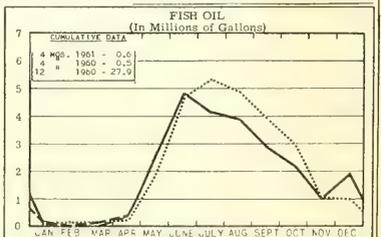
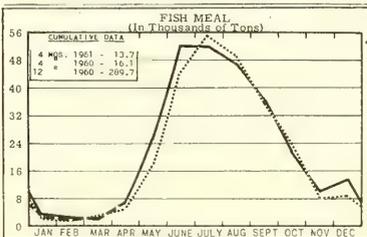
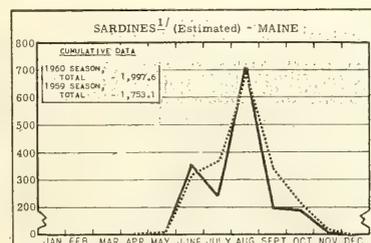
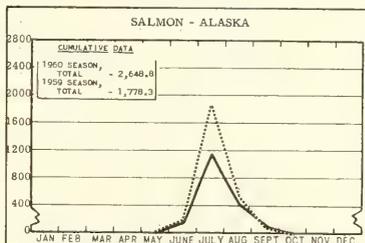
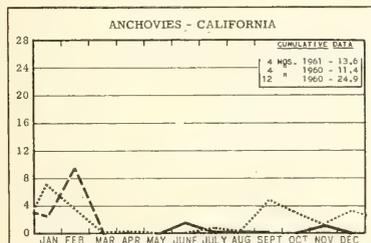
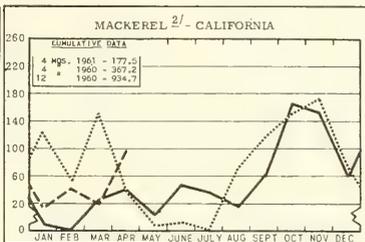
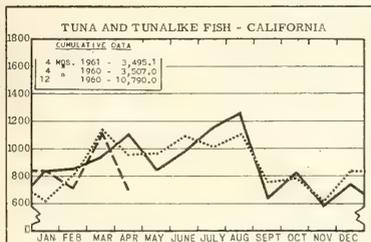


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES	100	1/4 drawn	3 1/2 oz.
SHRIMP	48		5 oz.
TUNA	48	# 1/2 tuna	6 & 7 oz.
PILCHARDS	48	# 1 oval	15 oz.
SALMON	48	1-lb. tall	16 oz.
ANCHOVIES	48	1/2-lb.	8 oz.

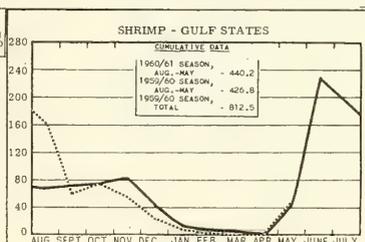
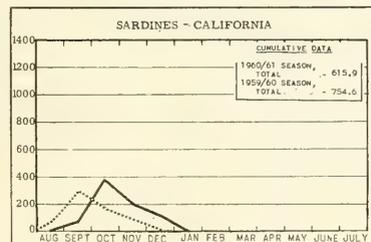
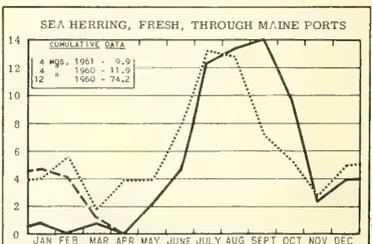
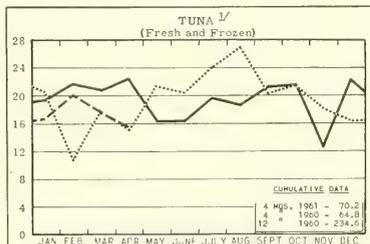
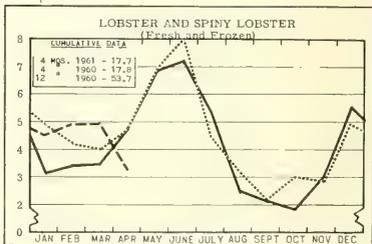
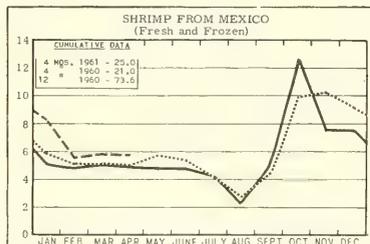
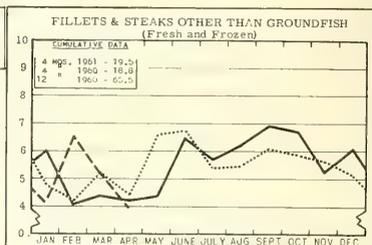
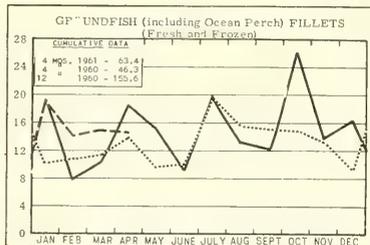
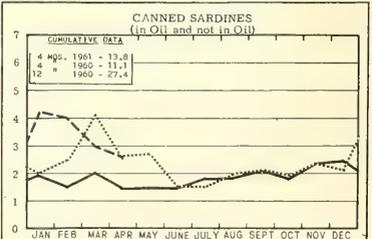
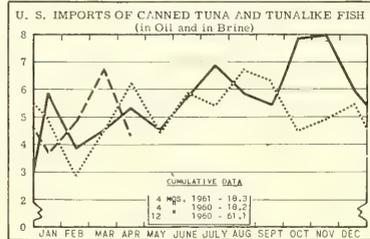


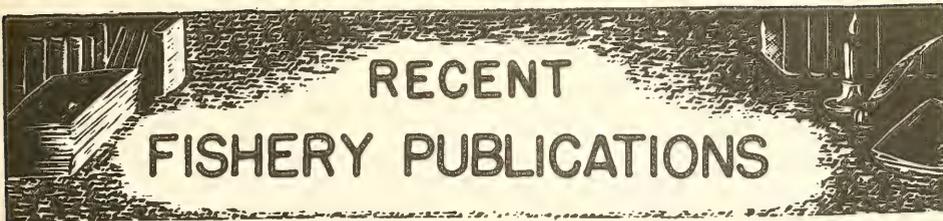
CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds



^{1/2} EXCLUDES LOINS AND DISCS.





RECENT FISHERY PUBLICATIONS

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.
 FL - FISHERY LEAFLETS.
 SL - BRANCH OF STATISTICS LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
 MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
 SSR - FISH - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
 SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

- | Number | Title |
|----------|--|
| CFS-2538 | - California Landings, December 1960, 5 pp. |
| CFS-2539 | - Wisconsin Landings, January 1961, 2 pp. |
| CFS-2545 | - Massachusetts Landings, December 1960, 6 pp. |
| CFS-2549 | - Georgia Landings, February 1961, 2 pp. |
| CFS-2552 | - Frozen Fish Report, March 1961, 8 pp. |
| CFS-2553 | - Fish Meal and Oil, February 1961, 2 pp. |
| CFS-2554 | - Rhode Island Landings, 1960 Annual Summary, 8 pp. |
| CFS-2555 | - Shrimp Landings, December 1960, 6 pp. |
| CFS-2556 | - New Jersey Landings, February 1961, 3 pp. |
| CFS-2558 | - Wisconsin Landings, February 1961, 2 pp. |
| CFS-2560 | - Maine Landings, February 1961, 3 pp. |
| CFS-2561 | - Rhode Island Landings, February 1961, 3 pp. |
| CFS-2562 | - Michigan Landings, February 1961, 2 pp. |
| CFS-2563 | - Mississippi Landings, January 1961, 2 pp. |
| CFS-2564 | - New York Landings, February 1961, 4 pp. |
| CFS-2565 | - Minnesota Landings, January and February 1961, 2 pp. |
| CFS-2567 | - Virginia Landings, February 1961, 3 pp. |
| CFS-2568 | - Maine Landings, 1960 Annual Summary, 6 pp. |
| CFS-2570 | - Texas Landings, January 1961, 3 pp. |
| CFS-2571 | - Fish Sticks and Portions, January-March 1961, 3 pp. |
| CFS-2574 | - Oregon Landings, 1960 Annual Summary, 2 pp. |
| CFS-2575 | - California Landings, January 1961, 4 pp. |
| CFS-2576 | - Mississippi Landings, February 1961, 2 pp. |
| CFS-2577 | - North Carolina Landings, March 1961, 4 pp. |
| CFS-2579 | - South Carolina Landings, March 1961, 2 pp. |
| CFS-2580 | - Georgia Landings, March 1961, 2 pp. |
| CFS-2581 | - Fish Meal and Oil, March 1961, 2 pp. |
| CFS-2587 | - Ohio Landings, March 1961, 2 pp. |
| CFS-2589 | - Alabama Landings, January 1961, 2 pp. |

FL-147 (Revised January 1961) - List of National Fish Hatcheries, 10 pp., processed.

FL-993 - Fisheries of the United States, 1960 (A Preliminary Review), by E. A. Power, 70 pp., illus., revised April 1961. A preliminary review of commercial fishery activities, well illustrated with graphs and charts. In addition to data on production, consumption, prices, manufactured fishery products, value of industry and capital investments, and supplies of certain fishery products, this leaflet contains information on fishery imports and exports, and world fisheries.

SL- 50 - Partial List of Wholesale Dealers in Fishery Products in Inland Cities with a Population of 50,000 and Over, 1959.

SL-162 - Firms Producing Fish Sticks and Portions, 1961 (Revised).

SSR-Fish. No. 372 - Relative Abundance of Plankton off Naples, Florida, and Associated Hydrographic Data, 1956-57, by Alexander Dragovich, 43 pp., illus., January 1961.

SSR-Fish. No. 374 - Zooplankton Volumes Off the Pacific Coast, 1958, by James R. Thraikill, 72 pp., illus., January 1961.

Sep. No. 620 - Bottom Trawling Explorations off the Washington and British Columbia Coasts, May-August 1960.

Sep. No. 621 - Indexes of the Cost of Transportation for Fishery Products.

Fisheries Loan Fund, Fiscal Year 1958, Fish and Wildlife Circular 106, 7 pp., illus., processed. Covers the statistics of the fisheries, a review of the loan fund program, organization of the Office of Loans and Grants, status of the loan fund, and practical value of the program. Includes graphs showing number of loan applications, value of applications, and other similar data.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

- | Number | Title |
|--------|--|
| MNL-50 | - Preliminary Estimate of Commercial Fish Production, Province of Ontario, Canada, 1960. |
| MNL-51 | - Turkish Fisheries in the Marmara Area. |

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE FROM THE U. S. FISH AND WILDLIFE SERVICE, BIOLOGICAL LABORATORY, SOUTHEAST HARBOR, ME.

Biological Groups of Murman Herring (CLUPEA HARENGUS HARENGUS) according to the Structure of Winter Rings on the Scales, by P. A. Murashkintseva, 21 pp., illus., processed, February 1960. (Translated from Russian, Trudy Polyarnyy Nauchno-Issledovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii, no. 1, 1938, pp. 74-87.)

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Parasites of Clupeid Fishes in the Black Sea, by G. K. Petrushevskii, 21 pp., processed, March 1960. (Translated from Russian, Leningrad, Vsesoyuznogo Nauchno-Issledovatel'skogo Instituta Ozer-nogo i Rechnogo Rybnogo Khozyaystva, Izvestiya, vol. 42, 1957, pp. 304-314.)

Supplementary Data on the Reaction of Herring to Electric Light, by D. P. Tikhonov, 3 pp., illus., processed, February 1960. (Translated from Russian, Rybnoye Khozyaystvo, vol. 35, no. 4, 1959, pp. 13-14.)

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED:

(Baltimore) Monthly Summary--Fishery Products, January and February 1961, 8 pp. each. (Market News Service, U. S. Fish and Wildlife Service, 400 E. Lombard St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous years; and wholesale prices on the Baltimore market; for the months indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, March 1961, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California receipts of the major fisheries (including tuna, mackerel, anchovies, and market fish) at leading ports; packs of major canned products; manufacture of byproducts; and wholesale prices for frozen and canned products; with comparative data; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, April 1961, 8 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Lomas Station, San Diego 6, Calif.) Discusses the cruise during which scientists measured s-line depth by the use of sonar; comments on the use of polaroid glasses in sighting schools of tuna; and presents topographic charts and sea-surface temperature charts, Eastern Pacific Ocean, April 1961; and other pertinent data; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, April 1961, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

A Fish and Wildlife Conservation Plan for the Boeuf and Tensas Rivers and Bayou Macon Project, Arkansas and Louisiana, a Unit of the Mississippi River and Tributaries Review, 28 pp., illus., processed, 1959. (U. S. Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, Office of Regional Director, Peachtree-Seventh Bldg., Atlanta 23, Ga.)

Fishery Development Program of the Lower Columbia River, Report for Fiscal Year 1953, 89 pp., illus., processed. (U. S. Fish and Wildlife Service, Regional Director, Seattle, Wash.)

Future Developments in the Production and Utilization of Fish Meal (Report of the International Meeting on Fish Meal), FAO, Rome, March 20-29, 1961, 38 pp., processed. (Branch of Technology, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington 25, D. C.) A report on the future developments in the production and utilization of fish meal prepared for the International Meeting on Fish Meal, held in Rome on March 20-29, 1961. The meeting was convened by the Director-General of the Food and Agriculture Organization of the United Nations at the request of certain member governments. The meeting was called as a result of a rapid increase in the world's productive capacity for fish meal without the use being made of the product keeping pace with this expansion. Consequently, stocks of meal accumulated, prices fell substantially, and production had to be reduced in a number of countries. The purpose of the meeting was to assess the world demand for fish meal, both short and long term, in relation to resources and productive capacity; to consider ways and means of increasing the effective demand for fish meal by action on the part of governments and of the industry individually or in concert; and to explore possibilities of ensuring stable conditions in the international market for fish meal.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, April 1961, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead

City, together with cumulative and comparative data; for the month indicated.

New England Fisheries--Monthly Summary, March 1961, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the principal New England fishery ports, and presents food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and landings and ex-vessel prices for fares, by species landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for March 1961, 20 pp. (Market News Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, imports entered at New York City, primary wholesaler prices for frozen products, and marketing trends; for the month indicated.

Questions and Answers Regarding the Federal Wage-Hour Law Amendments of 1961 Affecting the Fishing Industry, ECML-6, 7 pp., processed, May 1961. (Branch of Economics, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington 25, D. C.) A list of questions and answers pertaining to the Federal Wage-Hour Law Amendments of 1961 as they affect the fishing industry. Some of these amendments make changes in the application of the Federal Wage and Hour Law to the fishing industry.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, April 1961, 9 pp. (Market News Service, U. S. Fish and Wildlife Service, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Ore.) wholesale dealers; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

Summary of Tagging Operations, July 1, 1959 through June 30, 1960, by Sterling L. Cogswell, 11 pp., processed. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, Woods Hole, Mass.)

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

Embryological Stages in the Sea Lamprey and Effects of Temperature on Development, by George W. Flavis, Fishery Bulletin 182 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 37 pp., illus., printed, 30 cents, 1961.

Filefishes (Monacanthidae) of the Western North Atlantic, by Frederick H. Berry and Louis E. Voegelé, Fishery Bulletin 181 (from Fishery Bulletin of the

Fish and Wildlife Service, vol. 61), 53 pp., illus., printed, 40 cents, 1961.

¹"An Improved Instrument to Section Bones for Age and Growth Determinations of Fish," by Arthur Witt, Jr., article, *The Progressive Fish-Culturist*, vol. 23, no. 2, April 1961, pp. 94-96, illus., printed.

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 ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

AIR TRANSPORTATION:

"L'Avion et de Transport de Denrees Perissables sous Regime de Froid" (Controlled Temperature Transport of Perishable Foodstuffs in Aircraft), by M. Maurer, article, *Bulletin of the International Institute of Refrigeration*, vol. 41, no. 1, 1961, pp. 301-323, illus., printed in French with English abstracts. *Institut International du Froid, 177, Boulevard Malesherbes, Paris (17^e), France.* The full text of a general study for which an abridged text was presented at the 10th International Congress of Refrigeration in August 1959. Contains sections on: "Conditions for Use of Aeroplanes for the Transport of Perishable Foodstuffs;" "Cooling of Aircraft Holds at Ground;" and "Equipment of Aircraft for the Transport of Perishable Foodstuffs under Controlled Temperature."

ALASKA:

Regulations of the Alaska Board of Fish and Game for Commercial Fishing in Alaska, 119 pp., printed. Alaska Department of Fish and Game, 229 Alaska Office Bldg., Juneau, Alaska, 1961.

ALGAE:

Actions and Interactions of Temperature, Light Intensity and Nutrient Concentration on the Growth of the Green Alga, CHLAMYDOMONAS REINHARDI Dangeard, by Alen Milne McCombie, 24 pp., illus., printed. (Reprinted from *Journal of the Fisheries Research Board of Canada*, vol. 17, no. 6, 1960, pp. 871-894.) Queen's Printer and Controller of Stationery, Ottawa, Canada.

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"Change in Freshness and CTC Residue of Chlortetracycline-Treated Trawler's Catches with Species,

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"Biochemical Changes in Fish During Maturation," by H. L. A. Tarr, article, *Marine Biology*, April 1959, pp. 36-50, printed. Proceedings of the Twentieth Annual Biology Colloquium, Oregon State College, Corvallis, Oreg.

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Fisheries Statistics of British Columbia, 1960 (Preliminary), 14 pp., printed. Department of Fisheries, Economics Branch, Pacific Area, Vancouver, B. C., Canada, April 1961. Discusses the total value of fish and fish products produced in 1960 with an analysis of the decline in total landings; landed and marketed value, production and utilization, and canned pack of salmon; herring landings; halibut landings; crab and shrimp catch; fishing vessels; gear and equipment; and number of licensed fishermen. Includes statistical tables on landings and value by species, and by years; utilization of the catch, by species; salmon pack, 1960; and other similar data.

Operations of Modern Fishing Craft, Atlantic Seaboard, 1959, by John Proskie, Primary Industry Studies No. 1, vol. 9, 112 pp., processed. Economics Service, Department of Fisheries, Ottawa, Canada, 1961. (Available from Queen's Printer and Controller of Stationery, Ottawa, Canada.) An annual progress report on a study of the economics of primary fishing enterprises in the Atlantic provinces. Presents in summary form the results of fishing activities and the financial outcome for 156 primary fishing enterprises. The data include modernization program, 1947-60; description of boats, capital cost, financing, ownership; fishing activities; landings and landed values; and prices, receipts, expenditures, net returns. Also includes data on fishing effort and returns; geographic operational areas; and seasonal fishing effort and landings.

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"Urban Family Expenditures for Fish, 1953, 1955 and 1957," by H. C. Frick, article, *Trade News*, vol. 13, no. 9, March 1961, pp. 5-18, illus., processed. Information and Educational Service, Department of Fisheries, Ottawa, Canada. Reports on three biennial family food expenditure surveys conducted in 1953, 1955, and 1957, by the Dominion Bureau of Statistics. The average weekly family expenditure for fisheries food products in five Canadian cities was 50 cents in 1957. This was above the 1955 figure of 43 cents, but below that for 1953, which was 54 cents. In each of the three years, fish and shellfish purchases represented only two percent of the average weekly family expenditures for all foods of about \$22. In the first two surveys, families recorded their fish purchases under three headings: (1) fresh fish, cured fish, and other seafood; (2) canned salmon; and (3) other canned fish and seafood. In 1957, a separate category was used for frozen fish, making four classifications in all. Statistical tables present the results of these surveys.

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Crevettes, Langoustines, Langoustes: dans le Golfe de Cadix! (Shrimp, Spiny Lobsters, and Lobsters in the Gulf of Cadiz), by Jules Molard, article, *France Peche*, vol. 6, no. 48, February 1961, pp. 13-14, printed in French. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France.

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equivalent of \$75,769,000 in ordinary capital resources and \$72,882,500 in resources of the fund for special operations. By the end of 1960, the Bank had received 194 applications for loans and 174 inquiries. At this time, the Bank had 91 applications on an active status, involving \$200 million in loan requests.

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Some Aspects of the Marketing of Dried Fish in Central and West Africa, by George R. Allen and Jacques Chauv, 66 pp., processed. Food and Agriculture Organization of the United Nations, Rome, Italy, 1961. A report based on a study tour in Central and West Africa made in August and September 1959. The study was organized to satisfy the need for information on the trade in a commodity which is of great actual, and even greater potential, importance in meeting protein requirements in human diets and, at the same time, is a significant source of income for those employed in the fishery industries in the area. Topics covered include the demand for dried fish, the economic approach to production and marketing problems, cooperation between African countries, and intermediary marketing functions. Also discussed are the retailing of dried fish in Central and West Africa, the fishery industries of Angola, the stockfish trade in Nigeria, and observations on the dried fish trade on a country-by-country basis.

FOREIGN TRADE:

Licensing and Exchange Controls--the Philippines, WTIS Part 2, Operations Report No. 61-9, 10 pp., printed, 10 cents. Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C., February 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Discusses Philippine import and export controls, the decontrol program, import licensing, exchange controls on imports, allocation of regular exchange quotas, regulations on free market imports, special import regulations, and United States controls on exports and imports.

Licensing and Exchange Controls--United Kingdom, WTIS Part 2, Operations Report No. 61-4, 4 pp., printed, 10 cents. Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C., January 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Discusses the United Kingdom's import and export licensing policy, import and export licensing and exchange controls, and United States controls on exports and imports.

FRANCE:

"Le Monde de La Peche a Pris Conscience de Ses Problemes et Marque sa Volonte de les Resoudre"

(The Fishery Industry Has Assessed Its Problems and Expresses a Willingness to Solve Them), article, La Peche Maritime, vol. 40, no. 997, April 1961, pp. 205-212, illus., printed in French. La Peche Maritime, 190, Boulevard Haussmann, Paris, France.

"La Production Francaise en Produits de la Mer Surgeles Face au Marche National" (The French Production of Processed Frozen Fishery Products Competes on the National Market), by A. Bachmann, article, France Peche, vol. 6, no. 48, February 1961, pp. 43-44, illus., printed in French. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France.

FRESH FISH HANDLING:

Chilling of Fish, 276 pp., illus., printed. Food and Agriculture Organization of the United Nations, Rome, Italy, 1961. Contains papers submitted at a conference sponsored by FAO's Interim Committee on Fish Handling and Processing, held in Rotterdam, June 1956. The volume is divided into three parts: (1) The Use of Antibiotics, Bacteriostatic Ices, and Dips; (2) Brine Cooling, Sea-Water Ice, Scale Ice; and (3) Fresh Fish Quality Assessment--Objective and Subjective Methods. During discussions, it was stressed that the methods used by the fishing industry are often such that a great improvement in the keeping quality of fish can be attained by better handling, icing, and hygiene, without the use of preservatives. It was also suggested that a fair distribution of antibiotics in ice during its manufacture is possible, particularly with small ice. Discussions on brine cooling included the use of tanks with chilled sea water on fishing vessels; and it was decided that the question of the stability of boats needed further examination. The opinion was expressed that this method did not adapt itself to distant-water trawlers because of the extra space needed. There was also a discussion on fish odors. One man stated that it is difficult, even for expert graders, to spot by visual examination the "stinkers." It is only when the fillet is cut that one can tell, by the odor, that a fish is a stinker. In assessing quality of fresh fish, the newer tests and improvements in existing tests are being developed and explored, the most recent covering studies of chemical changes taking place in spoiling. Details are given of a method being developed in Germany on the use of electricity in testing the quality of fresh fish. In Great Britain, work is being done on the changes in the opacity of fish eye lenses during storage of the fish in ice and on the development of a special apparatus for estimating opacity.

FROZEN FISH:

Commercialisation et Consommation du Poisson Surgele (Marketing and Consumption of Frozen Fish), Draft No. 5/18, 136 pp., printed in French, \$1.25. European Agency of Productivity, European Organisation for Economic Cooperation, 2, rue Andre-Pascal, Paris (16^e), France.

"Le Poisson Congele au Danemark" (Frozen Fish in Denmark), by F. Bramsnaes, article, France Peche, vol. 6, no. 48, February 1961, pp. 21-23, 25-28, illus., printed in French. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France.

FUR SEALS:

"North Pacific Fur Seals," article, Trade News, vol. 13, no. 9, March 1961, pp. 3-4, illus., processed. In-

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formation and Educational Service, Department of Fisheries, Ottawa, Canada.

GENERAL:

The UNESCO Courier, vol. 13, no. 7-8, July-August 1960, printed. United Nations Educational, Scientific, and Cultural Organization, 801 3rd Ave., New York 22, N. Y. Contains a series of 16 articles on the ocean's secrets--devoted to oceanography and marine life.

HALIBUT:

Memorandum on 1961 Pacific Halibut Fishery Regulations, 7 pp., processed. International Pacific Halibut Commission, Fisheries Hall No. 2, University of Washington, Seattle 5, Wash. Lists the regulatory areas and length of the halibut fishing seasons, and discusses closed seasons, catch limits, minimum size limit, and nets and dory gear prohibited. Also covers the retention of tagged halibut, licensing of vessels, conditions limiting validity of licenses, earliest dates for validation of licenses, permits to retain incidentally caught halibut, statistical returns by vessels, and dealers' records.

Pacific Halibut Fishery Regulations (Effective March 30, 1961), 11 pp., printed. International Pacific Halibut Commission, Fisheries Hall No. 2, University of Washington, Seattle 5, Wash., March 1961. These regulations were published in conformity with the Pacific Halibut Fishery Convention between the United States and Canada, signed March 2, 1953. They are based on biological and statistical investigations, designed to show what catch can be taken from the stocks each year. The 1961 regulations differ from those of 1960 in the following respects: (1) Area 3B is divided into two parts, Area 3B North and Area 3B South, with differential opening dates of April 10 and April 25 respectively; (2) The second season in Areas 1B and 2 is eliminated; (3) the catch limit in Area 2 has been increased from 26.5 million pounds to 28 million pounds, and in Area 3A from 30 million pounds to 33 million pounds; (4) the descriptions of the Timbered Islet and Mast-seed grounds in Area 2, which no longer qualify as nursery grounds, are removed from the regulations.

Utilization of Pacific Halibut Stocks: Yield per Recruitment, Report No. 28, 51 pp., illus., printed. International Pacific Halibut Commission, Fisheries Hall No. 2, University of Washington, Seattle 5, Wash., 1960.

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"Explorations for Herring in the Bay of Fundy and Gulf of Maine," by S. N. Tibbo and V. M. Brawn, article, Journal of the Fisheries Research Board of Canada, vol. 17, September 1960, pp. 735-737, printed. Journal of the Fisheries Research Board of Canada, Queen's Printer & Controller of Stationery, Ottawa, Canada.

"Rapport over Smasildundersøkelser i Nord-Norge med F/F Asterias høsten 1960" (Report on Small Herring Investigations in Northern Norway on Board the Asterias during 1960), by Per Hognestad, article, Fiskets Gang, vol. 47, no. 16, April 20, 1961, pp. 329-333, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Seasonal and Diurnal Vertical Distribution of Herring (CLUPEA HARENGUS L.) in Passamaquoddy Bay, N. B.," by Vivien M. Brawn, article, Journal of the Fisheries Research Board of Canada, vol. 17, September 1960, pp. 699-711, printed. Journal of the Fisheries Research Board of Canada, Queen's Printer & Controller of Stationery, Ottawa, Canada.

IDAHO:

Experimental Rough Fish Control; Annual Progress Report, by Charles R. Fill and James F. Keating, Jr., 49 pp., illus., printed. Fisheries Division, Boise, Idaho, 1960.

Completion Report, 1955-1960, by James F. Keating, 71 pp., printed.

INTERNATIONAL COMMISSIONS:

International North Pacific Fisheries Commission, Bulletin No. 3, January 1961, 27 pp., illus., printed. International North Pacific Fisheries Commission, 6640 NW Marine Dr., Vancouver 8, B. C., Canada. Contains articles on: "Rapid Counting of Nematoda in Salmon by Peptic Digestion," by Joseph A. Stern and others; "Serological Differentiation of Populations of Sockeye Salmon," by G. J. Ridgway, J. E. Cushing, and G. L. Durall; and "Some Features of the Upper Zone of the Sub-Arctic Pacific Ocean," by A. J. Dudgeon.

Report by the President on the Eighth Meeting of the Permanent Commission Held in London, May 1960, 37 pp., processed in English and portions in French. Office of the Commission, International Fisheries Convention of 1946, Board of Trade Bldgs., Whitehall Gardens, London SW1, England, 1961. A report on the eighth meeting of the Permanent Commission, International Fisheries Convention of 1946. Includes, among other items, the report of the Committee on Mesh Difficulties, a proposal to increase the mesh size in trawl nets in the northeast part of the Convention area, and a discussion of the state of the herring industry. Also includes the agenda of the eighth meeting, a list of the observers and delegates, and financial reports.

ISRAEL:

Bamidgeh, vol. 12, no. 4, December 1960, 48 pp., illus., printed in Hebrew and English. Bamidgeh, Joint Agricultural Extension Center, Division of Fisheries, Ministry of Agriculture, Tel Aviv, Israel. Contains the following articles: "Suggestions for the Improvement of Fish Breeding," by S. Tal; "An Electric Instrument for Brandmarking Fish," by Rom Moav, G. Wohlfarth, and M. Lahman; "Adaptability of Tilapia nilotica to Various Saline Conditions," by Ruth Lotan; "The Elimination of Uncontrolled Straws in Carp Fattening Ponds," by J. Pruginin and J. Schechter; and "A Mobile Belt for Hauling and Sorting Fish," by Z. Shatz.

ITALY:

Bollettino di Pesca, Piscicoltura e Idrobiologia (Bulletin of Fishery, Fish Culture, and Hydrobiology), vol. 14, no. 2, July-December 1959, 116 pp., illus., printed in Italian. Laboratorio Centrale di Idrobiologia, Piazza Borghese, 91, Rome, Italy. Includes, among others, these articles: "Lo Scampo del Mare Tirreno (Nato 1)" (The lobster, Nephrops norvegicus, of the Tyrrhenian Sea), by Francesco Matta; "Osservazioni Computate nelle Tonacche del Tono"

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di Milazzo durante le Stagione di Pesca 1958" (Observations Made of Tuna Pound Nets of Milazzo, Sicily, during the Summer Fishery of 1958), by Francesco Li Greci; "La Pesca nell'Isola d'Elba" (The Fisheries of the Island of Elba), by Maria Giovanna Pedrotti; and "Osservazioni Eseguite in Alcune Tonname del Basso Tirreno durante la Campagna di Pesca 1959" (Observations Made of Some Tuna Pound Nets in the Lower Tyrrhenian Sea during the 1959 Fishing Season), by Sebastiano Genovese.

LAW OF THE SEA:

"Landhelgismaalid, Lausn a Deilunni with Breth--Aukning Fiskveithilogsogunnar" (Dispute on Fishing Limits, Dispute with the British--Extension of Fishing Zone), article, *Aegir*, vol. 54, no. 4, March 1961, pp. 70-79, illus., printed in Icelandic. *Aegir*, Posth. 20, Reykjavik, Iceland.

"Sedentary Fisheries and the Convention on the Continental Shelf," by Richard Young, article, *American Journal of International Law*, vol. 55, no. 2, April 1961, pp. 359-373, printed. American Society of International Law, Prince and Lemon Sts., Lancaster, Pa. The Convention on the Continental Shelf of April 29, 1958 declares that the "coastal State exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources." It later defines these resources as "the mineral and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil." This article discusses the history of the legal aspects of the continental shelf resources and the work of the International Law Commission on this subject as part of its study of the law of the sea. The proceedings of the Fourth Committee (Continental Shelf) of the Geneva Conference are also discussed, as well as the status provided by the Convention, its scope, and problems which might arise from it.

LOBSTERS:

Pesca Exploratoria de la Langosta con Nasas, al Sur de Camaguey, Cuba (Exploratory Spiny Lobster Fishing with Traps, South of Camaguey, Cuba), by Rene J. Buesa Mas, Contribution No. 11, 28 pp., illus., printed in Spanish. Centro de Investigaciones Pesqueras, Seccion de Pesca, Instituto Nacional de la Reforma Agraria, Playa Habana, Bauta, Cuba.

LONG-LINER:

"Le Daguite Premier Thonier Construit en Europe pour la Peche a la Ligne Longue" (The Daguite, First Tuna Vessel Constructed in Europe for the Long-Line Fishery), article, *La Peche Maritime*, vol. 40, no. 996, March 1961, pp. 167-171, 173, illus., printed in French. *La Peche Maritime*, 190, Boulevard Haussmann, Paris, France.

MACKEREL:

"Studies on the Method for Testing the Spoilage of Food. XI - Determination of Volatile Reducing Substances of Mackerel Flesh by Steam Distillation," by Tetsuo Tomiyama and others, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 28, January 1960, pp. 33-38, printed in

Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Tokyo, Japan.

MARINE AIDS:

List of Lights and Other Marine Aids, Vol. IV, *Great Lakes, United States and Canada*, Catalog No. T 47.52.v.4/961, 240 pp., illus., printed, \$1.75. U. S. Coast Guard, Washington 25, D. C., 1961. (Available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Lists the lights and other marine aids to navigation maintained or under authority of the U. S. Coast Guard and the Dominion of Canada on the Great Lakes and the St. Lawrence River above Regis River.

MARINE BIOLOGY:

The Biological Bulletin, vol. 120, no. 2, April 1961, 159 pp., illus., printed. Marine Biological Laboratory, Woods Hole, Mass. Includes, among others, these articles: "An Experimental Demonstration of Echo-Location Behavior in the Porpoise, *Tursiops truncatus* (Montagu)," by Kenneth S. Norris and others; "Skeleton Formation of Sea Urchin Larvae. III--Similarity of Effect of Low Calcium and High Magnesium on Spicule Formation," by Kayo Okazaki; and "The Effect of Temperature on the Growth and Survival of Several Marine Algal Species," by Ravenna Ukeles.

Journal of the Marine Biological Association of the United Kingdom, vol. 41, no. 1, February 1961, 227 pp., illus., printed, 50s. (US\$8.50). Cambridge University Press, 32 E. 57th St., New York 22, N. Y. Includes, among others, these articles: "The Long Rough Dabs of the Clyde Sea Area," by T. B. Bagenal; "Vitamin B₁₂ and Marine Ecology: the Response of *Monochrysis lutheri*," by M. R. Droop; "A Pressurizing Device for a Camera Case Designed for Use in Shallow Water," by D. J. Scarratt; and "Observations on the Mortality of *Ostrea edulis*," by P. R. Walne.

MARINE MAMMALS:

Results of the Puritan-American Museum of Natural History Expedition to Western Mexico. 10--Marine Mammals from the Coasts of Baja California and the Tres Marias Islands, Mexico, by Richard G. Van Gelder, American Museum Novitates, no. 1992, March 8, 1960, 27 pp., illus., printed. The American Museum of Natural History, Central Park W. at 79th St., New York 24, N. Y.

MUSSELS:

"Seasonal Variations in the Chemical Composition of Mussel (*MYTILUS EDULIS*). PART 2 - Carbohydrates," by F. Fraga, article, *Investigacion Pesquera*, vol. 11, January 1958, p. 33, printed in Spanish. *Investigacion Pesquera*, Instituto de Investigaciones Pesqueras, Universidad de Barcelona, Barcelona, Spain.

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United States Coast Pilot I--Atlantic Coast, Eastport to Cape Cod, Sixth Edition, 243 pp., illus., printed, \$2.50. Coast and Geodetic Survey, U. S. Department of Commerce, 1960.

NORWAY:

"Loddeundersokelser med F/F Johan Hjort, 22 February-18 Mars 1961" (Capelin Survey by F/F Johan

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Hjort February 22-March 18, 1961), by D. Moller and others, article, Fiskets Gang, vol. 47, no. 17, April 27, 1961, pp. 347-350, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway

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Oceanographic Data from ATLANTIS Cruise 247, January-June 1959 for the International Geophysical Year of 1957-58, Reference No. 60-40, 151 pp., illus., processed. Woods Hole Oceanographic Institution, Woods Hole, Mass., March 1960.

Studies of Physical, Chemical, and Biological Oceanography in the Vicinity of the Revilla Gigedo Islands during the "Island Current Survey" of 1957, by Edward B. Bennett and Milner B. Schaefer, Inter-American Tropical Tuna Commission Bulletin, vol. 4, no. 5, 1960, 101 pp., illus., printed. Inter-American Tropical Tuna Commission, La Jolla, Calif.

O.E.C.D.:

Organization for Economic Cooperation and Development, Department of State Publication 7181, 24 pp., printed, 15 cents. Office of Public Services, Bureau of Public Affairs, U. S. Department of State, Washington, D. C., April 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

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"The Growth of the Fish Otolith," by Takaaki Irie, article, Journal of the Faculty of Fisheries and Animal Husbandry, Hiroshima University, vol. 3, no. 1, December 1960, pp. 203-221, illus., printed. The Faculty of Fisheries and Animal Husbandry, Hiroshima University, Fukuyama, Japan.

PERU:

"Las Conservas Peruanas" (Peruvian Canned Products), article, Pesca, vol. 11, no. 3, March 1961, pp. 11-17, illus., printed in Spanish. Pesca, Av. Wilson 911, Oficina 602, Lima, Peru.

PLANKTON:

Phytoplankton in the Black Sea and Its Quantitative Growth, by N. V. Morozova-Vodianitskaia, TRANS-80, 28 pp., processed. (Translated from Russian, Trudy Sevastopol'skoi Biologicheskoi Stantsii, vol. 9, 1957, pp. 3-13.) Technical Services Branch, Division of Oceanography, U. S. Navy Hydrographic Office, Washington, D. C., 1960.

POISONOUS FISH:

Peces Peligrosos en los Rios y Lagos de la Amazonia Peruana (Dangerous Fishes in the Rivers and Lakes of the Peruvian Amazon), by Jorge E. Sanchez R., Serie de Divulgacion Cientifica No. 2, 15 pp., illus., printed in Spanish. Ministerio de Agricultura, Direccion de Pesqueria y Caza, Lima, Peru, 1951.

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"Current Aspects of the Wholesomeness of Irradiated Food," by Merrill Stafford Read, article, Journal of Agricultural and Food Chemistry, vol. 8, September-October 1960, pp. 342-349, printed. Journal of Agricultural and Food Chemistry, American Chemical Society, 1801 K Street NW, Washington 6, D. C.

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"A Simple Method for Judging the Rancidity of Oily Fish," by Shigeshi Masuda, article, Bulletin of the Seikai Regional Fisheries Research Laboratory, no. 12, 1957, pp. 43-59, printed in Japanese. Suisan-cho Seikai-ku Suisan Kenkyusho, Maruo-machi Nagasaki-shi, Japan.

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"U.S.S.R.'s Refrigerated Fishing Vessels," by A. Kan and E. Pavlov, article, Quick Frozen Foods, vol. 23, September 1960, pp. 40-41, 94-96, printed. Quick Frozen Foods, E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y.

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"Inosine in the Muscle of Pacific Salmon Stored in Ice," by Vera M. Creelman and Neil Tomlison, article, Journal of the Fisheries Research Board of Canada, vol. 17, May 1960, pp. 449-451, printed. Journal of the Fisheries Research Board of Canada, Queen's Printer & Controller of Stationery, Ottawa, Canada.

A Pacific Salmon (ONCORHYNCHUS GORBUSCHA) in Scottish Waters, by W. M. Shearer and E. Trewas, printed. (Reprinted from Nature, vol. 188, no. 4753, December 3, 1960.) St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

Salmon Spawning Report--British Columbia, 1960, 16 pp., processed. Department of Fisheries, Pacific Area, 1110 Georgia St. W., Vancouver 5, B. C., Canada, May 9, 1961. A report covering the seeding of the salmon spawning areas of British Columbia for 1960. Developments or trends of the 1960 migration and spawning escapement of salmon, by species and areas, are discussed.

Statistics on Salmon Sport Fishing in the Tidal Waters of British Columbia, 1960, 29 pp., illus., processed. Department of Fisheries of Canada, 1110 W. Georgia St., Vancouver 5, B. C., Canada, March 31, 1961. For the second successive year, the salmon sport catch in British Columbia showed a drop, with 331,425 salmon and grilse taken in 1960, down by 64,950 from 1959. The sports catch of all species, except coho, was down from 1959. Both sport and commercial fishermen experienced a sharp decline in salmon landings in 1960. However, the drop was proportionately more pronounced in commercial landings, with the over-all catch the lowest since records were first kept in 1910.

"Stillehavslaks pa Norskekysten" (Pacific Pink Salmon off the Coast of Norway), by Birger Rasmussen, article, Fiskets Gang, vol. 47, no. 17, April 27, 1961, pp. 351-354, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

Toxic Effects of Organic and Inorganic Pollutants on Young Salmon and Trout, Research Bulletin No. 5, 274 pp., processed. Washington State Department of Fisheries, 4015 20th Ave., W., Seattle 99, Wash., September 1960.

"Tryptic Enzymes of Chinook Salmon," by C. Bradford Croston, article, Archives of Biochemistry and Biophysics, vol. 89, August 1960, pp. 202-206,

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SALT FISH:

"Preparacao e Secagem de Peixes Salgados nas Regioes Tropicais--Experimentacao com algumas Especies da Amazonia" (Preparation and Drying of Salt Fish in Tropical Regions--Experiments with Some Species from the Amazon), by Antonio Torres Botelho, article, *Boletim de Pesca*, vol. 13, no. 70, March 1961, pp. 39-59, illus., printed in Portuguese. *Boletim de Pesca*, R. S. Bento, 644, 4.º Esq., Lisbon, Portugal.

"Prevention of Red Discoloration in Salt Fish," by A. Torr s Botelho, article, *Boletim da Pesca*, vol. 11, March 1958, pp. 11, printed in Portuguese. *Boletim da Pesca*, Avenida da Liberdade, 211-4, Lisbon, Portugal.

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The Pilchard of South West Africa (SARDINOPS OCELLATA), Size Composition of the Commercial Catches in South West Africa, 1952-1957, by J. P. Matthews, Investigational Report No. 1, 45 pp., illus., printed. Administration of South West Africa, Marine Research Laboratory, Windhoek, South West Africa. Deals with the size composition of the commercial catches of the South-West African pilchard, *Sardinops ocellata* (Pappe), which were made in the vicinity of Walvis Bay along the South-West African coast during the period October 1952 to December 1957. A description of the method of sampling and of the treatment of the samples is given. Then follows a description of the size composition of the catches, by months and by years, and a comparison with the fish which occurred in the catches of the Union of South Africa. Includes statistical tables showing length frequencies of commercial pilchard catches, 1952-1957, by months and by years, and graphs showing length frequencies during these years.

SEAWEED:

Annual Report for 1960, 19 pp., printed. Institute of Seaweed Research, Inveresk, Midlothian, Scotland. Discusses developments in the Scottish and foreign seaweed byproducts industry during 1960, and the Institute's information and technical assistance services. Also discusses production of alginates from seaweed, use of seaweed meal in animal feed-stuffs, development of fertilizers from seaweed, sponsorship of seaweed research by other organizations, and a list of publications on seaweed published during 1960.

SHIPWORMS:

A Method of Exterminating Shipworms of the Family Teredinidae by Electric Current, by N. V. Vershinin, TRANS-79, 8 pp., illus., processed. (Translated from Russian, *Biulleten' Okeanograficheskoi Komissii*, no. 1, 1958, pp. 60-63.) U. S. Navy Hydrographic Office, Washington, D. C., 1960.

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Journal of the Fisheries Research Board of Canada, Queen's Printer & Controller of Stationery, Ottawa, Canada.

"Directory of Mexican Shrimp Producing Firms," article, *Seafood Merchandising*, vol. 20, June 1960, pp. 33-35, printed. *Seafood Merchandising*, H. L. Peace Publications, 624 Gravier Street, New Orleans 9, La.

The Fairy Shrimp BRANCHINECTA CAMPESTRIS

from Northwestern United States (Crustacea: Phyllopoda), by James E. Lynch, *Proceedings of the United States National Museum*, vol. 112, no. 3447, 1960, 13 pp., illus., printed. United States National Museum, Smithsonian Institution, Washington, D. C.

The Feeding Mechanism of Some Attyd Prawns of the Genus CARIDINA, by Geoffrey Fryer, Transactions of the Royal Society of Edinburgh, vol. 60, no. 10, 1959-60, 28 pp., illus., printed, 10s. 6d. (about US\$1.50). Royal Society of Edinburgh, 22 George St., Edinburgh 2, Scotland, 1960.

The Texas Shrimp Fishery, by William C. Guest, Bulletin No. 36, 22 pp., illus., printed. Texas Game and Fish Commission, Walton State Bldg., Austin 14, Tex., 1958. Presents details of the Texas shrimp industry, by far the most important commercial fishery in the State. The quantity of shrimp landed increased from 18 million pounds in the fiscal year 1947/48 to over 79 million pounds in 1954/55. This pamphlet discusses the species of shrimp landed in Texas, life histories of commercial shrimp, the commercial shrimp fishery, and the bait shrimp fishery.

SMALL BUSINESS MANAGEMENT:

Improved Accounting Methods for Wholesale Food Distributors, Marketing Research Report No. 454, 146 pp., illus., processed. Transportation and Facilities Research Division, Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C. (Available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This report is based on detailed studies in the accounting departments of 7 wholesale food distributors and on observations made in numerous wholesale food distribution businesses in the United States and Canada. Its primary objectives were: (1) to apply the principles of work simplification to assembling, posting, totaling, and balancing the thousands of daily transactions for accumulating and summarizing into the records of account; (2) to develop improved methods of financial reporting to management and a standard simplified procedure for maintaining the general ledger with manual methods, automatic tabulating machine methods, and electronic computers having memory units; (3) to develop a method of providing reports, as byproducts of the accounting system, on productivity in warehousing, selling, and delivery; and (4) to develop a method of accounting and account classification that can be used throughout the industry.

The Management Side of Small-Plant R & D, by Leland S. Hobson, Management Aids for Small Manufacturers No. 119, 4 pp., processed. Small Business Administration, Washington 25, D. C., December 1960.

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This leaflet is designed to help owners and managers of small plants understand better the administrative side of technology as a stepping stone toward increased business and better profits. Suggestions to the small-plant manager include: checking his ideas of "research" and "development," knowing what goes on, making research function separate from operation of the plant, reviewing his research budget regularly, keeping his staff quality high and balanced, choosing projects wisely, scheduling research budget-wise as well as time-wise, and using special research-project teams.

Meeting the Risks of Change, by Edward L. Anthony, Small Marketers Aid No. 66, 4 pp., printed. Small Business Administration, Washington 25, D. C., April 1961. Change and risk--two universal factors in business--can weaken or strengthen the small marketer. He can let change push him around or he can meet its risks by using new conditions to his advantage. Two important kinds of change are technological developments and shifts in demand. This leaflet suggests that the small marketer can cut down the risks of change. In many cases, by understanding change and by planning for it, he can use change to strengthen his competitive position. Often, the soundest manager is the one who recognizes a trend in time, but who avoids the "first-or-nothing" gambles. Principles and cases are included which should stimulate thinking on how to meet the risks of change in stores, wholesale houses, and service establishments.

SPINY LOBSTERS:

Aproveitamento das Lagostas do Noroeste Africano (Utilization of Spiny Lobsters from Northeastern Africa), by C. Fernando Costa, Publication No. 36, 126 pp., illus., printed in Portuguese. Gabinete de Estudos das Pescas, Lisbon, Portugal, 1960.

SPOILAGE:

"Role of Psychrophilic Bacteria in Frozen Food Spoilage," by A. C. Peterson and M. F. Gunderson, article, *Food Technology*, vol. 14, September 1960, pp. 413-417, printed. *Food Technology*, the Garrard Press, 510 North Hickory, Champaign, Ill.

"Studies on the Method for Testing the Spoilage of Food. X--Errors Involved in OTA's-Method for Determination of Histamine," by Atsushi Tsuda and others, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 25, September 1959, pp. 361-367, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Tokyo, Japan.

SQUID:

"Some Aspects on the Water-Soluble Proteins of Squid Muscle," by Juichiro J. Matsumoto, article, *Bulletin of Tokai Regional Fisheries Research Laboratory*, no. 20, May 1958, pp. 65-75, printed. Tokai Regional Fisheries Research Laboratory, Tsukushima, Chuo-ku, Tokyo, Japan.

TARIFFS:

Import Tariff System of Denmark, WTIS Part 2, Operations Report No. 61-17, 2 pp., printed, single copy 10 cents. Bureau of Foreign Commerce, U. S.

Department of Commerce, Washington 25, D. C., March 1961.

Venezuela, WTIS Part 2, Operations Report No. 61-18, 2 pp., printed, single copy 10 cents, March 1961.

Mozambique, WTIS Part 2, Operations Report No. 61-19, 2 pp., printed, single copy 10 cents, March 1961.

Sudan, WTIS Part 2, Operations Report No. 61-21, 2 pp., printed, single copy 10 cents, March 1961.

France, WTIS Part 2, Economic Report No. 61-26, 2 pp., printed, 10 cents a single copy, April 1961.

Import Tariff System of Iran, WTIS Part 2, Operations Report No. 60-59, 2 pp., printed, 10 cents. Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C., November 1960. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

India, WTIS Part 2, Operations Report No. 60-60, 2 pp., printed, 10 cents, November 1960.

New Zealand, WTIS Part 2, Operations Report No. 60-61, 2 pp., printed, 10 cents, November 1960.

Australia, WTIS Part 2, Operations Report No. 60-62, 2 pp., printed, 10 cents, November 1960.

TENNESSEE VALLEY AUTHORITY:

1959 Annual Report, Report No. 228-59, 13 pp., illus., printed. Fish and Game Branch, Division of Forestry Relations, Tennessee Valley Authority, Norris, Tenn.

TEXAS:

The Marine Fisheries Division of the Texas Game and Fish Commission, 8 pp., illus., printed. The Marine Fisheries Division, Texas Game and Fish Commission, Walton State Bldg., Austin, Texas. A brief description of the Texas marine fisheries and activities of the Marine Fisheries Division. Aiming at improved fishery harvests, study is made of the spawning, feeding, growth, and migration of food fish. From these studies, proper management techniques and protective laws are developed. The Texas Gulf Coast now has a steadily growing reputation as one of the nation's top sport fishing areas. In the commercial field, much work has been done toward locating concentrations of market fish. Private industry has been encouraged, with some success, to establish new fisheries, resulting in increased industrial income to Texas. Shrimp, oysters, and the edible blue crab have received a great deal of attention. Other fishery research studies are described.

THAILAND:

Fisheries Record of Thailand 1959, 50 pp., illus., processed in Thai and English. Statistics Section, Department of Fisheries, Ministry of Agriculture, Bangkok, Thailand, October 1960. Contains statis-

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tical tables giving annual catch and utilization of marine and fresh-water fish, by kind and provinces; sales of fresh and salted fish and fresh-water fish; and fish-pond production. It also contains data on foreign trade in fishery products; registered fishing vessels; fishing gear; and production of fishery products. Tables include data on salt- and fresh-water shrimp landings and utilization.

TRADE:

Freeing Trade in Europe, 28 pp., printed. British Information Services, 45 Rockefeller Plaza, New York 20, N. Y., December 1960. Outlines the course of European economic integration, the main features of, and the background to, the new economic organizations which have emerged in Europe, and the efforts being made to bring about some form of wider unity. The approach of Britain to the problems, taking into account its other commitments to the Commonwealth and to international trading organizations, are recorded in detail.

TRADE LISTS:

The Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at \$2 each.

Canneries--Italy, 19 pp. (April 1961). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes firms canning fish.

Boat and Ship Builders, Repairers and Chandlers--Brazil, 27 pp. (March 1961). Lists the names and addresses, size of boat and ship builders, etc., and types of equipment handled by each firm. Includes firms dealing in fishing craft.

Oils (Animal, Fish, and Vegetable)--Importers, Dealers, Producers, Refiners, and Exporters--Colombia, 11 pp. (March 1961). Includes basic trade and industry data, and lists the names and addresses, size of firms, and types of products handled by each firm. Includes firms dealing in fish oils.

TROUT:

"Icing of Trout," by P. Hansen, article, Ferskvands-fiskeribladet, vol. 57, no. 3, pp. 34-38, printed in Danish, Ferskvandsfiskeribladet Frederiksdal, Kgs. Lyngby, Denmark.

Observations on the Life History of the Hybrid between Eastern Brook Trout and Lake Trout in Algonquin Park, Ontario, by N. V. Martin and N. S. Baldwin, 11 pp., illus., printed. (Reprinted from Journal of the Fisheries Research Board of Canada, vol. 17, no. 4, 1960, pp. 541-551.) Queen's Printer and Controller of Stationery, Ottawa, Canada.

The Story of New Mexico's Trout Hatcheries, 12 pp., illus., printed. Department of Game and Fish, Santa Fe, New Mexico.

"Studies on the Fat Metabolism of Fish. I--Contents of Fat and Phosphorus During the Growth of Rainbow Trout," by Toyoki Ono, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 10,

1959, pp. 858-861, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Tokyo, Japan.

TROUT FARMING:

Trout in Farm and Ranch Ponds, Catalog No. A 1.9:2154, 17 pp., illus., printed, 10 cents. U. S. Department of Agriculture, Washington 25, D. C., 1961. (Available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Tells how to plan and manage farm and ranch ponds to grow trout for food and recreation and lists some essentials for commercial production.

"U. S. Trout Industry and Its Foreign Competitors," article, U. S. Trout News, vol. 5, no. 6, March-April 1961, pp. 4-5, 19-22, illus., printed. U. S. Trout Farmers Association, 110 Social Hall Ave., Salt Lake City 11, Utah. An article, based on letters from industry members to a magazine editor, that defines the basic differences between the U. S. and foreign trout industries. Also presents information on how to improve trout flavor and quality through better cultural methods.

TUNA:

Distribution of Fishing Effort and Resulting Tuna Catches from the Eastern Tropical Pacific by Quarters of the Year, 1951-1958, by Franklin G. Alverson, Inter-American Tropical Tuna Commission Bulletin, vol. 4, no. 6, 1960, 128 pp., illus., printed in English and Spanish. Inter-American Tropical Tuna Commission, La Jolla, Calif.

"Problems of Color of Frozen Tuna Meat on Cooking," by T. Yamamoto, article, Refrigeration, vol. 35, March 1960, pp. 1-8, printed. Refrigeration, Nihon Reito Kyokai (Japanese Society of Refrigeration) No. 3, 1-Chome, Ginza Nishi, Chuo-ku, Tokyo.

"Puerto Rico Cannery Packs 100 Tons of Prime Tuna Daily for U. S. Trade," by Harold N. Underhill, article, Canner/Packer (Western Edition), vol. 128, November 1959, pp. 30-31, printed. Canner and Packer, Triad Publishing Co., 59 E. Monroe St., Chicago 3, Ill.

Species and Size Relationships within Schools of Yellowfin and Skipjack Tuna, as Indicated by Catches in the Eastern Tropical Pacific Ocean, by Gordon C. Bradhead and Craig J. Orange, Inter-American Tropical Tuna Commission Bulletin, vol. 4, no. 7, 1960, 46 pp., illus., printed in Spanish and English. Inter-American Tropical Tuna Commission, La Jolla, Calif.

UNDERWATER PHOTOGRAPHY:

Underwater Photography in the Study of Hydromechanical Phenomena, by Joseph D. Richard and Edmond L. Fisher, Final Report 60-4, 11 pp., illus., processed. The Marine Laboratory, Institute of Marine Science, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla., October 1960.

UNITED KINGDOM:

White Fish Authority Publicity Campaign 1961-1962, 11 pp., illus., processed. White Fish Authority, Lincoln's Inn Chambers, 2/3 Cursitor St., London EC4, England. Covers an outline of the White Fish Authority's campaign to advertise fish. The consumer

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survey carried out by the Authority in 1960 indicated that, while fish was served from time to time in all but a fraction of households, there was a general indifference to the value of fish among housewives and that more attention should be given to the cooking and serving of fish. Press advertisements, therefore, are designed to give a new interest to fish cookery. They concentrate upon new and interesting ways to cook fish which, while easy and simple, add color and glamour to fish, and they introduce a new theme--fish sauces. Merchandising material is closely integrated and linked with the new advertising theme. Other aspects of the White Fish Authority's educational work are also discussed. Included is a leaflet entitled "How You Can Help to Keep Fish Fresh," which gives a few hints on transporting fish by train; and samples of flyers entitled "Fish with a Difference," "The Way You Cook Your Fish," "What's Sauce for the Fish;" and "5-Minute Home Made Sauces."

"World's Largest Fish Centre Opened in London," article, Food Manufacture, vol. 35, October 1960, pp. 435-436, printed. Food Manufacture, Leonard Hill, Ltd., Stratford House, 9 Eden Street, London NW1, England.

U.S.S.R.:

The following English translations of foreign language articles are available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

Behavior of a Trawl in Water, by E. A. Lebedev, OTS 60-51180, 7 pp., illus., processed, 50 cents. (Translated from Rybnoe Khozyaistvo, vol. 35, no. 2, 1959, pp. 39-42.)

Our Observations on the Behavior of the Trawl in Water, by N. A. Lyapin, OTS 60-51080, 5 pp., illus., processed, 50 cents. (Translated from Rybnoe Khozyaistvo, vol. 35, no. 2, 1959, pp. 43-46.)

Some Suggestions on the Standardization of Far-Eastern Trawls, by A. V. Lestev and G. E. Grishchenko, OTS 60-51129, 11 pp., illus., processed, 50 cents. (Translated from Rybnoe Khozyaistvo, vol. 35, no. 2, 1959, pp. 33-39.)

Deep-Sea Fish of Far Eastern Seas of the U.S.S.R., by T. S. Rass, OTS 60-21099, 21 pp., illus., processed, 50 cents, 1960. (Translated from Russian, Zoologicheskii Zhurnal, vol. 33, no. 6, 1954, pp. 1312-1324.)

Determining the Diurnal Amount of Food Consumed by the Young of Sockeye Salmon and the Three-Spined Stickleback by the Use of the Respiration Method, by E. M. Krokhin, OTS 60-21106, 21 pp., illus., processed, 50 cents, 1960. (Translated from Izvestiya Tikhookeanskogo Nauchno-Issledovatel'skogo Instituta Rybnogo Khozyaistva i Okeanografii, vol. 44, 1957, pp. 97-110.)

Kuroshio and the Population of the Amur Fall Chum Salmon (ONCORHYNCHUS KETA (Walb.) Infrasp. Autumnalis), by I. B. Birman, OTS 60-21095, 9 pp., illus., printed, 50 cents. (Translated from Voprosy Ikhtologii, no. 8, 1957, pp. 3-7.)

Morpho-Biological and Morphometric Characteristics of Pink Salmon of the Amgun' and Iska Rivers, by R. Enyutina, OTS 60-21097, 8 pp., processed, 50 cents, 1960. (Translated from Russian, Izvestiya Tikhookeanskogo Nauchno-Issledovatel'skogo Instituta Rybnogo Khozyaistva i Okeanografii, no. 41, 1954, pp. 333-336.)

The Most Numerous Deep-Sea Fish in Far Eastern Seas--The Cyclothone--CYCLOTHONE MICRODON Guenther (Pisces, Gonostomidae), by V. A. Mukhacheva, OTS 60-21110, 16 pp., illus., processed, 50 cents, 1960. (Translated from Russian, Akademiya Nauk, SSSR, Trudy Insituta Okeanologii, vol. 11, 1954, pp. 206-219.)

Saury Concentration Areas and Fisheries in the Pacific Ocean, by L. V. Klyuev, OTS 60-21100, 9 pp., illus., processed, 50 cents, 1960. (Translated from Rybnoe Khozyaistvo, vol. 34, no. 5, 1958, pp. 8-13.)

Our Experience in Introducing Complex Mechanization, by K. P. Orishich, OTS 60-21146, 9 pp., illus., processed, 50 cents, 1960. (Translated from Rybnoe Khozyaistvo, vol. 34, no. 7, 1958, pp. 43-49.)

West Kamchatka Salmon, Their Commercial Exploitation and Reproduction, by R. S. Semko, OTS 60-21123, 14 pp., processed, 50 cents, 1960. (Translated from Russian, Akademiya Nauk SSSR, Ikhtologicheskaya Komissiya, Trudy Soveshchaniy, no. 4, 1954, pp. 38-47.)

VESSELS:

Boat Building--A Complete Handbook of Wooden Boat Construction, by H. I. Chapelle, 624 pp., illus., printed, 50s. (about US\$7). George Allen and Unwin, Ltd., 40 Museum St., London WC1, England, 1956.

WEATHER CHARTS:

Coastal Warning Facilities Charts, 1961, 5 charts, 2 pp. each, processed, 10 cents each. Weather Bureau, U. S. Department of Commerce, Washington, D. C., 1961. (For sale by the Superintendent of Documents; U. S. Government Printing Office, Washington 25, D. C.) Charts show stations displaying storm warnings; explanation of warning displays; and schedules of AM and FM radio and TV stations that broadcast weather forecasts and warnings. The charts cover Eastport, Maine, to Montauk Point, N.Y.; Montauk Point, N. Y., to Manasquan, N. J.; Manasquan, N. J., to Cape Hatteras and Chesapeake Bay; Cape Hatteras to Brunswick, Ga.; and Eastern Florida.

WEST INDIES:

"W. I. Fisheries Development 1959/60," by Ernest Hess, article, West Indies Fisheries Bulletin, no. 1, January-February 1961, pp. 1-3, processed. Federal Fisheries Adviser, Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad. Discusses mechanization of fishing boats, introduction of experimental fishing vessels, improvement of shore facilities, progress in distribution of fishery products, advances in fish culture and conservation, formation of cooperatives, and progress in research during 1959/60.

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WHALE:

Preservation of Whale Meat, by Roland G. Booth, U. S. Patent No. 2,934,440, April 26, 1960. U. S. Patent Office, Department of Commerce, Washington 25, D. C.

Whaling Gazette, vol. 50, no. 3, March 1961, pp. 111-113, printed in Norwegian and English, Norsk Hvalfangst-Tidende, Sandefjord, Norway. Presents the results of the 1960/61 whaling season for the Norwegian, Japanese, British, and Netherlands whaling fleets. Includes statistical tables showing yield in barrels of whale oil for each factoryship, and comparisons with the previous season.

WHALING:

"Catch Reports--Pelagic Catch in the Season 1960/61," article, Norsk Hvalfangst-Tidende (The Norwegian



CORRECTION

GREAT LAKES UNIFORM FISHERY REGULATIONS

In the April 1961 issue of Commercial Fisheries Review, p. 43, a news item appeared under the headings: "Great Lakes Fisheries Commission. Uniform Regulations Being Drafted." The article pointed out that model legislation is being drafted to establish uniform regulations for commercial and sport fishing in the Great Lakes. The group drafting this legislation is the Great Lakes Commission, a state Compact group, and not the Great Lakes Fisheries Commission (an international fishery commission) as indicated in the article. Also, the scientific name given in the lake trout sketch should have read "Cristivomer namaycush," but we understand that taxonomists now have assigned the scientific name of "Salvelinus namaycush" to the lake trout.

CORRECTION

APPLICATION OF STEAMING AND VACUUM TO SHUCKING AND CLEANING SCALLOPS

The article "Application of Steaming and Vacuum to Shucking and Cleaning Scallops," by Harvey R. Bullis, Jr. and Travis D. Love, which appeared in the May 1961 (pp. 1-4) issue of Commercial Fisheries Review has two errors. On page 2, the first sentence of the paragraph subheaded "Procedure" should read: "The scallops were placed by hand in a flat, shallow pan, where they were held for 20 seconds in sufficient boiling water (approximately $\frac{3}{4}$ of an inch) to cover the lower shell."

The last two column headings ("Moisture" and "Ash") in table 1, page 3, are reversed. The corrected table follows:

Table 1 - Proximate Composition of Scallop Viscera and Meats (Muscles)

Sample	Protein	Oil	Moisture	Ash
	(Percent)			
Viscera	9.7	2.5	83.1	4.7
Viscera	9.5	2.6	82.7	5.2
Viscera	9.5	2.7	82.6	5.2
Edible Meats (Avg. of 2 samples)	16.2	0.8	81.4	1.6

JELLIED EELS POPULAR IN GREAT BRITAIN

Each week throughout the year between 15,000 and 20,000 foil cartons of jellied eels are prepared in a factory in East London and dispatched by road and rail all over England. Some of the cartons are sold in shops, others in hotels and clubs, such as Fleet Street's famous Wig and Pen Club. Many of them go to markets.

Boxes of live eels are brought daily from Billingsgate and, until they are needed, are stored in a refrigerator of 500 cu. ft. capacity at the entrance to the factory. From there the eels are taken to an adjoining room, where they are gutted and sliced.

They are then washed in a special machine in which they are swirled about under a spray of water.

All of this preparatory work is done before the eels are taken into the main factory building.

The great bane of the eel trade is hooks. Many of the eels are line-caught and the hooks, or fragments of them may remain hidden in the meat even after careful cleaning. The firm has installed electronic testing equipment just inside the entrance to the factory. This machine detects any metal in the meat of the eels.

The eels are then boiled in large stainless steel containers; the broth which results from the cooking is used to make the jelly.

Eels caught in the summer months in Ireland or on the Continent need only between 5 and 10 minutes of simmering, while eels received in winter require between 15 and 20 minutes. Those received from the Mediterranean need from 25 to 35 minutes.

When cooked, some eels are packed in cartons, others in bowls. The bowls of jellied eels, which sell mainly in the summer months, are sent mostly to stalls, many of them at seaside resorts, and to race meetings.

Those sections of eel to be packed in cartons are placed in the cartons on a conveyor belt. As they travel along the belt they are automatically filled with juice and lidded.

The cartons are packed in corrugated cardboard boxes, which act as insulation, in each of which is packed a packet of shaped wooden spoons.

There are two refrigerators, of 3,000 cu. ft. and 1,500 cu. ft. capacity, for storing the bowls and cartons prior to selling. These are kept at a temperature of 40° F. It is important not to freeze jellied eels, as after thawing a film of water forms on top of the jelly which is harmful to the eels.

Altogether the firm supplies between 800 and 900 outlets, mainly in the London area, and they have 60 showcase refrigerators which they loan, without charge, for display of their products to the best advantage.

Traditionally, jellied eels are a summer delicacy bought from a stall, possibly at the seaside or outside a pub. By using modern methods this firm has made them available through more outlets to a wider public throughout the year. (Fish Trades Gazette, March 18, 1961.)

SEA SCALLOP SOUFFLE SNACKS

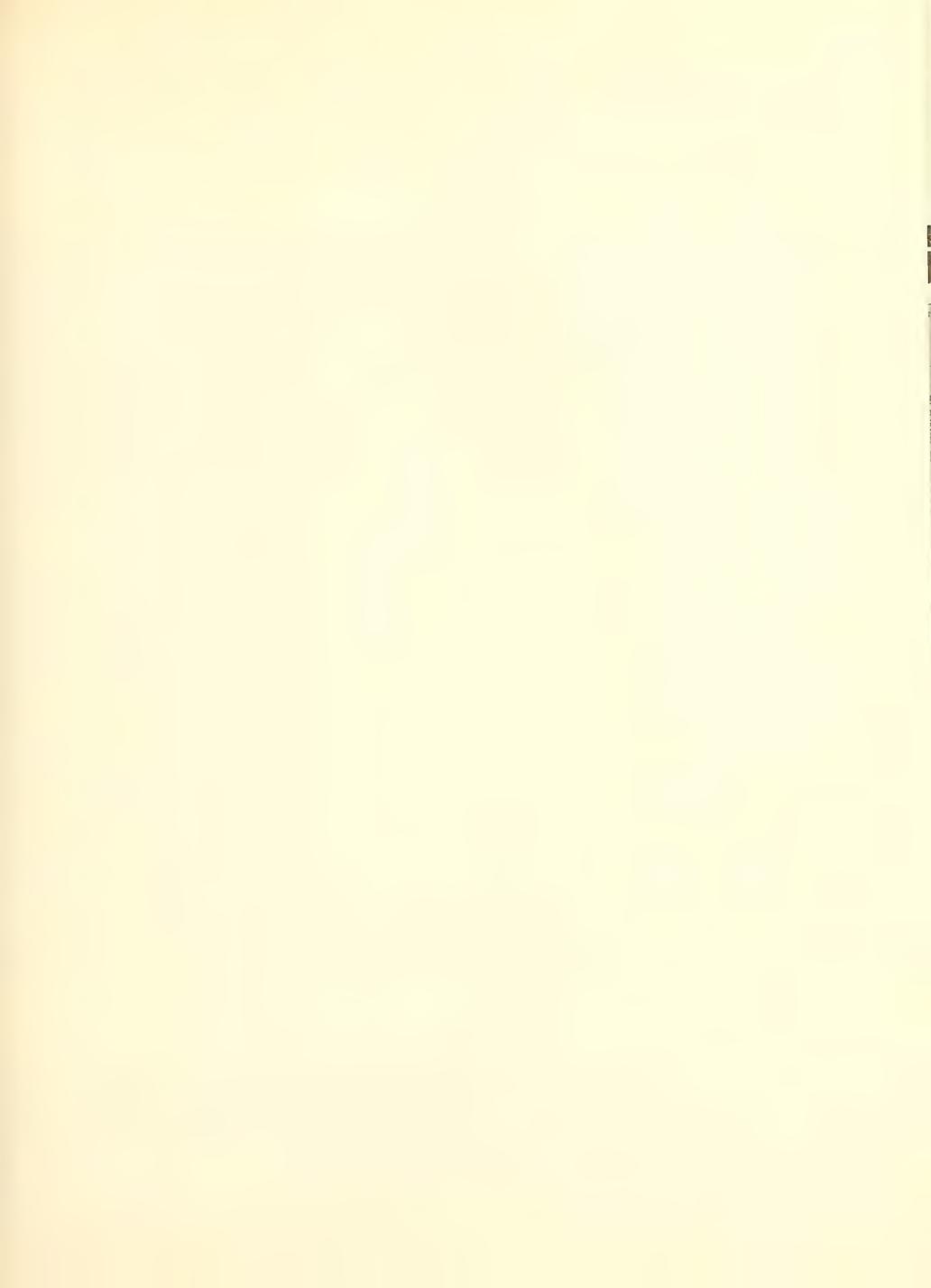


1 pound scallops, fresh or frozen	1 $\frac{1}{2}$ teaspoons lemon juice
1 quart boiling water	1 $\frac{1}{4}$ teaspoon salt
2 tablespoons salt	1 $\frac{1}{4}$ teaspoon Worcestershire sauce
$\frac{1}{4}$ cup mayonnaise or salad dressing	Dash pepper
1 tablespoon chopped parsley	1 egg white, beaten
2 tablespoons drained sweet pickle relish	

Thaw frozen scallops. Remove any shell particles and wash. Place in boiling salted water. Cover and return to the boiling point. Simmer for 3 to 4 minutes, depending on size. Drain. Combine all ingredients except scallops and egg white. Mix well. Fold into egg white. Place scallops on a well-greased cookie sheet, 15x12 inches. Top each scallop with mayonnaise mixture. Broil about 3 inches from source of heat for 3 to 4 minutes or until brown. Makes about 36 hors d'oeuvres.









COMMERCIAL FISHERIES REVIEW MAILING LIST BEING CIRCULARIZED

Since Federal regulations require that all mailing lists be circularized periodically, a circularization letter dated January 27 was sent to all those on the Commercial Fisheries Review mailing list. (Individuals or firms who have been added to the mailing list subsequent to February 1, 1961, will not receive a circularization letter and will continue to be retained on the mailing list, unless the recipient meanwhile requests that his name be removed.)

The names of those firms and individuals who did not return the lower portion of the January 27 circularization letter will be deleted from the Commercial Fisheries Review mailing list. This issue (July 1961) will be the last one to be mailed to you if you did not reply.

COMMERCIAL FISHERIES REVIEW



OCTOBER 17-23, 1960



Vol. 22, No. 8

AUGUST 1960

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

ROBERT W. GIBSON JR.

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COMMERCIAL FISHERIES REVIEW



VOL. 23, NO. 8

AUGUST 1961

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 BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
H. M. Bearse, Assistant Editor

Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, May 10, 1960.

5/31/63

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A STUDY OF VESSEL AND GEAR USAGE IN THE SHRIMP FISHERY OF THE SOUTHEASTERN UNITED STATES

By Rolf Juhl*

SUMMARY

As a portion of a program designed to study means of improving the efficiency of fishing gear and fishing practice in the shrimp fishery of the Southeastern States, operators of 58 highline shrimp vessels were interviewed concerning vessels, gear, and practices employed. Results were analyzed in an attempt to determine the extent of uniformity of gear design and usage, the existence of general trends within the fishery, and points of confused or questionable practice.

A diversity of types of gear, vessel-gear combinations, and fishing practices was uncovered. This diversity points to the pressing need for study leading to the development of standards by which the efficiency of fishing gear and methods can be evaluated. Such study has been started by the U. S. Bureau of Commercial Fisheries Gear Research Unit at Pascagoula, Miss.

INTRODUCTION

The U. S. Bureau of Commercial Fisheries has been engaged in a formalized program of exploratory fishing and gear research since 1948. One current phase of the gear-research work is the study and improvement of the methods and gear used in the shrimp fishery of the Southeastern States.

This report provides a general evaluation of the present status of some of the fishing practices used by the industry. Primary objectives are to determine: (1) What uniformity of gear and methods is present; (2) what regional trends, if any, exist; and (3) what aspects of gear design and usage show the greatest need of improvement. Determination of these objectives is a necessary step in initiating the development of recommendations for standards for vessel equipment, fishing gear, and fishing practice; and is a means of uncovering areas of questionable or confused practice that can be analyzed in the underwater photographic studies of shrimp trawls currently being carried out by the Bureau.

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Fig. 1 - A typical double-rigged "Florida-type" shrimp trawler. At sea, the "outriggers" or port and starboard booms are lowered and one trawl is dragged from each.

The basic data for the study were obtained through the Bureau's statistics personnel at ports, from North Carolina to the Texas-Mexico border, where the operators of 58 selected highline shrimp vessels were located. Information compiled therefrom is divided into the following main topics: (1) Type, size, and power of the vessels used; (2) size, design, and construction material of gear used; and (3) correlations existing between vessels and gear and among gear components. In addition, a discussion is included of the angle of trawl-door set and its influence.

THE VESSELS



Fig. 2 - A typical single-rigged "Florida-type" shrimp trawler. The single net is dragged from the starboard boom. The smaller port boom or "outrigger" is used to drag a small trynet.

The vessels used in the shrimp fishery of the Gulf of Mexico and southeastern coast of the United States have been described previously (Knake, Murdock, and Cating, 1958; Sundstrom 1958; and USF&WS, 1959). Of the 58 highline vessels included in this study, 43 are double-rigged "Florida-type" trawlers (fig. 1), 12 are single-rigged "Florida-type" trawlers (fig. 2), and 3 are "Biloxi-type" trawlers (fig. 3). This numerical relationship is not intended to approximate the distribution of these types within the total fleet. The vessels were chosen, rather, on the basis of their records as highline units. Table 1 summarizes some of the more important attributes of the vessels studied.

Analysis of figures for individual vessels shows that the gross and net tonnages are related fairly closely to the lengths of the vessels. This relationship may be attributed to

the uniform hull design of the "Florida-type" vessels. Horsepower, however, shows no such close relationship with length (fig. 4). The variation between horsepower and length is evident in all three vessel types and in vessels of all sizes, but is most pronounced in the 50- to 70-foot, 100- to 200-hp. class.

Seven different makes of engines are represented in the vessels, but over 82 percent were supplied by two major manufacturers. Diesel power is used in 57 of the boats; gasoline power is used in only 1.

Table 1 - Summary of the Characteristics of the Vessels and Gear Used by 58 Highline Shrimp Fishermen

Characteristic and Unit	Range	Mode	Mean 1/
VESSELS:			
Length over-all, feet	38 - 82	54 - 67	60.0
Beam, feet	12 - 24	18	17.5
Gross tonnage, tons	9 - 103	38 - 48	50.5
Net tonnage, tons	5 - 62	27 - 30	30.0
Effective horsepower	80 - 585	165 - 170	184.0
NETS:			
<i>Used by Double-Rigged Vessels:</i>			
Corkline length, feet	30 - 62	40 - 50	46.5
Leadline length, feet	39 - 79	48 - 60	55.0
Leadline weight, pounds	0 - 70	10 - 25	22.0
Mesh size, cotton, inches	2 - 2 $\frac{1}{4}$	2 - 2 $\frac{1}{4}$	-
Mesh size, synthetic, inches	1 $\frac{3}{4}$ - 2 $\frac{1}{4}$	2	-
<i>Used by Single-Rigged Vessels:</i>			
Corkline length, feet	40 - 99	40-60 & 83-99	71.0
Leadline length, feet	50 - 110	70 - 93	79.0
Leadline weight, pounds	10 - 100	30 - 50	46.0
Mesh size, cotton, inches	2 - 2 $\frac{1}{4}$	2 - 2 $\frac{1}{4}$	-
Mesh size, synthetic, inches	1 $\frac{3}{4}$ - 2 $\frac{1}{4}$	2	-
DOORS:			
<i>Used by Double-Rigged Vessels:</i>			
Height, feet	2.75 - 3.33	2.66 - 3.0	2.87
Length, feet	6 - 9	7	7.12
Area, feet square	17 - 30	18 - 21	20.60
Feet of net (corkline length squared) per sq. ft. of door	1.55 - 3.05	2.21 - 2.58	2.27
<i>Used by Single-Rigged Vessels:</i>			
Height, feet	2.16 - 3.66	3.33	2.97
Length, feet	5.5 - 11.0	8.0	7.82
Area, feet square	15 - 40	20 - 30	23.50
Feet of net (corkline length squared) per sq. ft. of door	1.77 - 4.75	2.36 - 3.54	3.02
FLOATS, number used			
	0 - 11	3	3.6

1/Figures in this column cannot be used to illustrate "typical examples owing to the small percentage of the sample lying within the mean.

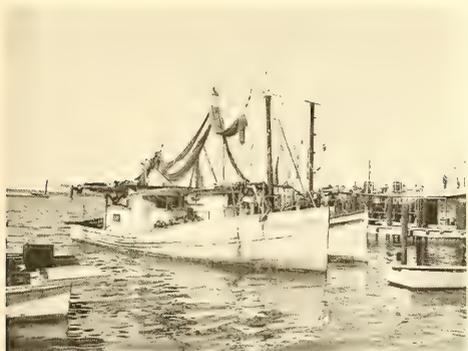


Fig. 3 - "Biloxi-type" shrimp trawlers. The single net is dragged a-stern from warps leading over blocks at the after corners of the house.

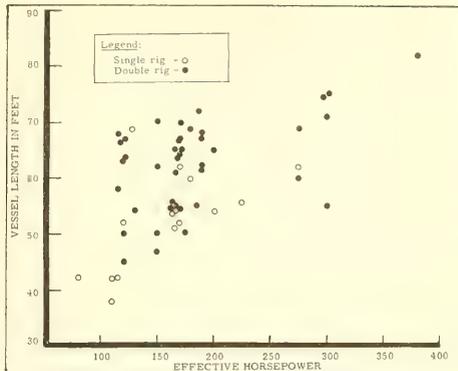


Fig. 4 - Relationship of vessel size (length) and main-engine horse-power. Lack of standardization is clearly indicated.

THE GEAR

Table 1 also summarizes the principal characteristics of the gear used by the vessel operators interviewed. This gear has been described by Bullis (1951) and, more briefly, by Knake, Murdock, and Cating (1958).

NET DIMENSIONS, DESIGNS, AND CONSTRUCTION MATERIALS: Results of the survey demonstrate that, whereas the nets used with single-rigged vessels fall into two distinct size groups, those used with double-rigged vessels are more evenly distributed about a single mode (table 1).

Nets of three designs--flat, balloon, and semiballoon--are used by the highliners. No distinct preference is found among the operators of single-rigged vessels as a group, but a definite preference for flat trawls is found among operators of double-rigged vessels (57 percent use flat trawls, 36 percent use balloon trawls, and 7 percent use semiballoon).

When the nets reported are divided into two groups, cotton and synthetic without regard to size or type, no distinct preference is discernible (table 2). Synthetic webbing, however, is used in the construction of all nets reported with a corkline length of 60 feet or over, with one exception, and randomly in nets of smaller size. The synthetic category includes four synthetic blends: nylon, nycot, marlon, and nylon-rayon combination.

Trawl Type	Number of Trawls		Total
	Cotton	Synthetic	
Flat	20	16	36
Balloon	9	15	24
Semiballoon	2	6	8
Total	31	37	68

LEADLINES AND TICKLER CHAINS: The leadlines or footropes used differ from one another principally in the amount of weight attached to them (table 1). In all cases, chain of varying length and generally of 1/4-inch diameter, is used to hold the leadline near the bottom. The distance between the leadline and the bottom is adjusted further by the use of rollers 1/2", by lengthening or shortening the chain loops on the leadline, or by a combination of the two. The survey average (mean, table 1) shows that approximately one-third more weight is used on the leadlines of nets dragged by single-rigged vessels. Individual variation, however, is extreme, and chain weight can vary considerably depending on bottom conditions and the choice of the individual captain.

1/2" Rollers used by shrimp fishermen are made in two ways: By drilling holes in hollow-plastic floats and attaching these to the footrope; or by constructing spindle-shaped rollers from thin wooden slats.

With two exceptions, tickler chains are used on all nets reported. The average horizontal distance between the midpoint of the tickler chain and the leadline is 2 feet 8 inches with an over-all range of distance of 1 to 6 feet. Tickler chains are constructed from $\frac{7}{16}$ - to $\frac{7}{8}$ -inch-diameter chain with $\frac{1}{4}$ -inch-diameter chain most often reported. Of the 49 users providing information in this regard, 19 tie the chain directly to the doors and 30 to the wings of the net, including 7 who continue the chains along the lower legs.

FLOATS: Hollow-plastic and plastic-foam floats are used most commonly; cork floats are used by only two of the operators interviewed. Since plastic foam may inadvertently be confused with hollow plastic (which would instill considerable error in calculations), calculations on lifting power are not included here. Considerable variation exists, also, in the number of floats used (table 1), and only half as many are used, generally, on sandy as on muddy bottom. The average number of floats reported for the 3 types of nets is: Flat nets, 2.1; balloon nets, 4.1; and semiballoon, 6.1.

DRAGGING WARP, BRIDLES, AND LEG CABLES: The length of the dragging warp carried by shrimp vessels is governed, largely, by the depth of water in which those vessels trawl. Within the survey sample, warp lengths vary from 75 to 750 fathoms. Warp carried by single-rigged vessels varies from 75 to 200 fathoms with a mean of 133 fathoms per drum, and that carried aboard double-rigged vessels varies from 100 to 750 fathoms with a mean of 145 fathoms per drum. The wire used varies from $\frac{1}{4}$ - to $\frac{5}{8}$ -inch diameter, in multiples of $\frac{1}{16}$ inch.

Bridle lengths vary from 17 to 50 fathoms, but the great majority fall within 20 to 25 fathoms. In all cases where bridles longer than 25 fathoms are reported, the net used with those bridles is over 51 feet in corkline length. Bridles are not used with single rigs.

Leg (door-to-wing connections) lengths vary with the type of trawl (table 3) and also with the type of vessel. Single-rigged vessel operators use longer legs than double-rigged vessel operators, and the longest legs are used in conjunction with semiballoon trawls.

Vessel Rig	Mean Length of Legs (feet)		
	Flat Trawls	Balloon Trawls	Semiballoon Trawls
Double . . .	5.50	5.50	7.50
Single . . .	7.75	8.75	11.50
Combined . .	5.75	6.50	10.50

¹/Rounded to nearest 3 inches.

operators use longer legs than double-rigged vessel operators, and the longest legs are used in conjunction with semiballoon trawls.

TRAWL DOORS: In all cases, the trawl doors used were reported as flat, of wooden construction, and fitted with chain bridles shackled to rings for attachment of the bridles or dragging cables. Door dimensions are given in table 1. Although the doors used with single-rigged vessels are slightly shorter (on the average) than those used with double-rigged vessels, the average length-height ratio for all doors is 2.4:1.

CORRELATIONS BETWEEN VESSELS AND GEAR AND AMONG GEAR COMPONENTS

The foregoing discussion has served to indicate that there is a wide range of characteristics of both vessels and gear used by the operators included in the sample of 58 highliners. It can be assumed that a survey of a random sample of the whole fleet would show an even greater range. The task remains of determining whether or not patterns exist between vessel characteristics and the gear used, whether or not there are patterns existent among gear components, and whether or not differences in use exist which offset the wide range of characteristics.

HORSEPOWER AND NET SIZE: In this and the following sections, vessel horsepower, rather than vessel speed or vessel size, is used in determination of correlations, or lack of correlations, between vessels and gear because of the questionable reliability of estimated values for vessel speed and the lack of correlation between vessel size and power.

When net size is plotted against vessel horsepower, a vague correlation appears, suggesting a tendency for net size to be proportional to vessel horsepower in both single- and double-rigged categories. Examination of the actual net size-horsepower relationships, how-

ever, shows that none of those reported fall within the mean expected. Variation is more evident in single-rig combinations than in double-rig combinations, owing, no doubt to the larger range of values presented by the former group. Three single-rigged vessels, for example, are included in the survey with engines of the same horsepower. One of these drags a 60-foot net, one an 83-foot net, and one a 96-foot net. Extremes for the whole sample (double and single rigs) are represented by a

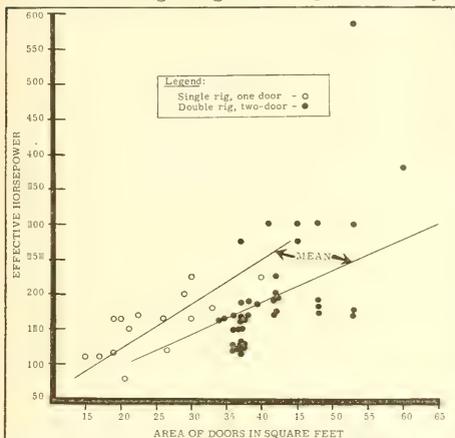


Fig. 5 - Relationship of vessel horsepower and size of doors. Despite a general tendency for door size to increase with horsepower, little standardization is evident.

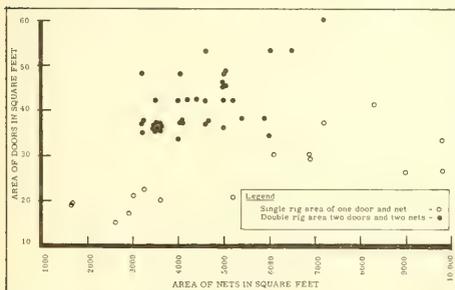


Fig. 6 - Relationship of door size and net size. The lack of correlation between these two factors is thought to be due, in part, to a tendency to retain a constant net height regardless of net size, and to the relatively constant 2.4:1 ratio of door length to door height. A tendency for the doors used by double-rigged vessels to be larger than those used with the same-sized nets by single-rigged vessels is shown.

it follows that door size should not be expected to vary proportionally with net size.

Figure 6 shows, in a fairly well-defined manner, that double-rigged vessels use larger doors than single-rigged vessels for nets of equivalent size. Table 1 shows that there is a mean difference of three-quarters of a

single-rigged, 80-hp. vessel dragging a 72-foot net and a double-rigged 170-hp. vessel with two 62-foot nets. Despite the small sample, especially of single-rigged vessels, lack of conformity to any standard appears evident.

HORSEPOWER AND DOOR SIZE: In determinations of possible correlation between horsepower of the vessel and the size of doors used (fig. 5), the area of one door is used for single-rigged vessels and the area of two doors is used for double-rigged vessels. A much closer relation is demonstrated between horsepower and the doors used with single-rigged vessels than between these factors with double-rigged vessels. In both cases, however, the deviation from the mean shows a variance sufficiently large that only the vague statement, that with increase in horsepower the size of the doors tends to increase, is permitted.

DOOR SIZE AND NET SIZE: When the size of the doors is plotted against the size of the net (fig. 6), a lack of conformity is evidenced that is even greater than is shown when horsepower is plotted against door size. For these determinations, the combined area of one door and the attached net was used for single-rigged vessels, and the combined area of two doors and the two attached nets was used for double-rigged vessels. Net area is calculated as the square of the length of the corkline. A decided random pattern results from plotting these areas. This may be explained by the tendency, normal among shrimp fishermen, to maintain a relatively constant wing height regardless of the size of the net. Since the doors are normally constructed so that they are a little more than twice as long as high, since the height of the wings is dependent on the height of the doors, and since the height of the net does not increase with the size (corkline length or area) of the net,

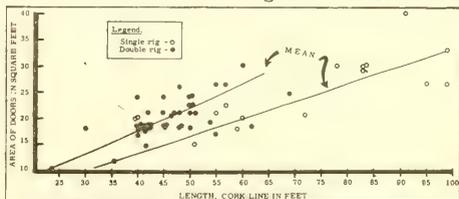


Fig. 7 - Relationship of door size and corkline length of attached nets. A clearcut tendency for double-rigged vessels to use larger doors on nets of equivalent size is shown. Great variation in the two factors is evident.

foot (26 percent) in corkline length per square foot of door area between combinations used by double-rigged and single-rigged vessels. This relationship is shown more clearly in figure 7. Use of larger doors by operators of double-rigged vessels may relate to an attempt to compensate for the additional drag of pulling two nets and for the subsequent decrease in speed and spreading power.

Figure 7 also shows the great variation existing in the relation between door area and corkline length. Extreme examples combine doors of 18 and 18.5 square feet with nets measuring 30 and 62 feet along the corkline on one end of the range, and doors measuring from 17 to 26 feet in area with nets measuring 55 feet along the corkline at the other.

MISCELLANEOUS CORRELATIONS: Little correlation exists between bridle length and net size, except that, as stated previously, in all cases where the bridle length exceeds 25 fathoms, the attached net exceeds 51 feet in corkline length. Warp diameter, too, bears little relation to the size of the net, although extreme examples combine $\frac{1}{4}$ -inch-diameter cable with a 40-foot net and $\frac{5}{8}$ -inch-diameter cable with a 91-foot net. Within those extremes there is little uniformity or proportionality. Differences in leg length have been discussed elsewhere and are shown in figure 3.

ANGLE OF TRAWL-DOOR SET

Data received from the 58 vessel operators were also studied to determine whether or not there is a correlation between the high catches obtained fairly consistently by highline vessels and a standard angle of set.

The angle of trawl-door attack is preset aboard the vessel by adjusting the ratio of the length of the front chains of the door to the length of the back chains. The shearing power necessary to offset the drag of the trawl and create the desired wing spread is directly related to the area of the doors and the speed of the vessel. The ideal condition, in the door-net relationship, is to obtain the greatest possible spread of the wings without deforming the net opening or causing excessive drag. Because information on vessel speed is not reliable, only the area of the doors and the angle of door-set can be considered here.

The angles at which the doors are set was measured by plotting three sides of the triangle formed by the front and back chains and the door itself (fig. 8) on scaled graph paper. A line drawn from the centerline, or midpoint between the front and back edges of the door, through the apex of the chains forms angle "a." This angle defines the set or angle of attack

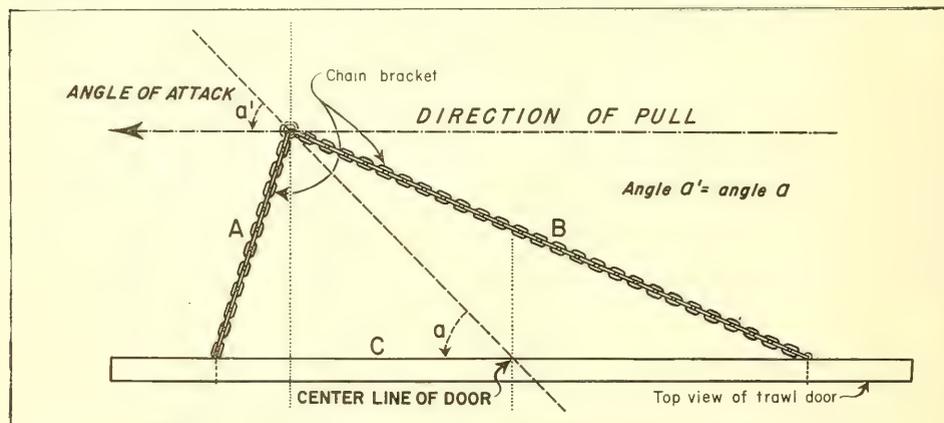


Fig. 8 - Trawl door showing the measurements used in determining the angle of attack.

that the door will assume when pulled through the water. The angles were read directly with a protractor. Where the front and back points of chain attachment were not placed at equal distances from the edges of the door, the centerline was shifted accordingly.

The angle values obtained are not representative of the true angles at which the doors would fish under actual operational conditions because they do not take into consideration the additional deflective force of the plowing effect exerted by the doors as they move over, and partially through, the bottom or the straightening effect exerted by the net on the doors. Nevertheless they are sufficiently accurate to provide concise information on the range of values and possible over- and under-optimum settings.

The values calculated for the angle of door set for all of the vessels in the sample range from 31 to 56 degrees (a variation of 25 degrees), with a modal interval of from 40 to 45 degrees, and a mean figure of 42.5 degrees. Omitting the extreme values on either end of the range as being particularly subject to error, still leaves a range of 35 to 52 degrees, which represents a variation in practice of 17 degrees for 52 vessels. The variation from the mean is uniformly scattered within the range with only a slightly greater grouping indicating the mode.

The angle of trawl door set not only varies to a greater degree among the double-rigged vessels than among the single-rigged vessels, but also tends to be less than the average angle in a great proportion of the cases. Since no correlation can be found between the size of the doors and the angle of set, this smaller angle cannot be ascribed directly to the use of larger doors. The possibility does exist, however, that the larger doors, used by the double-rigged vessels are set with a smaller angle to minimize the additional spreading effect of superfluous surface areas.

In all but one case, the reports showed that the upper front and back chains are set longer than the lower chains. The single exception reported no difference. Of the reports showing a difference, 31 percent showed one chain link more in the upper chains and 69 percent showed 2 chain links more. The shorter chain length on the lower chains tends to tilt the door outward. A compensating inward tilt is achieved by the counterweight of the chains and the bridles or cables. Presumably, when fishing in relatively shallow water, the outward inclination of the doors will be more pronounced than when fishing in deep water because the lighter weight of a decreased amount of warp has less effect on the doors.

CONCLUSIONS

Evaluation of the information extracted from survey data indicates the existence of general trends and similarities within the industry, but the consistent deviation from the mean in most of the categories does not allow extraction of conclusive statements concerning characteristics of "standard" vessels and gear. Moreover, the wide range of fishing practices and gear usage uncovered in this survey indicates an unsystematic method of combining closely interrelated features.

These deviations from a mean characteristic and the wide ranges in use and practice point to the need for a more thorough evaluation of existing fishery practices for the purpose of establishing effective standards for gear design and usage.

GENERAL TRENDS: (a) A tendency for a close correlation between vessel length and tonnage (uniform hull design), not accompanied by any tendency toward application of power.

(b) An almost exclusive use of Diesel engines for main-engine power and a preponderent use of engines manufactured by only 2 manufacturers.

(c) A tendency to favor flat trawls for use with double-rigged vessels, and a lack of any tendency toward choice of nets of one design for use with single-rigged vessels.

- (d) A tendency for larger nets (60 feet and larger) to be constructed of synthetic twines.
- (e) An almost universal use of tickler chains.
- (f) Use of more floats on muddy than on sandy bottoms and progressively more floats on balloon than on semiballoon or flat trawls.
- (g) Use by double-rig vessel operators of 20- to 25-fathom bridles on most nets regardless of net size.
- (h) Use of longer legs (door-to-wing connections) in single-rig gear.
- (i) Use of doors that invariably are constructed slightly more than twice as long as high.
- (j) A tendency for net height to remain constant regardless of the size of the net.
- (k) A lack of uniformity in angle of trawl-door set.
- (l) A tendency for setting lower door chains from 1 to 2 links longer than the upper chains.

AREAS NEEDING IMPROVEMENT: The need for more study leading to greater standardization is evident. The following factors are among those that are currently unknown and that must be determined if choice and use of gear and vessels is to be put on a rational, scientific basis:

- (a) Optimum horsepower requirement for specific hull designs.
- (b) The relation existing between horsepower and net size so that the most efficient combination can be chosen.
- (c) Exact and simple methods of measuring dragging speed and the most effective speed under varying conditions to assure optimum fishing power.
- (d) The most effective door- and net-size combinations so that the optimum spread of the net can be achieved with a minimum door size, the least distortion of the net, and the least resistance.
- (e) The best angle of attack of the doors under different fishing conditions, bottom type, and topography so that the greatest fishing power can be extracted from the gear.

The last two items (d and e) will be incorporated in the underwater studies of shrimp trawls which are to be carried out by the Bureau in the Gulf and South Atlantic Region in the near future.

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REPORT OF "JELLIED" FLOUNDER FROM GULF OF MEXICO

By Travis D. Love*

ABSTRACT

The jellied meat of flounder was examined chemically and microscopically for abnormalities. None was found other than the disappearance of separate muscle fiber.

INTRODUCTION

Other investigators have reported the occurrence of a "jellied" condition of the muscle tissue in certain species of commercial food fish. Templeman and Andrews (1956) reported a "jellied" condition in American plaice (*Hippoglossoides platessoides*) from the Grand Banks area characterized by normal odor, low protein, extremely high moisture, and extremely high drip losses. These investigators surmised that the condition might be due to protein impoverishment following spawning in the food-poor cold waters of the Grand Banks. A report of the Food Fish Investigation Board (1952) listed "milky" hake with a white pasty meat, yet normal otherwise, occurring during a catch from Mauretanean waters in 1950. Microscopic examination showed numerous yeast-like bodies believed to be the spores of the parasite *Chloromyxum thirsites*. This paper states that Australian investigators report a strong proteolytic enzyme secreted by the parasite which is capable of producing the "milky" or "pasty" condition. Tsuchiya and Kudo (1957) report the "jellied" condition in swordfish with the parasite *Chloromyxum* noted in the muscle tissues. They report that low volatile basic nitrogen indicates that the meat is not to be considered spoiled. These investigators found that freezing causes a diminution of the numbers of the parasites in the meat. Between 1,100-1,400 parasites per 0.01 milliliter of muscle juice were noted after 2 weeks of frozen storage and only 200-300 remained after 15 weeks at 0° F. Fletcher and Shewan (1951) reported milkiness of Mauretanean hake and that its probable cause was the parasite *Chloromyxum* sp. found in the jellied meat. They also noted the fish to be organoleptically normal with respect to flavor and odor. A. Mayer (1952) reported the fillets of Icelandic catfish to show white patches near the bones and to contain a sporozoa believed to be a myxo-sporidium.

Bullis (1958) in an unpublished observation noted that Gulf of Mexico flounder, *Paralichthys squamulentus*, caught in the North Central Gulf in 20-50 fathoms of water and frozen immediately after catch exhibited a soft jelly-like consistency on thawing and cleaning even though the fish were normal with respect to odor and flavor. The purpose of this paper is to report chemical and microscopic examinations made of other samples of this species.

OBSERVATIONS

In 1960 the M/V *Oregon*, exploratory fishing vessel of the U. S. Bureau of Commercial Fisheries, fishing off the mouth of the Mississippi River in 20-30 fathoms of water for shrimp, took 75-100 pounds of mixed sizes of flounder, *P. squamulentus*, which appeared normal in all respects. These fish were frozen in the round within an hour and, a few days later, were transferred to the 0° F. storage freezer at the Pascagoula Technological Laboratory. Thirty days afterward these fish were thawed overnight in the controlled thawing room of the laboratory at 37° F. On examination the fish were of mushy consistency. The cut surface of the muscle tissue was opaque, milky, and jelly-like with a thick slimy exudate appearing on standing. A careful organoleptic examination by several trained members of the Technological staff was made, and all members of the panel judged the odor normal.

A careful microscopic examination of the jellied meat was made using both widefield and bacteriological microscopes at several magnifications. Tissue preparations, stained by the

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Gram's method, and unstained slides revealed a smooth homogenous jelly-like mass with complete absence of all tissue structures. No spores, cysts, or parasites of any type were noted. It is suggested by other researchers in the field that sporulation of the vegetative forms may have been prevented by the short time elapse between catch and freezing aboard ship.

Tissue slides from two of the fish that appeared to be firmer than others showed some faint "ghost" appearance of muscle fibers which soon disappeared on standing near the warm microscope lamp. Several members of the staff definitely noted that this autolysis was rapidly progressing in the muscle tissue while the fish were being cut and examined in a warm room. Firmer fish that showed faint muscle fiber arrangement on cutting soon degenerated into a wet slimy jelly-like mass unaccompanied by any abnormal odors.

Sample Analyzed	Protein	Moisture
	. . . (Percent) . . .	
Softest flounder (avg. of 6 samples) . . .	21.20	76.9
Firmer flounder (avg. of 2 samples) . . .	21.25	77.2
Normal flounder from other sources . . .	21.00	78.0

Protein (Nx 6.25) and moisture determinations (A.O.A.C. 1960) were made on two samples of the fish. Sample A consisted of six 4-ounce fillets from the softest fish and B consisted of two 8-ounce fillets from two of the firmest fish. Results are shown in table 1.

DISCUSSION

The protein and moisture appear normal for flounder fillets of this type. The question arises as to the low protein reported by other investigators. Should the enzyme autolyze the tissues to jelly-like consistency we would expect the same nitrogen values by the Kjeldahl method unless considerable ammonical-type decomposition occurred. The "jellied" flounder examined in this laboratory suffered very little drip loss prior to the cutting of fillets for samples.

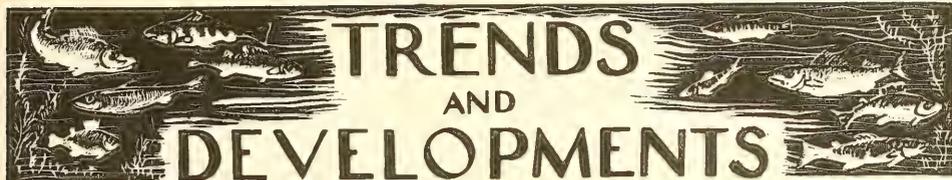
SUMMARY

"Jellied" flounder having normal protein and moisture are reported from the Gulf of Mexico. No parasites could be detected on microscopic examination.

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TRENDS AND DEVELOPMENTS

Fishing Vessel and Gear Developments

EQUIPMENT NOTE NO. 9--THE SURF-CLAM FISHERY OF NEW JERSEY:

The surf-clam fishery of New Jersey currently produces over 20 million pounds of meats annually (table 1). This fishery, once primarily a bait fishery, has achieved national importance as a primary source of supply for minced, chowder, and frying clams. The substitution of surf clams (*Spisula solidissima*) for soft clams (*Mya arenaria*) has been conducive to the development of the fishery.

Table 1 - Surf Clam Landings, New York and New Jersey ^{1/}		
Year	New York	New Jersey
	..... (1,000 Lbs. of Meats)	
1960	721,453	23,382,157
1959	514,381	20,164,000
1958	429,400	12,461,900
1957	1,599,100	15,224,200
1956	2,368,300	11,583,500
1955	2,026,400	8,277,500
1954	3,359,700	6,876,900
1953	3,345,400	6,878,100
1952	4,138,100	6,418,300
1951	4,046,100	6,419,400
1950	3,184,000	4,298,700
1949	4,903,700	407,700
1948	3,520,900	167,300
1947	3,314,700	156,600
1946	6,482,500	Not available
1945	3,982,200	526,500
1944	920,000	14,700
1943	475,000	170,100
1942	340,000	413,200
1941	Not available	Not available
1940	660,000	573,000

^{1/}From "Fishery Statistics of the United States," U. S. Fish and Wildlife Service, 1940-1960.

UTILIZATION OF SURF CLAMS

Surf clams are marketed as canned clam chowder, minced clams, and as "strippings," the latter substituting for soft clams in certain instances. Strippings are made by a mechanical process in which the shucked meats (foot portion of the clam) are thoroughly eviscerated and washed, then passed through a

machine that cuts the meats in narrow strips. By stripping, the meat of the surf clam is reduced to small pieces suitable for frying.

LOCATION OF THE FISHERY

The surf-clam fishery for food, as distinguished from the bait fishery which for many years was an important source of bait to cod fishermen and the party boat fishermen, first developed in the New York coastal area in World War II. It soon spread to more productive beds off the New Jersey coast (Atlantic States Marine Fisheries Commission, 1958). Landings were made at various ports along the coasts of New Jersey, Delaware, and Maryland. In 1950, a plant for processing surf clams was opened in Wildwood, N. J., and the New Jersey-Delaware coasts became the center of the fishery. Today, owing to the presence of readily-accessible beds of clams nearby, the fishery is conducted almost entirely out of Point Pleasant, N. J., and most New Jersey landings are made in that port.

Fishing is conducted in an area approximately 15 to 25 miles southeast of Point Pleasant. The more productive clam beds now fished are in depths ranging from 60 to 90 feet. Vessels make individual trips of less than one day and usually fish four days a week. The daily catch is either shucked and shipped by truck as fresh clams to other plants for further processing, or shipped whole as shell stock.

FISHING GEAR

There are about 30 vessels engaged in the New Jersey surf-clam fishery. These range in length from 65 to 90 feet, are Diesel-powered, and are mostly of Florida shrimp-boat design (fig. 1). An average

crew consists of the captain and two fishermen. Vessels are pilothouse-controlled and rigged with a special towing bit and steel outrigger boom for retrieving fishing gear.

The fishing gear (figs. 2-5) consists primarily of a sled dredge, a centrifugal pump, and a 5-inch (internal diameter) hose. The hose is permanently attached to the dredge during fishing operations. Sea water is pumped under pressure through this hose to the dredge manifold where it is ejected through a series of nozzles into the ocean floor. By



Fig. 1 - A typical Diesel-powered surf-clam vessel. Vessels in use range from 65 to 90 feet in length. An auxiliary Diesel engine is mounted below deck, aft, to drive a 5-inch centrifugal pump that supplies water for the hydraulic dredge.

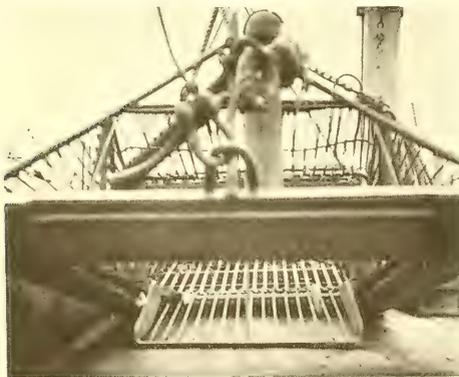


Fig. 3 - The steel cutting edge or knife is set to cut from $6\frac{7}{8}$ to 8 inches below the dredge shoes.



Fig. 2 - Hydraulic Jet Dredge. Dredges consist of two basic parts, the dredge section proper and the sled section. The dredge section (forward) has a manifold of 5- or 6-inch pipe with a series of horizontally-spaced nozzles aimed down, back, and immediately forward of the cutting knife. Water pressure is maintained at about 70 pounds with a volume of from 1,000 to 1,500 gallons per minute. The sled section is attached to the dredge section to retain the clams washed back from the dredge.

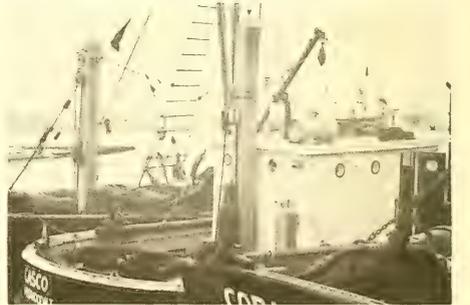


Fig. 4 - The towing bit is set from the keel and is high enough to allow the dredge towline to pass clear of the stern. The towline is reeved through a snatch block that is fastened to the towing bit before holding turns are applied to reduce chafing of towline. Hose used for jetting measures 5 inches in internal diameter and is constructed of heavy-duty collapsible nylon-reinforced rubber. Sections of the hose (seen along the rail) are fastened together with pressure clamps over aluminum sieves. The hose is always longer than the towing warp.



Fig. 5 - When fishing, the outrigger keeps the dredge section out-board. For unloading the clam catch, the sled section with the chain bag is brought inboard.

proper direction of the nozzles, the hydraulic action of the water washes the sand from over and around the clams. This action allows the deep-set knife blade to pass under the clams and lift them from the bottom so that they pass back into the sled section.

Surf clams (fig. 6) because of their size, relatively thin shells, and ability to bed in hard, coarse-grained sand, present a problem in dredging. The non-hydraulic dredges, used in the hard clam (*Venus mercenaria*) fishery of southern New England, tend to crush the surf clams when forcing them from



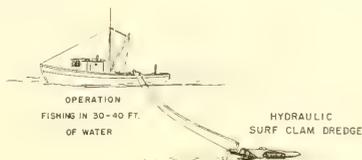
Fig. 6 - Clams are culled and stowed in bushel bags on deck aft. Vessels make 15- to 30-minute drags, which average from 11 to 23 bushels per drag.

the bottom. The high-pressure jet clam dredge was, therefore, developed specifically for harvesting surf clams.

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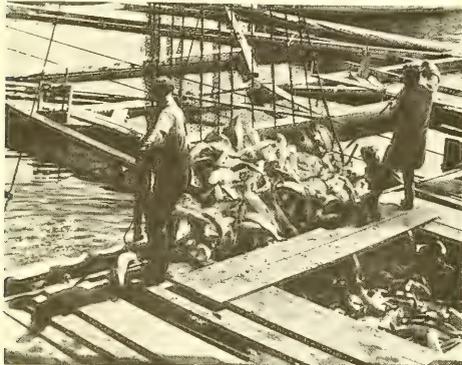
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Alaska

STATE SUPREME COURT RULES ON CASE WHICH AFFECTS USE OF FISH TRAPS BY INDIAN COMMUNITIES:

On June 2, 1961, the Alaska Supreme Court issued its opinion on the trap case (Metlakatla Indian Community et. al. vs. State). This case revolves around the right of Indian Communities to use fish traps in Alaska. Question involves the rights of three native communities to operate traps, since the State of Alaska Constitution and State laws prohibit traps and the State served notice that it would enforce the law.



Brailing a salmon trap in southeastern Alaska. This type of gear is now banned by Alaska State laws.

The U. S. Department of the Interior, following passage of the Statehood Act, issued regulations prohibiting traps except for operation of 11 traps by 3 native communities. This was done on the basis that the Statehood Act secured to the Indians certain fishing rights.

Native communities filed suit in the U. S. District Court to enjoin the State from enforcing the trap prohibition. Suits were dismissed.

Justice Brennan of the U. S. Supreme Court (on July 11, 1959) granted a stay pending appeal to the U. S. Supreme Court. That Court heard arguments and then on June 20, 1960, handed down a decision in Metlakatla Indian Community vs. Egan and the two cases related to it. By a 6 to 3 decision, that Court announced that it would refrain from deciding the issues presented to it on their merits in

order to afford the Alaska Supreme Court the opportunity to rule on the questions open to it for decision.

The State Supreme Court on June 2, 1961, affirmed the judgment of the U. S. District Court in dismissing the suit. Undoubtedly the case will go back to the U. S. Supreme Court and it is believed that Justice Brennan's stay continues in effect. The stay means that the three Indian communities will continue to use the fish traps.

The principal points of the State Supreme Court decision are: (1) State constitution: "The State and its people further disclaim all right or title in or to any property, including fishing rights, the right or title to which may be held by or for any Indian, Eskimo, or Aleut, or Community thereof, as that right or title is defined in the act of Admission."

(2) Statehood Act does not define the right or title. It reads: "As a compact with the U. S. said State and its people do agree and declare that they forever disclaim all right and title.... to any lands or other property (including fishing rights), the right or title to which may be held by any Indians, Eskimos, or Aleuts (hereinafter called natives) or is held by the U. S. in trust for said natives,...."

The State Court opinion recognizes a different status for the Metlakatla Indian Community, referring to it as "the only fishing privilege held by a native community at the time of enactment of the Alaska Statehood Act." However, it dismisses this privilege as a "temporary privilege" which disappeared with statehood.



American Fisheries Advisory Committee

OCEANOGRAPHIC RESEARCH STRESSED AT MEETING:

Utilization of the sea for the benefit of the human race was the theme of the 12th meeting of the American Fisheries Advisory Committee held in the Department of the Interior Building in Washington, D. C., May 22 and 23, 1961.

The first session was opened by Secretary of the Interior Stewart L. Udall, who

pledged the support of the Department in making research of the sea one of the outstanding programs of the New Frontier. Secretary Udall asked not only increased efforts in learning the biological, chemical, and physical secrets of the sea, but called for increased technological efforts in making the vast protein resources of the sea available to the undernourished peoples of the world.

Besides general expressions of approval of the stepped-up program of oceanographic research which many Federal agencies are planning, the Committee recommended that the research program on artificial propagation of oysters and clams be continued and that there be an intensified program to discover ways to put to beneficial use the large stocks of underutilized fish in the Great Lakes.

Secretary Udall urged the advisory group to broaden its advice and counsel to the Department "to include counsel on all fisheries matters."

Donald L. McKernan, Director of the U. S. Bureau of Commercial Fisheries, gave a detailed report on "What Lies Ahead" from the Bureau standpoint. He re-emphasized the necessity of learning how to use the sea for the benefit of mankind. He pointed out the stake America as a Nation has in the oceans of the world and then discussed what the American fishing industry can do in the huge task of supplying nutrients to the people of this Nation and of the world. Interwoven with his remarks were instances of the Bureau of Commercial Fisheries' responsibility to the American fishing industry, in helping the industry to make maximum sustained harvests, with a minimum of time and effort.

Specifically, McKernan said that those concerned with the fishing industry must understand the sea and its effect upon the distribution and abundance of fish; they must know the life history of many species and all there is to know about the dynamics of fish populations; they must learn how to predict abundance of a species, know their movements, and how and when to catch them most economically; know more about the upwellings in the sea, their effect upon the food chains, and how to protect the resource from predators which at times plague it; and finally there must be more technological knowledge on full utilization of the products of the sea.

The importance of "vital statistics" and additional knowledge of the sea in predicting abundance and distribution of fish was stressed by Dr. J. L. McHugh, Chief of the Bureau's Division of Biological Research. McHugh stressed the damage which pollution can do to fisheries, especially in estuaries. He pointed out the damage done by hurricanes, not only the physical damage, but the havoc sometimes wrought by the churning of waters, the elevation of bottom water to the top, the introduction of long-settled chemicals into surface waters, and their sometimes deleterious effect upon fish which are not inured to that particular type of water. He pointed out the value of knowing how many fish of a given species are caught, the size and age characteristics, the hours of the catch, and numerous other bits of information about landings which, over a period of time tell a story to the fishery biologist.

The advantage of a small pilot plant to help the fishing industry study problems of mass production of fish flour was discussed. It was pointed out that fish flour is equal to dried egg solids in amount and value of protein and that dried eggs have been accepted as the standard for determining protein quality.

The American Fisheries Advisory Committee has 20 members, appointed by the Secretary of the Interior. Frank P. Briggs, Assistant Secretary of the Interior for Fish and Wildlife, is the chairman of the group, and presided at the sessions. The first meeting of the Committee was held in Washington in April 1955. Recently the Committee has been meeting annually instead of semi-annually.

The Advisory Committee was authorized by the Saltonstall-Kennedy Act passed in 1954. This Act provides that an amount of money equal to 30 percent of the funds received in import duties on fishery products be made available to the Department of the Interior to promote the free flow of domestically-produced fishery products into channels of trade, to conduct biological, technological, and other types of research necessary to aid in the harvest or utilization of fish and fishery products. The Saltonstall-Kennedy funds for these purposes vary from \$4 to \$6 million a year.



Antarctic

MARINE RESEARCH INCLUDED IN STUDIES TO BE CONDUCTED BY VESSEL ON PERMANENT STATION;

The National Science Foundation will operate its first research ship on more or less permanent station in Antarctic waters. The vessel, which will be open to qualified scientists in much the same way that institutions such as the Brookhaven and Oak Ridge national laboratories are, is a 3,000-ton converted Navy freighter named the *Eltanin*. A ship with a reinforced hull, last used for carrying supplies to radar stations in the Arctic, she should be ready to sail on her next mission by the end of the year.

The *Eltanin* will have accommodations for a scientific party of 38 and a crew of about 40. The Foundation will operate the vessel by inviting proposals for work aboard her from universities, Government agencies, and other interested institutions. Scientists and crew will be rotated by air from the United States. The ship itself will remain in the far south for two to three years at a time.

The Foundation's unusual venture was born of the need for increased studies of Antarctic waters. In recent years most Antarctic work has been done on the ice. Only one U. S. oceanographic institution, Columbia University's Lamont Geological Observatory (whose schooner *Vema* is currently on her sixth cruise in Antarctic waters in six years), has had substantial experience in research in Antarctic seas. Lamont is among eight institutions cooperating in designing equipment for the *Eltanin*, which will be fitted out for research in meteorology, cosmic rays, radio propagation and geomagnetism, as well as in oceanography, marine geophysics, and marine biology. (Scientific American, May 1961.)



Atlantic Marine Game Fish Research

SURVEY OF MARINE SPORT FISHING NEAR COMPLETION;

A survey of marine sport fishing, which the U. S. Bureau of the Census is conducting under a contract with the U. S. Bureau of Sportfish and Wildlife's Atlantic Marine Game Fish Research Center at Sandy Hook, N. J.,

was nearing completion early this year. The survey is based on a nationwide sampling of people who engaged in salt-water fishing during 1960, and will provide estimates of the quantities of fish caught, species, fishing methods, and regions. Analysis of the data is near completion and a report is to be submitted at the end of the 1961 summer.

* * * * *

TWO APPROACHES TO COVER RANGES OF MARINE GAME FISH;

Marine biologists are constantly troubled by the overwhelming problem of how to cover, in their field programs, the entire ranges of species which they study. The Sandy Hook Center in the first quarter of 1961 announced two approaches to attacking this problem:

1. By using the services of qualified amateur skin divers, selected for education and experience as underwater observers, to conduct, through their clubs, systematic observations of coastal fishes. The type of activity will vary with different clubs. One club of divers which has formed "Research Divers Society" is particularly interested in tagging with darts. They will do this in close cooperation with state fishery agencies and, as required, with the Sandy Hook Center. Another group being sponsored is "The Littoral Society," which parallels in its conception the Audubon Society, and, like that organization, will conduct a periodic synoptic census of shore fishes. Several meetings were held at the Sandy Hook Center to plan the first count which is scheduled for September 4, 1961, and also to plan a limited summer program of natural history observation. At least two divers have volunteered their services to the Center and will work on behalf of the Littoral Society for several weeks this summer.

2. To understand the vagaries in the occurrences, distribution, and abundance of fishes, it is essential to have synoptic and systematic pictures of the physical and biological features of their environments throughout their ranges. This is possible only by cooperation among all marine laboratories in making the necessary observations. The Sandy Hook Laboratory Director has presented to biologists in three regional meetings of the Atlantic States Marine Fisheries Commission Bio-

logical Committee, the idea of conducting periodic multipleship surveys in a program to be called the Atlantic Shelf Environmental Campaign. This would take place in 1963 or 1964. The proposal has been unanimously recommended for formal presentation to the forthcoming annual meeting of the whole Commission. After the Commission approves the plan, funds are available from an Office of Naval Research (ONR) grant to pay travel expenses of five scientists who will attend the first meeting to advise in designing the campaign.



California

UNDERWATER CHAMBER WITH GLASS PORTS ADDED TO RESEARCH VESSEL "ALASKA":

Four one-inch-thick crystal-glass viewing ports were placed in the hull of the research vessel Alaska of the California Department of Fish and Game. The ports are on the starboard side and reveal submarine goings-on into a watertight compartment that was built within the ship. Viewers enter this compartment through a hatch opening through the main deck. Thus, the ship is safe and seaworthy, even if the compartment fills with water.



Fig. 1 - Research vessel Alaska operated by the California Department of Fish and Game.

The chamber is unique in that it is amidships and provides wide-angle viewing in relatively spacious comfort.

Admittedly, the idea of an underwater viewing-port is not new. Almost 100 years ago, Jules Verne provided viewing windows

for the imaginary Nautilus in his novel, "Twenty Thousand Leagues Under the Sea." Diving bells, bathyspheres, bathyscapes, and glass-bottom boats have utilized similar "looking-glasses" and enabled man to see and study the denizens of the deep. Recently, the U. S. Bureau of Commercial Fisheries fitted one of their vessels, the Charles H. Gilbert, with underwater ports to observe tuna behavior in the mid-Pacific.

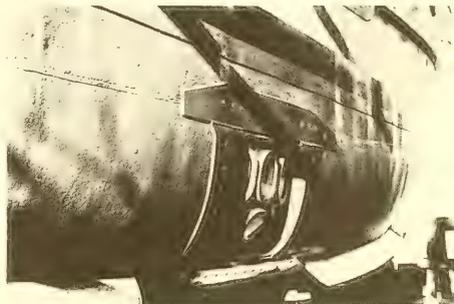


Fig. 2 - Underwater chamber with glass ports on the M/V Alaska is located on the starboard side. Note steel plate reinforcement. Photo was taken when vessel was in drydock.

Quick and positive identification of fish schools will be one of many uses of the new underwater eyes on the Alaska. On a recent field trial, biologists observed a flock of sea birds actively feeding nearby. A single pass through the area while looking through the viewing ports revealed that they were working on a school of anchovies.



Fig. 3 - Diver-biologist of the California Department of Fish and Game working in conjunction with observers inside the underwater chamber of the Alaska. White plastic sheet used to write messages and record observations while in the water.

The viewing chamber will provide a direct means of observing underwater fauna without getting wet. By observing fish behavior, biologists hope to develop more efficient collecting devices. They will also be provided a better look at schooling pelagic fish, such as sardines, in their natural environment.

To date, the Alaska has been used to collect samples of sardines for abundance and distribution studies. These have been attracted to the vessel by a light suspended over the water at night. When a sufficient quantity has been attracted they are caught with a special blanket net developed by Department personnel. At times, however, the sardines remain deep and are beyond the range of the net. Often, by altering the intensity of the light, it has been possible to lure these deep schools to the surface. Occasionally too, "wild" schools are encountered and these are always difficult to catch with the net.

By applying the knowledge gained from observing the behavior of sardines through the viewing ports, the biologists feel certain that many of their misses will be changed to hits. What holds for sardines should hold for other fishes too. (Excerpted from article by Doyle Gates, in Outdoor California, May 1961.)

* * * * *

SHRIMP STUDY OFF CALIFORNIA COAST CONTINUED:

M/V "N. B. Scofield" Cruise 61S2-Shrimp:
The coastal waters from Brookings, Oreg., to Avila, Calif., were surveyed (March 13-April 28, 1961) by the California Department of Fish and Game research vessel N. B. Scofield for concentrations of pink shrimp, Pandalus jordani. Other objectives were to determine size, sex, and weight of the shrimp, to obtain bottom temperatures in the areas explored; and to determine species of fish and invertebrates and weight of all species caught incidentally during shrimp fishing operations.

The strong northerly and southerly winds accompanied by heavy seas greatly hampered trawling operations during most of the cruise. A total of 115 tows was made, using a 20-by 8-foot beam trawl with a cotton net of 1¼-inch mesh. The tows were: 34 in the area from the California-Oregon border to Rocky

Pt.; 15 from Bear Landing to Westport; 55 from Salt Point to Bodega Head; and 11 from Pt. San Luis to Pt. Sal.

In the area from the California-Oregon border to Rocky Pt., the heaviest shrimp concentrations were off of the Klamath River in 66 to 68 fathoms and in the vicinity of Redding Rock in 72 to 76 fathoms. Tows made off of the Klamath River produced an average of 1,155 pounds of shrimp per hour. The average count was 165 per pound, heads on. From the area off Redding Rock, shrimp were taken at a rate of 715 pounds per hour. Here the count was 140 shrimp per pound. Three tows in the area off of Pyramid Pt. failed to yield heavy concentrations of shrimp. In this area the catch was 44 pounds per hour of shrimp averaging 129 per pound, heads on.

In the area from Bear Landing to Westport, the best concentrations were found in a bed extending from Bear Landing to Cape Vizcaino, approximately 2¼ miles wide. Of the 15 tows in this area, 7 produced 1,322 pounds per hour, from depths of 61 to 80 fathoms. These shrimp averaged 128 to the pound, heads on.

In the area from Salt Point to Bodega Head, there were two widely separated concentrations. One was between Salt Point and Fort Ross at 57 fathoms. Here shrimp were caught at a rate of 370 pounds per hour and had a count of 95 per pound, heads on. The other concentration was between the Russian River and Bodega Head, in 42-49 fathoms. Shrimp were taken in this area at an average rate of 149 pounds per hour and had an average count of 150 per pound, heads on.

Two main shrimp concentrations were separated by a narrow area of low production (73 pounds per hour). The northernmost of these beds yielded 245 pounds per hour, at a count of 51 per pound; and the southern bed produced 555 pounds per hour at a count of 57 per pound. These two concentrations were between Pt. San Luis and Pt. Sal in 110 to 127 fathoms.

Approximately 50 shrimp were taken from each tow that contained shrimp (92 of 115 tows) and these were sexed, sized, and weighed. The majority of the females had completed spawning. Very few still contained roe. This was especially true in the Avila-Pt. Sal area.

A total of 76 bathythermograph casts was made--the majority over shrimp beds.

Note: Also see Commercial Fisheries Review, June 1961 p. 17.

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MIDWATER TRAWL TESTED IN CATCHING SALMON FINGERLINGS:

M/V "Nautilus" Cruise 61-N-2-Salmon: A midwater trawl, with a 15-foot square opening, was tested in San Francisco Bay (March 13-16, 1961) by the California Department of Fish and Game research vessel Nautilus to become familiar with its operation and prepare for salmon studies. The mouth of the net is held open by 4 quarter doors acting as kites. The trawl may be fished at the surface by using only the 4 quarter doors, or may be fished deeper by placing 2 small otter doors 150 feet forward of the net.

Sets were made using the quarter doors alone and using the otter doors in conjunction with the quarter doors. Various speeds and depths were used, so that operations would be familiar under different conditions. Enough sets were made to develop a smooth technique in handling winches, otter doors, and the net itself.

M/V "Nautilus" Cruise 61-N-3-Salmon: The midwater trawl operations were continued (April 10-14, 24-28, 1961) in the Carquinez Straits to (1) capture marked salmon fingerlings; (2) determine time of day or night that salmon fingerlings may be captured; (3) determine areas where salmon fingerlings may be captured; and (4) standardize trawling methods for future operations.

Eighty-five tows were completed. A total of 807 king salmon (Oncorhynchus tshawytscha) fingerlings were captured, 8 of which were marked. The marked salmon were from a release made in San Pablo Bay seaward of the fishing area. Of the 20 rainbow trout (Salmo gairdneri) taken, 2 had been marked and released into the American River. The most abundant species taken, incidentally, in the area fished were northern anchovy (Engraulis mordax) and Pacific herring (Clupea pallasii). Other species captured included striped bass (Roccus saxatilis), American shad (Alosa sapidissima), splittail (Pogonichthys macrolepedotus), jack smelt (Atherinopsis californiensis), staghorn sculpin (Leptocottus armatus), Sacramento smelt (Spirinchus thaleichthys), Pacific tomcod (Microgadus proximus), Northern

midshipman (Porichthys notatus), pipefish (Syngnathus griseo-lineatus), starry flounder (Platichthys stellatus) and carp (Cyprinus carpio).

The largest numbers of salmon fingerlings were caught between 7 a.m. and 5 p.m. The best catches of 30, 33, and 36 salmon fingerlings per tow were made between the hours of 10 a.m. and 2 p.m. Between 8 p.m. and 4 a.m., catches averaged about 3 salmon per tow.

Catches were similar in the center and each side of Carquinez Straits, indicating a uniform distribution of salmon fingerlings throughout the sampling area. Catches were also similar for tows made with and against the current.

A standard procedure was worked out for subsequent cruises. This plan calls for alternating tows between upstream and downstream and between the south shore, center, and north shore of the straits. Each tow will be for 20 minutes, and fishing will be conducted from 8 a.m. to 3 p.m. daily.

M/V "Nautilus" Cruises 61-N-8 and 61-N-9-Salmon: Operations were continued (May 8-12, 22-26, 1961) in the Carquinez Straits to capture marked salmon fingerlings.

All trawling was conducted between 7 a.m. and 3 p.m.; each tow was for 20 minutes. Tows were alternated between upstream and downstream, and between the north shore, center, and south shore of the channel. A flow meter was used to measure the amount of water strained by the net on each tow.

During the 101 tows completed, a total of 1,820 king salmon (Oncorhynchus tshawytscha) fingerlings were captured--catch per tow varied from none to 115. A total of 24 marked salmon was recovered, 22 from releases made in San Pablo Bay, approximately two miles seaward of the fishing area. One marked salmon was recovered from releases made at Coleman Hatchery and one from releases made at Rio Vista. Eighteen rainbow trout (Salmo gairdneri) were also taken--three were marked and had been released in the American River.

Other species appearing in the catch, listed in order of abundance, were: northern anchovy (Engraulis mordax), Pacific herring (Clupea pallasii), striped bass

(Roccus saxatilis), American shad (Alosa sapidissima), starry flounder (Platichthys stellatus), jack smelt (Atherinopsis calliforniensis), splittail (Pogonichthys macrolepedotus), staghorn sculpin (Leptocottus armatus), Sacramento smelt (Spirinchus thaleichthys) Pacific tomcod (Microgadus proximus), and carp (Cyprinus carpio).

Two tows were made at a depth of 50 to 60 feet to determine if salmon were evenly distributed in depth. Small numbers caught at these depths (1-2) compared to the larger numbers caught subsequently at the surface (13-22) indicates that better catches may be made on the surface during the hours fished. With the exception of these two deep tows, all fishing was done at the surface.

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PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 61-A-3-Pelagic
Fish: The coastal waters from Ensenada, Baja California, northward to Santa Barbara, Calif., were surveyed (April 7-24, 1961) by the California Department of Fish and Game research vessel Alaska. The objectives were (1) to sample spawning sardines to determine what relationship exists between the spring spawners off southern California and northern Baja California and the genetically distinct groups which have been defined as "northern" and "southern" stocks; (2) to locate and sample fish from the transition zone between the two stocks to determine the extent of mixing; (3) to determine if a 500-watt underwater light would increase fish attraction when used in addition to the regular (1,500-watt surface) survey light; and (4) to make incidental collections requested by other investigations.

Of the 75 night-light stations occupied, anchovies were attracted at 9, Pacific mackerel at 7, jack mackerel at 6, and sardines at 4. Sardines were collected in sufficient numbers for blood genetic studies at 2 stations off Santa Catalina Island. Blood tests were completed for both samples and they consisted of the "northern" stock type.

A 500-watt underwater light was used with the 1,500-watt surface light at alternate stations. With the surface light only, fish were attracted at 8 of 35 stations. The underwater light used in conjunction with

the surface lights attracted fish at 10 of 35 stations. No significant difference could be detected between the two types of lights for the small number of stations tested.

The vessel scouted 341 miles during which 114 schools of anchovies, 28 small schools of mackerel, and one school of bonito were observed. Anchovies were observed almost continuously between Pt. Hueneme and Santa Barbara, and from Pyramid Head, San Clemente Island, eastward for 20 miles. They were also abundant in Todos Santos Bay, Mexico. The pelagic red crab (Pleuroncodes planipes) occurred in large numbers at 2 night-light stations between Oceanside and La Jolla.

Live kelp bass were collected for the Department's tuna investigation. Blood from kelp bass, relatively easy to obtain, will be used to develop serological techniques.

The 4 underwater viewing ports afforded an excellent view of sardine behavior and aided in obtaining a sample of "wild" sardines.

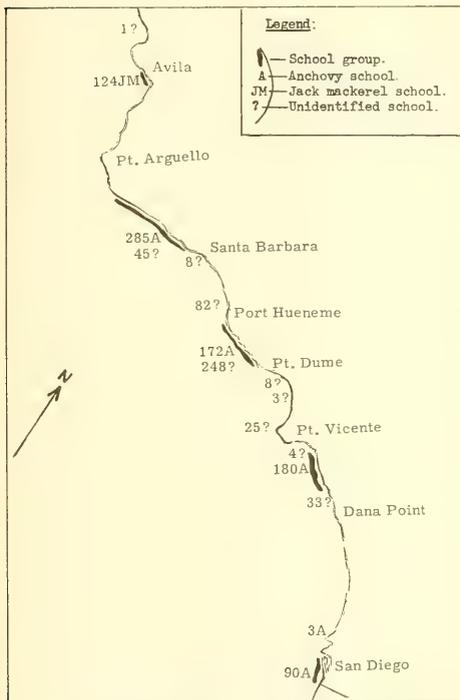
Sea surface temperatures ranged from 12.4° C. (54.3° F.) near Pitas Pt. near Santa Barbara, Calif., to 16.4° C. (61.5° F.) in Los Angeles Harbor.

Airplane Spotting Flight 61-6-Pelagic Fish: The inshore area from the United States Mexican Border to Point Piedras Blancas, Calif., was surveyed from the air (May 16 and 19, 1961) by the Department's Cessna "182" 9042T, (1) to determine the distribution and abundance of pelagic fish schools; and (2) to determine the magnitude of sportfishing activity, other than party boats, with particular emphasis on barracuda and white sea bass.

Adverse weather limited flying time to only 2 days of the 4 scheduled. Conditions were generally unfavorable on May 16, but were good on May 19.

Many more fish schools (1,311) were seen than during the April flight when only 185 schools were counted. During the May flight 730 anchovy, 124 jack mackerel, and 457 unidentified schools were observed. The jack mackerel were within a mile of shore between Pismo Beach and Avila. Four school groups of anchovies were seen.

These were off the Coronado Strand (90 schools), between Newport Beach and Seal Beach (180 schools), between Point Dume and Port Hueneme (172 schools), from Santa Barbara to Point Conception (285 schools). Three additional schools were observed off Torrey Pines. Most of the unidentified schools were deeper but in the same areas as the anchovies.



Flight 61-6 Pelagic Fish (May 16 and 19, 1961).

A moderate to severe "red tide" condition prevailed from Port Hueneme to La Jolla. It was generally confined to the extreme inshore area but at times appeared to extend several miles to sea. The most severe outbreaks were noted off Santa Monica and El Segundo, between Laguna Beach and Dana Point and in the vicinity of Oceanside.

Between the hours of 10 a.m. and 2:30 p.m. on May 16, 54 boats, excluding party boats, were observed fishing the inshore area from Pt. Dume to the Mexican Border. The largest concentration of skiffs (36) was in the Los

Angeles-Long Beach Harbor area at 11:30 a.m. By 3 p.m., only 13 boats were still fishing. Six boats were seen in Santa Monica Bay, 6 between Seal Beach and Newport Beach and 6 between Newport Beach and Point Loma. It was not possible to obtain a count of the fishermen, but spot checks revealed 2 to 4 per boat, with 2 in most.

A total of 50 surf fishermen was counted in Santa Monica Bay at about 10:45 a.m. Most were along sandy beaches between Will Rogers State Beach and Playa del Rey. A few people were fishing from rocks and jetties. Some surf fishermen were noted south of Seal Beach but an accurate count was not possible. No attempt was made to count pier fishermen.

A commercial barracuda troller was seen off Pt. Fermin.

Note: Also see Commercial Fisheries Review, July 1961 p. 10.



Cans- Shipments for Fishery Products

JANUARY-APRIL 1961:

Total shipments of metal cans during January-April 1961 amounted to 37,265 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 32,874 tons in the same period a year ago. Canning of fishery products in January-April this year was confined largely to tuna, shrimp, Gulf oysters, and jack and Pacific mackerel.



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.

* * * * *

BY AREA AND QUARTERS, 1959 AND 1960:

In 1960, out of total shipments of 123,929 short tons of steel for use in the manufacture of cans for fishery products, the Pacific Area or West (including Hawaii and Alaska) utilized 88,366 tons or 71.3 percent. The bulk of the fish-canning facilities are located in the Pacific area. The Pacific Area was followed by the Eastern Area (New England, Middle Atlantic, South Atlantic, and Puerto Rico) with 30,968 tons or 25 percent. The Central Area (including the Gulf of Mexico

Table 1 - U. S. and Puerto Rico Shipments of Steel for Cans for Fishery Products, 1959 and 1960

Area	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Total	
	1960	1959	1960	1959	1960	1959	1960	1959	1960	1959
	(Short Tons)									
West	16,090	14,223	30,540	25,300	23,776	26,775	17,960	15,511	88,366	81,809
East	5,311	4,701	6,546	7,318	11,854	10,990	7,257	6,290	30,968	29,299
Central	622	533	1,451	1,740	1,725	1,485	797	613	4,595	4,371
Total	22,023	19,457	38,537	34,358	37,355	39,250	26,014	22,414	123,929	115,479

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.

States and Inland States) used only 4,595 tons or 3.7 percent.

The over-all total of 123,929 tons was up 7.3 percent from the 115,479 tons used in 1959, due primarily to an increase of 8.0 percent in the amount of steel used for cans in the Pacific Area. Also, shipments of steel for cans for both the Eastern and Central areas were up 5-6 percent in 1960.

Shipments of steel for the manufacture of cans for fishery products on a quarterly basis were heaviest during the second quarter of 1960 for the Pacific Area, but for the Eastern and Central Areas the heaviest shipments occurred in the third quarter. In the West, 34.6 percent or 30,540 tons were consumed in the second quarter of 1960. The Eastern Area used 11,854 tons (38.3 percent of the 30,968-ton total) in the third quarter. The Central Area used 37.5 percent of the 4,595-ton total for the area in the third quarter and 31.6 percent in the second quarter.

Note: Also see *Commercial Fisheries Review*, July 1960 p. 23.



Central Pacific Fisheries Investigations

TUNA BAIT, GEAR, AND OCEANOGRAPHIC STUDIES MADE NEAR HAWAIIAN ISLANDS:

M/V "Charles H. Gilbert" Cruise 52: The primary missions of a 52-day cruise (ended May 17, 1961) by the U. S. Bureau of Commercial Fisheries' research vessel Charles H. Gilbert were to tag and release skipjack tuna outside the area of the Hawaiian live-bait fishery, determine the distribution of temperature and salinity in the surface waters, release drift bottles for studies of surface currents, collect skipjack blood samples for serological studies, and test the feasibility of gill nets for use in catching skipjack from surface schools.

Skipjack were sampled by live-bait fishing, using five different species of bait--threadfin shad, mosquito fish, tilapia, iao,

and nehu. Of particular interest was hardness shown by 70 buckets of threadfin shad from the Wahiawa Reservoir on the island of Oahu, stocked by the Bureau's Biological Laboratory, Honolulu, and the Hawaii Division of Fish and Game in 1959. Mortality during capture, transportation to the Charles H. Gilbert, and acclimatization to sea water in the bait wells aboard the vessel was 17 buckets. Only 1 or 2 buckets were lost by mortality during a 5-week period of the cruise. Unfortunately, as the skipjack schools encountered during the cruise were wild and fast and consisted primarily of small fish, a critical evaluation of the shad as a live bait was not possible.

The principal area of operation was to the west of the Hawaiian Islands, between Johnston Island and French Frigate Shoals. Of 95 surface schools observed, 26 were identified as skipjack. Of the remaining 69, 3 were yellowfin, 1 was a little tuna, 1 was dolphin, and 64 were unidentified. The majority of the schools were seen near islands. Rough seas accounted, at least in part, for the fewer number of school sightings in mid-ocean.

Out of 20 skipjack schools chummed, 435 skipjack were caught from 12 of the schools. Individual catches from the schools ranged from 1 to 115 skipjack. With but two exceptions, the schools were composed of small, 2-5 pound fish.

Skipjack (242) were tagged, all near Johnston Island. Of those tagged, 218 weighed 2 to 5 pounds and 24 weighed an average of 13 pounds. Blood samples were obtained from 100 fish from two schools near French Frigate Shoals and 42 more samples were collected from a school near Kailua, Hawaii.

The results of temperature observations (surface and bathythermograph) and surface salinity samples await detailed analyses. However, those salinity samples analyzed on board indicated that conditions were

typical for summer months in the central Pacific, with the boundary between the higher salinity North Pacific Central waters and those of intermediate salinity positioned to the north of the Hawaiian Archipelago.

About 700 drift bottles were released in waters to the leeward of the Hawaiian Islands (Oahu to Hawaii) and in various channels among the islands. By the end of May, 50 of the bottles had been recovered. Their drift was similar to that observed for the bottles recovered from the January-February 1961 cruise of the Charles H. Gilbert. The majority of the bottles dropped in leeward waters drifted northerly or easterly until they moved through the channels into windward waters, then the movement was to the west. The similarity between the drift during late winter and early summer periods is particularly striking, considering the fact that the winds were southerly (Kona) during the first period and from the northeast during the latter part of the cruise. An additional 200 bottles were released in waters within 5 miles of shore around Oahu. In general, recoveries to date (40 in number) have been only of those bottles released on the windward (eastern) side of the island.

Several experiments were made to test the feasibility of catching skipjack by means of gill nets. In the first test, a monofilament net (600 feet long by 24 feet deep) was set in an area where skipjack were seen breaking the surface. After a 3-hour period, the net was retrieved. No skipjack were caught. During the second test, both monofilament and nylon nets were used and chumming with live bait was carried out during and after the net was set. Thirty-four skipjack were caught in the monofilament section, none in the nylon. Direct observations from the underwater chambers of the vessel revealed that the nylon net was visible at a distance of 20-30 feet from the vessel, while the monofilament was nearly invisible. The skipjack, although feeding on the bait, were observed to avoid the nylon net.

In the third experiment, the skipjack school was chummed to the stern of the vessel and an attempt was made to encircle the school with the net. Unfortunately, the leading edge of the net became entangled in the screw and the experiment was discontinued. However, upon hauling the net, 60 skipjack were taken from the monofilament section, 3 from the nylon.

In the final test, a skipjack school was fished by the pole-and-line method. After capture of five live specimens for use in the Kewalo experimental tanks, the gill net was set with the vessel moving forward at chumming speed (2 knots). After setting the net, live bait was used to keep the school in the vicinity of the net. A total of 225 skipjack were caught in the monofilament section, 2 in the nylon. Although chumming was concentrated near the middle section of the monofilament net, skipjack were found gilled throughout the 100-fathom length of the monofilament webbing.



Express Rates

FISHERY PRODUCTS COMMODITY RATES INCREASES SUSPENDED:

A new tariff has been filed to become effective June 27, 1961, publishing a uniform scale or rates on all fish and seafoods moving via express. These new rates are based upon 60 percent of First Class Express Rates.

At the same time, the express agency cancelled all commodity rates on fish and seafoods. Many of these rates were applicable on various volume weights and were based upon levels ranging from 30 to 50 percent of First Class Rates. For example, as of mid-June the rates from Green Bay, Wis., to New York, N. Y., were \$6.45 up to 1,000 pounds, \$4.64 on shipments of 1,000 to 2,000 pounds, and \$4.29 over 2,000 pounds. The new rate would be \$8.92 per 100 pounds, regardless of volume. The express agency took this action due to alleged increased costs in handling this traffic.

The Interstate Commerce Commission just before the effective date refused to allow the express agency to cancel all commodity rates on fish and shellfish. The suspension order is only for seven months (to January 26, 1962) after which time the increases may go into effect if the ICC has not ruled on the lawfulness of the rates. The Commission ordered an investigation of the lawfulness of the proposed rates, charges, and regulations. The fishing industry is expected to protest the increases at the hearings which are expected to be scheduled.

The tariffs involved are Railway Express Agency, Incorporated: I.C.C. 8512 in full; Supplement 7 to I.C.C. 8320; Supplement 10 to I.C.C. 8321; Supplement 12 to I.C.C. 8326; Supplement 6 to I.C.C. 8331; also in Supplement 1 to I.C.C. 8494, the cancellation notice insofar as it directs the cancellation of matter held in force by reason of this suspension.



Federal Aid to Commercial Fishery States Endorsed by Interior Department

A proposal of Federal aid to states with commercial fisheries was endorsed on June 15, 1961, by the U. S. Department of the Interior. In a letter to Chairman Warren G. Magnuson of the Senate Committee on Interstate and Foreign Commerce, Assistant Secretary John A. Carver, Jr., endorsed the objective of Senate Bill 1230 but recommended several amendments. Most of these amendments would establish a policy of state matching funds, somewhat on the order of the existing Federal aid to states for sport fish restoration.

Under the Department's proposal, an amount equal to 30 percent of the customs duties on fishery products (\$4 to \$6 million) would be available as grants to colleges or research institutions and as Federal aid to states having commercial fisheries. The Department of the Interior would distribute one-third of this amount to educational and research institutions for fishery studies and for training personnel. The Department would distribute the remaining two-thirds to states with commercial fisheries.

The Department's report declared that many serious problems face the commercial fishing industry and recommends that the Government give aid to states in meeting these problems either under the fiscal procedures set forth in the bill or by direct appropriations.

The report stated that "in addition to Federal research, there is need to encourage and strengthen state fishery research, rehabilitation, and development programs, as set forth in this bill, in those states where our domestic fishing industry is active.

State activities of this kind complement the fishery activities this Department is carrying forward. Certain phases of fishery research and rehabilitation are most susceptible of state management. Adequate programs of state and Federal research will be mutually beneficial in promoting the Nation's commercial fisheries."¹¹

This proposal would not affect the present Saltonstall-Kennedy program for the betterment of the domestic fishing industry which is also financed by annual amounts equal to 30 percent of the customs duties on fishery products.



Federal Aid Funds for Sport Fish and Wildlife Restoration

A preliminary apportionment of \$12,850,000 of Federal Aid funds will be made available July 1, 1961, for State fish and wildlife projects, Secretary of the Interior Udall announced May 29, 1961. The balance of Federal Aid fish and wildlife restoration program funds for the year ending June 30, 1962, will be apportioned in October 1961. The comparable preliminary apportionment for the fiscal year beginning July 1, 1960, was \$12,800,000.

The Secretary stated that the early apportionment was made to help States program their Federal Aid activities more advantageously. It has been of special importance to those States operating on a revolving fund basis.

Under the Federal fish and wildlife restoration programs, States spend their own funds on approved projects and are then reimbursed up to 75 percent of the cost. Many States have exhausted or will have exhausted their Federal Aid funds for programming projects to start during the next fiscal year. The partial apportionment makes it possible for these States to secure approval for projects to start on July 1, 1961, or soon thereafter and to claim reimbursement therefor. Otherwise, many States would have to hold up projects until the regular apportionment in the autumn.

Federal Aid funds are derived from an excise tax on sporting arms and ammunition

and on sporting rods, reels, creels, and artificial lures. Distribution of the two funds is made on formulas based upon the number of paid license holders in a State and on its area, as prescribed by law. Both Federal Aid Acts (Pitman-Robertson Act, approved September 2, 1937, and the Dingell-Johnson Act, approved August 9, 1950) are administered by the Bureau of Sport Fisheries and Wildlife, U. S. Fish and Wildlife Service.

Of the \$12,850,000, a total of \$9,850,000 is for the restoration of wildlife and \$3,000,000 for the restoration of fish. No indication was given relative to the possible total apportionment, but in the last five years wildlife restoration funds have amounted to between \$14-\$15.5 million and fish restoration funds have been approximately \$5 million. For the fiscal year ending June 30, 1960, fish restoration funds amounted to \$5,836,000.

Note: Also see Commercial Fisheries Review, August 1960 p. 21 and January 1960 p. 34.



Florida

FISHERIES RESEARCH, JANUARY-MARCH 1961:

The Marine Laboratory of the University of Miami is carrying on research on fisheries with funds provided by various sources, including the Florida State Board of Conservation and the U. S. Fish and Wildlife Service. The research of interest to commercial fisheries which appeared in the Laboratory's March 1961 Salt Water Fisheries Newsletter follows:

Larval Shrimp: The famed Tortugas pink shrimp (Penaeus duorarum) has been under study by Marine Laboratory scientists since soon after the discovery of the resource in 1950. A new development in this study is the use of a plankton sled net recently brought from Norway. The plankton sled net is a deep sea net which slides over the bottom of the ocean. Because it can be towed in close proximity to the sea bottom, it can collect organisms rarely taken by conventional plankton nets.

The plankton sled was used in Florida to sample water very near the bottom on the Tortugas shrimp fishing grounds as part of a study sponsored by the U. S. Fish and Wildlife Service. Large numbers of shrimp nauplii were collected. Nauplii are the first

larval stage to develop from the egg. Also eggs of the right size and form to be shrimp eggs were found in great numbers. Further use of the sled, it is hoped, will shed light on the distribution of eggs and early nauplii stages of pink shrimp.

Spotted Sea Trout: An experiment designed to estimate the total number and mortality rate of spotted sea trout in the Pine Island, Fla., population is being conducted. Of 5,407 spotted sea trout tagged in January 1961, a total of 930 have been returned. The rate of return of 17 percent is indicative of the high rate of mortality that this population is subject to from fishing.

All fish were tagged with internal anchor tags. This type of tag consists of a 1.4 by 0.3 inch green plastic tag to which is attached a yellow plastic streamer. The streamer protrudes from the fish's body to aid detection. Fishermen are urged to cooperate by taking the tag to their local fish house with catch information.

Nonutilized Species Incidental to Shrimp Fishing: The investigation of the utilization of nonutilized fish from the shrimp fishery is being investigated with emphasis on the development of methods for preparing useful products.

The key to the process is an enzymatic breakdown of the fish. Enzymes are chemicals produced by the body, which break down the complex proteins that constitute the body of the fish, into less complicated materials and convert them to a liquid in a short time. The action of enzymes is not completely unfamiliar to us, in fact we are surrounded by their activity, they are the architects and demolition crews that build up and destroy all biological materials. The life process itself is intimately related to enzymatic activity.

Although enzymes are almost insignificant in size, their activity is in every respect formidable. When protein digesting enzymes act on the fish, they convert it to a liquid in a matter of 1 or 2 days when the temperature is 98° to 100° F., or in 5 to 6 days at lower temperature of 75° F. To do the same work a chemist would have to add a concentrated acid, heat the material at 570° F., under a pressure of 50 pounds per square inch, and hold it for three hours.

The enzymatic digestion of the fish gives a product called "liquid fish," which contains all the basic constituents of the original fish, only in a liquid or slurry form. We have received various suggestions for applications, and are considering a few at the present time.

In the fertilizer field, liquid plant nutrients are easier to apply, to transport, and to handle than solid nutrients. Nitrogen, one of the important plant nutrients is present in good quantity in liquid fish, furthermore it comes in an organic form which is absorbed slowly by the plant. We see an important use for liquid fish as a base or matrix for the manufacture of special tailor-made fertilizer formulas, in which plant nutrients would be added to the existing organic substances.

During the process of enzymatic digestion, a clear liquid floats to the top. This is a concentrate of soluble fish proteins, much like the beef proteins of bullion cubes. This liquid has a bland odor and flavor and constitutes a good source of readily digestible protein material. We hope that the pet food manufacturers will look to this material as a valuable ingredient for their products.

Fish Behavior Studies: The apparatus for determining whether sharks can detect, and orient to, low-frequency vibrations has been constructed at considerable expense and is now being used. Very little is known, of a scientific nature, about these large predators and it is felt that a more thorough knowledge of their sensory systems might provide a better understanding of the "shark problem." This project is sponsored by the Office of Naval Research.

A Japanese scientist is now working at the Marine Laboratory on the eyes of pelagic fishes, under a contract with the National Science Foundation. We hope to be able to determine the axis of vision and range of accommodation in sailfishes, dolphin, tuna, etc. These animals have escaped intensive investigation of their sensory systems because of the difficulty of maintaining them in captivity. We hope to uncover leads for further research with their visual apparatus and eventually to discover the importance of vision in their lives.



Frozen Foods

VOLUNTARY HANDLING PRACTICES APPROVED:

A joint five-year program with the major objective of further advancing handling standards in the frozen foods industry and thereby speeding the growth of the broadest possible customer acceptance was announced early in June 1961 by the Frozen Foods All-Industry Coordinating Committee. Major facets of the program include immediate promulgation of voluntary operating practices throughout the industry, progressively tightened throughout the next five years, indoctrination of employees at all levels to understand the importance and proper techniques of maintaining product quality, and encouragement of the development and use of better and more efficient equipment.

In announcing the program, the Committee Chairman, said: "We believe that never before have so many diversified interests in so large and complex an industry joined forces to lift a young industry by its bootstraps, so to speak. Although current sales are at the \$3 billion a year level it is estimated that perhaps half of the nation has never even tasted frozen foods, at least knowingly. . . ."

Cooperating Associations and Organizations: The Voluntary Operating Practices to be promulgated throughout the industry have been painstakingly worked out in great detail through many conferences in the past year and are now approved and signed officially by the following organizations: American Trucking Associations, National Associations of Food Chains, National Association of Frozen Food Packers, National Association of Retail Grocers of the United States, National Association of Refrigerated Warehouses, National Frozen Food Association, National Fisheries Institute, and National Prepared Frozen Food Processor Association.

Cooperating with the Committee are the following organizations: American Meat Institute, Institute of American Poultry Industries, National Food Brokers Association, National Institute of Locker and Freezer Provisioners, and Super Market Institute. Each has volunteered fullest support to the very large job of indoctrinating employees and supervisors throughout so far-flung an industry. Other national, regional, and local associations have also been invited to enlist in the various educational projects and have responded most cooperatively.

Invaluable cooperation in scientific and research aspects of the program have been provided and further promised to the Committee by the Western Regional Research Laboratory of the U. S. Department of Agriculture, the Refrigeration Research Foundation, and other public and private research organizations. The U. S. Bureau of Commercial Fisheries will undertake Time-Temperature-Tolerance studies on fishery products as soon as funds are made available to the University of Gloucester Technological Laboratory.

Problem of Educating Handlers: The employee indoctrination program will take the longest period to complete because of the numbers involved. Preliminary educational seminars for wholesalers and retailers have already been held in Massachusetts by the University of Massachusetts and in North Carolina by North Carolina State College. The Refrigeration Research Foundation is conducting a series of seminars for refrigerated warehouse supervisors in different areas across the nation. The release of two educational motion pictures during 1961 is planned: "Operation Zero" for all types of trucking employees and allies, produced by the American Trucking Associations, and "Frozen Foods Have a Memory" for retail grocery personnel in particular but with wider applications, produced through the cooperation of the U. S. Department of Agriculture. Booklets on the proper handling of frozen foods have been prepared by many associations. Federal and State Extension Services have also generously offered their cooperation in the industry's program.

The Committee has been in touch with various inventive approaches to improving equipment by suppliers outside as well

as within the industry. It is generally believed that the industry's well-publicized program will itself prove a major stimulus to further research looking toward more efficient storage, trucking, display cabinets, and other handling equipment.

Over-all Handling Practices Spelled Out for the First Time: "The basic initial task of the Frozen Foods All Industry Coordinating Committee has been largely completed," stated the Chairman, "and I can find no words adequate to pay tribute to the hard-working committee members who made it possible. Indeed, it may be considered somewhat of a miracle that the sponsoring associations, with their diversity of memberships and purposes, could be guided to a common course of action. This has probably never happened before in the food industry."

The Voluntary Operating Practices for the industry, approved by the sponsoring associations, have been submitted to the members of industry for their guidance. It is up to the associations, their members, and their many allies to implement the practices. The Committee will remain in active existence and its members will pursue several educational projects.

It was pointed out that the practices are, in essence, a timetable to a decidedly higher level by 1965. They are realistic in that they take into account the fact that a very heavy investment in equipment now in use was made before much of the newer and better equipment became available. They also were written with the knowledge that many of the workers who handle frozen foods have been only partially trained and supervised in this young, fast-growing industry and that time will be needed to correct these conditions. For that reason, during the remainder of this year and through next year, the Practices permit limited and realistic deviations above zero for limited periods at certain stages of handling. During 1963 and 1964, when more good equipment will be in use and the employees will be better trained, these tolerances will be tightened. In 1965 a further tightening will take place. Beginning then, the practices call for handling frozen foods at zero or lower all the way, except for slight deviations and limited time, when the product is in transit or changing locations.

The tolerances for 1961 through 1964 have been set to provide feasible stages for upgrading the methods of those of the industry's members who are faced with the greatest natural difficulties and the greatest proportionate new investment. It is expected that most industry members will better these operating practices from the start and will arrive at the improvement goal before 1965. It would be a serious mistake, on the other hand, if too rapid a program brought about such junking of still-valuable equipment and consequent business failures as substantially to raise the price to the consumer of frozen foods.

It is the intention of the members of the Committee to meet again before the end of 1961 and determine whether these initial Voluntary Operating Practices have been properly interpreted and found adequate to achieve the desired objectives and whether modifications or revisions, leading to an even more rapid rate of improvement, are feasible and should be incorporated.



Great Lakes Fishery Investigations

WESTERN LAKE SUPERIOR FISHERY SURVEY FOR 1961 SEASON BEGINS:

M/V "Siscowet" Cruise I: The 1961 season operations of the U. S. Bureau of Commercial Fisheries research vessel Siscowet were begun May 16-31, 1961, in the western area of Lake Superior.

Studies were devoted to the collection of larval stages of fish, the bathymetric dis-

tribution of chubs, and a survey of native and planted lake trout in the Apostle Islands region. The work took place in the following areas: south of Stockton Island; west of Outer Island; north of Ironwood Island; Raspberry Bay; Frog Bay; Red Cliff Point; west Madeline Island; and Pike's Bay.

A 5-foot net constructed of 1/16-inch mesh nylon was towed at depths ranging from 8 to 80 feet below the surface. Eight 15-minute tows captured 38 fish larvae. They did not appear to be concentrated at any particular level--catches were about the same at all depths. Many of the larvae appeared different but positive identification could not be made in the field.

A standard gang of experimental gill nets (1- to 5-inch mesh by 1/2-inch intervals) set at 62 fathoms south of Stockton Island took 263 chubs. Most all of the chubs had spawned late last fall or during the winter.

In cooperation with the Wisconsin Conservation Department, arrangements were made for 23,500 lake trout to be planted from shore in Frog Bay. These fish represented three stocks: 11,700 were of the Marquette domestic stock reared at Pendills Creek Rearing Station, Mich.; 5,900 were of the Green Lake, Wis., stock and 5,900 of the Apostle Island stock--both hatched and raised in the Bayfield Hatchery.

The Siscowet made trawl tows during and after planting of the trout to determine the time required for shore-planted lake trout to find suitable habitat and begin natural feeding.

The first lake trout were taken at a depth of 5 fathoms about 40 minutes after planting. They reached 10 fathoms in 1 hour, 50 minutes, and 15 fathoms in 3 1/2 hours after planting. The depth of 15 fathoms is about 1 mile from the planting site. It is considered suitable lake trout habitat because both native and formerly planted trout were captured in that area. Stomachs from all the recently planted trout were examined. It was not until 48 hours after planting that active feeding (*Pontoporeia*, insect larva) took place. All three stocks were proportionately represented in the trawl catches.

Trawl tows made in other areas among the Apostle Islands revealed a high percentage (nearly 80 percent) of hatchery-reared trout from previous years' plantings. The

1960 Bayfield-stocked fish were predominant in the catches.

Surface water temperatures ranged from 37.9° F. south of Stockton Island to 48.2° F. in Frog Bay.

M/V "Siscowet" Cruise 2: Spring environmental conditions were studied (June 1-9, 1961) at three limnological stations. Collections of limnological data and materials included: records of water temperatures, water samples for chemical analyses, bottom and plankton samples, and Secchi-disc readings. Information was gathered also on the bathymetric distribution of fish stocks, the distribution and survival of planted lake trout, the larval stages of fish, and experimental midwater trawling.

Areas visited during cruise 2 were: Frog Bay; south of Stockton Island; Pike's Bay; south of Oak Island; north of Sand Island; west of Bear Island; Sand Bay; west Madeline Island; north of Madeline Island; and north of Eagle Island.

Trawl catches made in Frog Bay and west of Bear Island and catches in gill nets set in Sand Bay included lake trout which had been planted from shore this spring. Bear Island is about 10 miles from the nearest planting site. One 15-minute trawl tow west of Madeline Island (17 fathoms) took 14 small trout, all of them fin-clipped. Ten of these trout bore the left-front fin clip which was the mark used by the Wisconsin Conservation Department for the 1960 plant. The success of the 1960 shore plant was further demonstrated in trawl catches from other areas. Excepting trout of the 1961 plant, the Siscowet captured 48 small trout during cruises 1 and 2. Thirty-nine were fin-clipped (81 percent) and of these, 30 were from the 1960 Bayfield plant. Other species common in the trawl catches were smelt, whitefish, cottids, sticklebacks, and trout-perch.

A gang of experimental gill nets set at 83 fathoms north of Sand Island took only a few deep-water chubs (C. kiyi) and several deep-water sculpin which were nearly ready to spawn.

A 43-foot semi-balloon trawl was converted to a full-balloon type and equipped with small hydroplane floats--in addition to the otter doors--for midwater trawling.

Catches were generally small but one catch of 121 smelt 50 feet below the surface in 22 fathoms is evidence that this type of gear may be useful in sampling pelagic fish during certain stages of their life history. Plans include further experimentation with this gear.

Surface-water temperatures varied from 37.6° F. north of Sand Island to 50.7° F. in Sand Bay. The water temperature on the bottom was about 40° F.

Note: Also see Commercial Fisheries Review, June 1961 p. 24.

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LAKE MICHIGAN 1961 FISH POPULATION SURVEY:

M/V "Cisco" Cruise 1: The primary objective of the U. S. Bureau of Commercial Fisheries research vessel Cisco during the 1961 season will be to inventory the chub populations of northern Lake Michigan so that there will be a basis for future comparisons. The same program was carried out in 1960 in the southern part of the lake. Gangs of nylon gill nets consisting of 9 mesh sizes totaling about one-half mile in length, and 50-foot balloon trawls of a type used by several of the Lake Michigan commercial trawlers will be fished this year. Gears of the same specifications were used in 1960.

Most of the effort during the first cruise (May 16-30, 1961) was devoted to gill-net fishing. Overnight sets were made at 25 and 50 fathoms off Charlevoix and Manistique, Mich., and Sturgeon Bay, Wis., and at 80 and 135 fathoms off Frankfort, Mich. Chub catches were light and predominately Leucichthys hoyi, except at 80 and 135 fathoms off Frankfort where the very few chubs taken were L. kiyi. No L. alpenae or L. zenithicus were caught in any of the lifts, but small numbers of L. reighardi, which appeared to be at the height of their spawning season, were taken in several of the sets. A few L. reighardi eggs were collected for taxonomic studies at the Northville, Mich., hatchery. Other species in the gill nets included a few lake herring, smelt, deep-water sculpins, trout-perch, and alewives; one individual of the latter species was caught at 135 fathoms.

Trawl hauls were made at 15, 25, and 50 fathoms off Manistique, 30 and 50 fathoms off Sturgeon Bay, and 30 fathoms in Little Traverse Bay east of Charlevoix. Chub

catches, on the basis of pounds per hour, ranged from none at 15 fathoms off Manistique to 900 at 30 fathoms off Sturgeon Bay. A 30-minute tow at 15 fathoms off Manistique yielded a pure catch of 800 pounds of alewives. Also, great numbers of small alewives were seen escaping through the cod end as the net was being brought in. In addition to chubs and alewives, the trawls took small numbers of trout-perch (as deep as 30 fathoms), smelt, slimy sculpins, and deep-water sculpins (50-fathom tows only).

Hydrographic collections and observations were made at 40-fathom stations off Charlevoix, Manistique, Sturgeon Bay, Frankfort, and midlake between Charlevoix and Manistique, and at 144 fathoms off Frankfort. Surface water temperatures were extremely cold throughout the cruise; open-lake temperatures were mostly 3° to 4° C. (average about 38° F.), and the lowest recorded was 2.5° C. (36.5° F.). Near shore, where there was very slight thermal stratification, surface temperatures ranged up to 7° C. (44.6° F.). The winter-like thermal condition of the northern portion of the lake accounts for the catches of alewives in very deep water and trout-perch in relatively deep water. When pronounced thermal stratification sets in, these species will move into the warm water near shore. Unusually clear water was observed at the 144-fathom station, where a Secchi disc reading of 60 feet was recorded. Disc readings at other stations ranged from 18 to 27 feet.

M/V "Cisco" Cruise 2: Most of the effort during Cruise 2 was devoted to trawling. Extensive areas of rough and steeply sloping bottom in the north end of Lake Michigan make it much more difficult to locate good trawling bottom than in the southern portion, especially when it is desired to maintain a given depth throughout the tow. Half-hour tows were made at 6, 15, 25, 35, and 50 fathoms off Frankfort, Mich.; at 30 fathoms off Charlevoix, Mich.; at 15, 25, 35, and 50 fathoms off Manistique, Mich.; at 30 and 50 fathoms off Sturgeon Bay, Wis.; and at 12, 15, and 25 fathoms off Kewaunee, Wis. Chub catches were small and in most cases were made up entirely of bloaters.

Alewives were the commonest species in the trawl catches besides chubs. At least a few were taken in nearly every tow, but catches were larger in the tows at 25 fathoms and shallower. The largest catch of alewives was 80 pounds, at 15 fathoms off

Frankfort. It is certain that in some cases great numbers of small individuals of this species escaped through the 1-5/8-inch mesh of the cod end.

Also taken in the trawl were few smelt (mostly in shallower tows; largest catch was 43 pounds at 15 fathoms off Manistique); few deep-water sculpins (up to 25 pounds in the 50-fathom tows); slimy sculpins (very few except for a modest catch at 50 fathoms off Manistique); and lake herring (uncommon).

Preliminary experimentation with a 40-foot modified British Columbia midwater trawl was conducted off Charlevoix. The trawl appeared to function well, but there were no concentrations of fish to test its fish-catching ability.

Standard gangs of nylon gill nets (50 feet each of 1½ and 1½, and 300 feet each of 2, 2½, 2½, 2½, 3, 3½, 4-inch mesh) were set at 25, 50, and 80 fathoms off Frankfort. Chub (*Leucichthys* sp.) catches were very light. The *L. reighardi* appeared to have just completed their spawning season.

Hydrographic collections and observations were made at 40-fathom stations off Frankfort, Charlevoix, Manistique, Sturgeon Bay, and in midlake between Charlevoix and Manistique; and at a 144-fathom station between Frankfort and Sturgeon Bay. Surface water was warming slowly and beginning to stratify, but the warming had been very slight in midlake between Frankfort and Sturgeon Bay. Surface temperatures ranged from 3.9° to 13.2° C. (39.0° to 55.7° F.). Secchi disc readings were 13 to 19 feet, except at the 144-fathom station, where the reading was 45 feet.

Note: Also see *Commercial Fisheries Review*, July 1961 p. 21

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LAKE ERIE FISH POPULATION SURVEY CONTINUED:

M/V "Musky" May 1961: Although the success of the U. S. Bureau of Commercial Fisheries research vessel *Musky* operations on Lake Erie is not dependent nor to any degree measured by the quantity of fish taken, its trawl catches during May were probably the most productive on record. Literally, thousands of fish were caught and sampled. Yellow perch of the 1959-year-class were dominant in the catch. Other species taken in considerable numbers were spottail shiners and sheepshead.

Of exceptional note was the trip to East Harbor during the first week of operations. Parallel 10-minute tows at the 15-foot and 20-foot depths produced rather uniform catches totaling several hundred fish of assorted sizes and kinds. At the 10-foot depth, the catch was of such magnitude that it necessitated sub-sampling procedures to record the essential data. The cod end of the net was so packed with fish that many more could not have been taken regardless of time limit. A final tally placed the trawl catch at more than 1,500 pounds and 11,000 fish. Approximately 98 percent of the lift consisted of male two-year-old perch. A second inshore tow provided almost identical results. While yellow perch are known for their segregation by sex prior to spawning, the percentage and numbers observed in so limited an area during the height of the spawning period was most unusual.

During two weeks of May the three-day-night sampling and observation series were carried out at East Harbor and Bono. High winds interrupted operations at East Harbor while bottom topography was a problem at Bono. Nevertheless, both series were completed without undue delay. Conspicuous by their absence were yearling smelt, alewives, and gizzard shad, which were among the few species that produced a good hatch in 1960.

Other trawl stations occupied were at Sandusky Bay, Sand Point, East Kelleys, and Rattlesnake. Various half-meter net tows collected numerous fry which were preserved for identification at a later date. Water temperatures in the western end of the lake which averaged 46° F. at the beginning of the month rose to about 65° F. by the end of May. This temperature range is

sector which were previously visited early in the 1930's and more recently by the Cisco (1958). Approximately 25 stations were covered with three samples being collected at each location.

Pessimism on the part of the commercial producers is quite apparent. Landings have dwindled to the extent that many fishermen are removing their nets from the lake. While this practice is customary during the summer season, it has come about much earlier than in the past years. The only immediate prospect of the fishery lies in the 1959-year-class of yellow perch putting on sufficient growth to make them readily available for the fall fishery. Even at that, the outlook is not too promising.

Note: Also see Commercial Fisheries Review, July 1961 p. 19.



Maine Sardines

CANNED STOCKS, JUNE 1, 1961:

Distributors' stocks of Maine sardines totaled 215,000 actual cases on June 1, 1961--18,000 cases more than the 197,000 cases on hand June 1, 1960. Stocks held by distributors on April 1, 1961, amounted to 267,000 cases, and on January 1, 1961, totaled 233,000 cases, according to estimates made by the U. S. Bureau of the Census.

Canners' stocks on June 1, 1961, totaled 294,000 standard cases (100 3 $\frac{1}{2}$ -oz. cans), an increase of 59,000 cases (25.0 percent) as compared with June 1, 1960. Stocks held by canners on April 1, 1961, totaled 506,000 cases and on January 1, 1961, amounted to 1,029,000 cases.

Table 1 - Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, June 1, 1961, With Comparisons^{1/}

Type	Unit	1960/61 Season				1959/60 Season				
		6/1/61	4/1/61	1/1/61	11/1/60	7/1/60	6/1/60	4/1/60	1/1/60	11/1/59
Distributors	1,000 actual cases	215	267	233	277	172	197	252	235	296
Canners	1,000 std. cases ^{2/}	294	506	1,029	1,258	359	235	397	843	1,001

^{1/}Table represents marketing season from November 1-October 31.
^{2/}100 3 $\frac{1}{2}$ -oz. cans equal one standard case.

somewhat cooler in comparison to averages of a year ago. The difference is presently evidenced by the lag in spawning and other seasonal activity for some species. Limnological information was gathered by the vessel and crew for several days on each of two different occasions. Bottom samples were taken at established stations in the western

The 1961 packing season opened on April 15, 1961, but because fish have been scarce the pack by the end of June was light--only 55,000 cases as compared to 337,000 cases in the same period in 1960. This was the smallest June pack since 1951. When the new packing season began on April 15, 1961, the carryover stocks totaled 457,000 cases

as compared to 335,000 cases when the 1960 season opened.

Note: Also see Commercial Fisheries Review, June 1961 p. 28.

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INCREASED COSTS AND LACK OF FISH WORRY CANNERS:

Drastically increased production costs and the latest run of fish in ten years are two major problems that are of serious concern to the Maine sardine industry. As of early June 1961 the supply of fish was virtually nonexistent along the entire Maine coast, whereas normally a sizable pack would have been made by June. Only two plants, one in Belfast and another in Port Clyde, had operated by early June and the amount of fish processed was so small that it served only as a shakedown run for the equipment.

However, it is the cost factor and not the fish supply that has caused the greatest number of headaches. The lack of fish was attributed to the late, cold spring and plenty of fish were expected, especially in the Portland area, by mid-June.

Apparently there is nothing that can change the production cost outlook. A cost accounting firm, employed by the industry, has advised the cannery that they can expect to have an increase of from 40 to 50 cents a case to pack the standard keyless product this season and more on the key-opening and special items.

Contributing to this situation are advances in oil, cans and covers, packing cases, and general operating expenses as well as new minimum wage legislation which becomes effective in September.

Percentage-wise this is the greatest increase of any single year in the history of the industry.

The Maine Sardine Council's Executive Secretary said on June 8 that the cannery would be forced to raise prices in order to stay in business and that this would be reflected on the rapidly diminishing inventories from last year's pack.



Last year the industry produced 1,997,600 standard cases of all types of

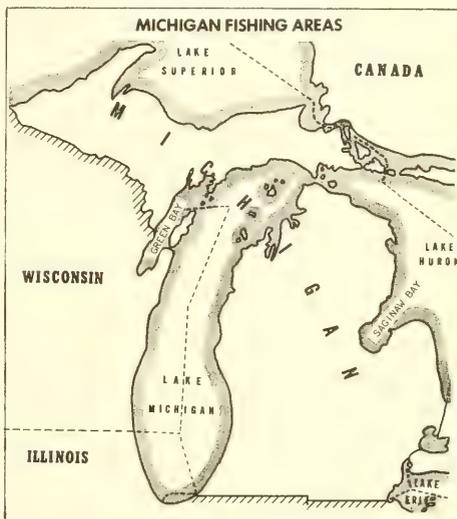
canned sardines and it expects to pack about the same amount this year if the fish finally show up.



Michigan

CHANGES PROPOSED IN GREAT LAKES COMMERCIAL FISHING REGULATIONS:

Public hearings were scheduled for late June and early July 1961 on changes in commercial fishing regulations tentatively approved early in June by the Michigan Conservation Commission.



Among the changes discussed at the meetings were measures aimed at giving immature whitefish and/or lake trout greater protection to aid the recovery of these once-abundant species in the Great Lakes. These proposals call for: (1) Raising the minimum legal size of whitefish from 17 to 18 inches, or two pounds in the round; (2) permitting use of pound and trap nets for taking whitefish and lake trout in any depth of water, provided the mesh size is increased to $5\frac{1}{4}$ inches to allow more undersized fish to escape; and (3) increasing the minimum size of mesh in gill, pound, and trap nets from $4\frac{1}{2}$ to $5\frac{1}{4}$ inches for taking whitefish and lake trout in all of Michigan's Great Lakes waters, and limiting gill nets to $20\frac{1}{2}$ meshes in depth.

The third change would not become effective until January 1, 1965. Since most nets normally need to be replaced in 3 to 4 years, this would allow commercial fishermen to plan ahead and save them from unexpected changeover costs in equipment which might be difficult to absorb if the change took immediate effect. The same reason holds true for another change proposed to take effect in 1965 which would reduce the size of mesh in gill nets from 8 to 7½ inches for taking carp in Wildfowl Bay, off Saginaw Bay.

It was proposed that the closed season on pickerel (northern pike) in Saginaw Bay be changed to match the March 5-April 10 off-limits period on yellow pike (walleye) fishing in those waters.

Completing the list of proposals was a change which would enable Michigan's Department of Conservation director to issue permits for trawling smelt and alewife in L'Anse Bay off Keweenaw Bay in Lake Superior where there is an abundance of smelt.



Mississippi

SURVEY OF OYSTER BOTTOMS:

A survey of the productive and potentially productive oyster bottoms of all state waters in Mississippi Sound and bays was completed early in 1961 by a staff member of the Mississippi Gulf Coast Laboratory at Ocean Springs, Miss. Conducted in connection with his work with the Mississippi Marine Conservation Commission, the survey was done to ascertain the condition of the existing reefs and bottoms so that future plans for rehabilitating and enlarging oyster-growing areas could be undertaken.



A barge loaded with shell to be "planted" in order to improve public oyster-growing areas in Mississippi.

During the month of April, the replanting of 2,500 barrels of seed oysters in the Sound

was supervised by the Laboratory. The seed oysters were removed from overcrowded areas and replanted on established oyster beds where oysters were sparse.

Another phase of the oyster bottom improvement program was the dragging of the once productive outside oyster reefs with oyster dredges; this was done with the idea that the shells would be turned over and the clean, unfouled surfaces would be exposed just prior to the spawning and setting period.



North Atlantic Fisheries

Exploration and Gear Research

MIDWATER TRAWLING FOR ATLANTIC HERRING PROMISING:

M/V "Delaware" Cruise 61-8: Promising midwater trawl catches of Atlantic herring and other fishes were made during the May 24-June 7, 1961 cruise of the U. S. Bureau of Commercial Fisheries research vessel Delaware.



Fig. 1 - Midwater trawl catch of about 4,500 pounds of herring on the deck of M/V Delaware.

Utilizing a technique developed in West Germany, a midwater trawl net was operated successfully in Gulf of Maine waters. Control of the depth of the net over the bottom was effected through the use of a depth-sounder transducer mounted on the headrope of the trawl net. A constant indication of the net opening, its relation to the bottom and the presence or absence of fish schools, was transmitted to the vessel through a two-conductor cable. This information was then recorded on board the vessel using the modified depth sounder (see fig. 1). Rapid changes in the depth of the net were brought about by increasing or decreasing the speed of the Delaware's main engine.



Fig. 2 - Echo-sounder recording of net over bottom as seen in the pilothouse of M/V Delaware. A constant indication is given of the net's position in relation to the bottom, the presence of fish schools, and the net opening (in this case about 40 feet between headrope and footrope).

The cruise was divided into two parts: The first phase, conducted off Gloucester, Mass., was for the purpose of testing the recently acquired electronic apparatus and the fishing gear. After some modifications to various components, the second phase was carried out. This portion of the cruise included experiments with controlling the gear's depth in relation to the bottom and experimental fishing.

During a 4-day period, 13 midwater trawl tows were made during daylight hours along the northern edge of Georges Bank. The duration of individual tows varied from 30 minutes to over two hours. The best catch per single tow included approximately 4,500 pounds of herring (*Clupea harengus harengus*). This catch was made in about 35 fathoms of water along the northern edge

of Georges Bank with the trawl fishing 6 to 10 fathoms above the bottom. Other species represented in the catch were Atlantic mackerel (*Scomber scombus*), silver hake (*Merluccius bilinearis*), and squid (*Loligo* sp.).

Note: Also see Commercial Fisheries Review, June 1961 p.34; April 1961 p. 26.



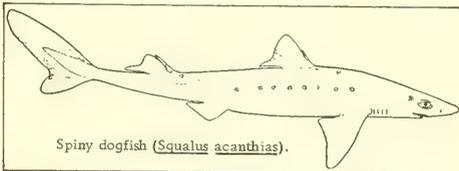
North Atlantic Fisheries Investigations

GROUNDFISH DISTRIBUTION AND ABUNDANCE ON INSHORE FISHING GROUNDS STUDIED:

M/V "Delaware" Cruise 61-7 (June 11-15, 1961): Haddock were caught in Ipswich Bay, on Stellwagen Bank, and off Nauset Beach by the U. S. Bureau of Commercial Fisheries research vessel Delaware. The vessel was on a 5-day survey to investigate the distribution and abundance of groundfish on the inshore fishing grounds off New England. The area off Race Point at the tip of Cape Cod was found to have the largest concentration of small haddock. Twenty other species of fish were caught in varying quantities.

Several species of live fish were returned to the Woods Hole Laboratory for display in the aquarium which was scheduled for opening to the public on July 1, 1961.

Spiny Dogfish Tagged Off New England Coast: In addition to the survey on distribution and abundance of groundfish conducted on this cruise, a total of 276 spiny dogfish were tagged and released, as part of a study to determine the movements and growth of that species.



Spiny dogfish (*Squalus acanthias*).

Two kinds of tags were used. Half the number of fish were marked with yellow plastic discs attached through the snout with stainless steel pins, while the other half were marked with yellow plastic tubing attached through the base of the first dorsal fin. A reward of \$1.00 will be paid for each tag turned in, and an additional dollar will be paid if the fish is turned in

with the tag intact so that measurements can be made. A letter with information on the tagging will also be sent to the finder.

The recent dogfish tagging experiment is part of a general fisheries research program to determine the migrations and growth of the spiny dogfish in the waters off New England. Many of the tagged dogfish are expected to be caught during the summer in Massachusetts and Maine coastal waters. Finders of tagged dogfish should take them to the nearest Federal or state fisheries representative, or mail only the tag to the U. S. Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Mass., giving the date and place the fish was caught.

Previous dogfish tagging experiments conducted by the Woods Hole Laboratory have shown that these small sharks make regular seasonal migrations from one area to another. Several dogfish tagged on Jeffreys Ledge in 1956 were recaptured over a period of years from one area off Portland, Maine, while one was recaptured on Georges Bank this past spring, five years after it was tagged. A dogfish tagged in 1960 on Stellwagen Bank was recaptured this year in a fish trap in Buzzards Bay.



Oregon

ALBACORE TUNA STUDY LAUNCHED:

An exploratory cruise to study albacore tuna movements off the Oregon coast was launched on June 29, 1961, by Fish Commission of Oregon personnel. Twelve days were scheduled for collecting basic oceanographic data and studying migration and distribution of tuna.

The fishing vessel Minnie was chartered by the Commission for the cruise, which was to be conducted from 40 to 140 miles offshore. Surface temperatures, salinity, and clearness of the water was to be recorded. Charts showing temperatures at various depths, and observations by use of a light lowered into the water at night to attract fish, were also to be made. These records are important in plotting migration patterns and distribution of the albacore. All of the albacore caught will be tagged and released so that their migratory habits can be further investigated.

These studies are being made by the Commission in an attempt to correlate oceanographic data with the presence or absence of albacore off the Oregon coast. The information will be made available to the troll fishing fleet so the fishery can be carried out with a greater degree of efficiency.

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NEW POND FOR REARING SILVER SALMON UNDER NATURAL CONDITIONS:

Stocking the Wahkeena Salmon Rearing Pond with 100,000 silver salmon fingerlings marked the completion late in May 1961 of the Oregon Fish Commission's newest experimental salmon-rearing facility.

The new 20-acre fish-rearing lake borders the Columbia River Highway, near Multnomah Falls, Multnomah County. Construction was financed by Federal funds, made available to the Fish Commission through the provisions of the Columbia River Fisheries Development Program. This Federal aid plan is designed to alleviate some of the damaging effects to the Columbia River fisheries due to dam construction on the Columbia River and its tributaries.

The silver salmon fingerlings were hatched at the Fish Commission's Sandy Hatchery from eggs taken from adults trapped at Cedar Creek, a tributary of the Sandy River.

The young salmon will be on their own for the next several months, feeding on insects and other natural foods available in the pond. When they are a year old, they will be allowed to escape into the Columbia River to begin the downstream trip to the ocean where they will remain until approaching maturity lures the survivors back into the Columbia River on the spawning run to the home waters, the outlet of Wahkeena Pond.

Pond-rearing of salmon is relatively new in the Pacific Northwest. The technique is showing considerable promise in Oregon, with the most outstanding success to date being that of the Fish Commission's silver salmon rearing project at Millicoma Pond in Coos County where about 80 percent of the fingerlings placed in the pond reached the yearling state. These fish showed an excellent rate of growth and were in prime condition when released into the Coos River.

Outstanding features of natural pond rearing include low production cost, through the elimination of the necessity for artificial feeding, and the high quality of young fish produced.

* * * * *

SALMON PASSAGE PROBLEM ON MCKENZIE RIVER:

A taxi service for chinook salmon as of June 1961 is in operation on the South Fork of the McKenzie River under the supervision of Oregon Fish Commission personnel. Site of the unusual fish transport installation is the U. S. Army Corps of Engineers' Cougar Dam construction project.

A serious fish passage problem at Cougar arises from the fact that the velocity of the water passing through the diversion tunnel, into which the South Fork has been directed during dam construction, is so high that adult salmon are unable to swim against it on their upstream migration.

The temporary passage facility, operated under the Commission's direction, consists of a steel and cement diversion rack extending at an angle across the river and so placed that upriver migrant fish are guided into a 1,000-gallon steel holding tank placed in a pit at one end of the rack. When a sufficient number of salmon have entered the trap, the tank is lifted by crane onto a truck, which then hauls the fish to a point well above the construction site and releases them into the river to continue the one-way trip to fulfill their destiny on the spawning grounds. A pair of tanks, one of which is placed in trapping position while the other is being used to haul fish, assures that the trapping operation will be continuous.



Oysters

NEW DISEASE DISCOVERED IN VIRGINIA:

While searching for the destructive Delaware Bay oyster disease, a new disease has been discovered by Virginia scientists of the Virginia Institute of Marine Science. A marine biologist from the Institute's Wachapreague station followed the June 1961 epidemic and made daily collections from trays and beds on Virginia's Eastern Shore.

This new protozoan organism, the discovery of which was announced on June 6, 1961, has been called SSO (Seaside Organism) because it occurs entirely on the seaside of Eastern Shore. The disease has been called "curdle disease" because of its effect on oyster tissue.

SSO is a somewhat sneaky killer which attacks oysters during the oystermen's off-season in May and June. Heavy losses are suffered on beds of old oysters held beyond their usual harvesting period, but damage is minor to beds of young oysters. The period of losses from SSO is short--about six weeks--with peak losses occurring the first week in June.

SSO is evidently an adjusted oyster parasite which has been on the seaside of Eastern Shore a long time. As such, it presents no great problem to the oyster farmer and is harmless to the consumer.



Salmon

ATTACK PLANNED ON HATCHERY DISEASE:

At a conference early in 1961, representatives of state agencies of Washington, Oregon, and California, and the U. S. Bureau of Commercial Fisheries met with Bureau pathologists and hatchery biologists to consider research on "coagulated yolk disease" which has caused severe losses of salmon and trout at western hatcheries.

Although cause of the disease is not known, the group considered 20 possible causes, ranging from bacteria and viruses to parasitic infection, handling, inherited susceptibility, and quality of the water in which the fish are held.

A new coordinated study of the disease and possibilities for its prevention was agreed upon among the researchers. The plan calls for division of study into such categories as histopathology; heredity; effects of metals and of metabolic wastes; bacteria; temperature and water chemistry influences; and the effects of routine treatment of eggs and fry for fungus infections.

The group will meet again in the spring of 1962 to review results and plans for further exploration of the disease.



Sea Lions

POSSIBILITY OF DEVELOPMENT OF AN INDUSTRY:

Research to control the Steller sea lion, which too often wrecks havoc on fishing gear and catches during harvest time and which is accused of preying on valuable fishing stocks at other times, may result in a new industry, according to a report issued recently by the U. S. Bureau of Commercial Fisheries.

The report summarizes an experimental sea lion harvest conducted by a commercial fishing company under contract with the Bureau. Pertinent information from earlier biological studies is included in the report.

The experimental harvest yielded more than 200 tons of high-protein ground meat which was sold through established channels to fur farmers feeding mink. The report notes a big demand for high-protein, low-fat, meat by the fur farms and fish hatcheries of western and midwestern States. Possibilities for other uses exist but these are dependent upon a stable annual harvest. Sea lion meat is about 73 percent water, five percent fat, and more than 20 percent protein.

Numerous complaints have been made by fishermen and fishing companies for a number of years concerning the depredations of sea lions. There has been no incentive to control the sea lion by annual harvest because the hide is practically valueless for commercial use and because there was little or no apparent market for the meat commensurate with the cost of harvest.

The Bureau studies and those conducted by the Fisheries Research Institute of the University of Washington and the Alaska Department of Fish and Game indicate that there are enough sea lions in Alaskan water to support a commercial operation. There are an estimated 150,000 sea lions in the Alaska area. The Bureau says in its report, "providing that facilities for processing can be improved the potential for a commercial operation is high." The Bureau recommends that specialized equipment should be used to reduce the amount of labor required to process the 2,000-pound carcasses.

An additional hazard is the weather, the report says. During the breeding season, which is the best time to harvest, the sea lions occupy rookeries along the windswept

Alaska Peninsula. At times, inclement weather makes harvesting impossible.

During the experimental harvest the harem bulls made up most of the harvest. Their places were taken immediately by bachelor bulls. Harvest of male animals would likely not decrease the herd appreciably for a long while. If studies indicate that a sharp reduction in the herd is necessary, the harvest would have to include female sea lions.

Anyone interested in commercial harvest of sea lions should acquaint himself with both the Federal and Alaska State fishery regulations.



Shellfish

NEED FOR MORE RESEARCH STRESSED BY INTERIOR DEPARTMENT:

Proposals for a greatly expanded shellfish research program were placed before the Congress on May 22, 1961, by the U. S. Department of the Interior.

In a letter to the Chairman of the House Committee on Merchant Marine and Fisheries, Assistant Secretary Frank P. Briggs urged the passage of a bill (H. R. 2894) which would provide for the construction of a shellfish laboratory at Milford Conn. The report declared that present facilities are too small for the new phases of shellfish research which are now possible and necessary.

"Our development of techniques in recent years for artificially spawning and rearing oysters and clams has opened numerous possibilities for more productive research toward solving many important industry problems," the Assistant Secretary explained in his letter. "Such methods of artificially producing seed, selective breeding for desirable characteristics, and chemical control of predators now appear possible. Much of this research has been accomplished with small numbers of shellfish in the laboratory; however, it is important to note that seed production and selective breeding will require the growing of a large number of bivalves under controlled conditions for considerable periods of time. Our present facilities are inadequate to allow suitable development of the techniques that will be of material aid to the industry."

To carry out the work, the U. S. Bureau of Commercial Fisheries will need such special facilities and equipment as an extensive sea-water system consisting of storage and settling tanks, filtering and ultraviolet treatment equipment, a heating system, and non-toxic piping and pumps. Special constant-temperature rooms are needed for raising shellfish food and for controlled experiments.

The plans include pilot-plant studies of the commercial possibilities of shellfish hatchery procedures as well as training personnel from the industry and from State conservation agencies in the use of these methods.



Tuna

ALBACORE FISHING FORECAST OFF WEST COAST OF NORTH AMERICA, 1961:

For the past year, scientists at the U. S. Bureau of Commercial Fisheries Biological Laboratory, San Diego, Calif., have been analyzing historical oceanographic, meteorological, and fishing records in an effort to understand variations in availability of the albacore tuna off the west coast of North America. The ultimate objective of this analysis is the accurate prediction of the distribution and availability of albacore from year to year as a practical aid to the fishing industry. Various sources of data are being used in the analysis: historical meteorological data from the Extended Forecast Section, U. S. Weather Bureau, Washington, D. C.; current synoptic weather and sea temperature information from ships at sea via U. S. Weather Bureau teletype circuits; historical sea temperature data from the U. S. Bureau of Commercial Fisheries Biological Laboratory, Stanford; salinities and sea temperatures from California Cooperative Oceanic Fisheries Investigation reports; coastal water temperatures from Scripps Institution of Oceanography; and albacore catch and landings data from the California Department of Fish and Game.

Forecasts will necessarily be restricted until the analysis of the historical data is completed, detailed up-to-date albacore catch and effort data are available, and it is possible

to gather more oceanographic data at sea currently. On the basis of relationships so far uncovered, a limited prediction for the area south of the International Border (United States-Mexican) is possible for 1961. It is based on the following assumptions: (1) large-scale trends now established in the ocean climate will persist into the summer; (2) the albacore will respond to the ocean environment as it has in the past; and (3) fishing effort will be similar to that in the past. Any major changes that may occur which substantially alter these assumptions will accordingly affect forecast reliability.

The fishery will begin farther south than in the past three years and 10.0 million pounds of albacore will be taken from south of the International Border. The average catch from that region for 1945 to 1959 was 15.9 million pounds (table 1).

The data suggest that the fishery should reach as far south as Guadalupe Island, and even though the center of abundance will probably remain offshore, a limited to moderate coastal fishery may develop.

It is too early in the year to permit a prediction for regions north of the International Border. For previous years, relationships have been noted between temperature in June and early July and area of catch off Oregon and Washington. Sea surface temperature from the northern region will be examined continuously and industry will be kept advised of the interpretation of the information if it is thought useful in suggesting whether or not there will be a substantial fishery off Oregon later in the year.

* * * * *

FIRST 1961 SEASON CATCHES OF ALBACORE MADE BY BUREAU RESEARCH VESSEL:

On June 6, 1961, biologists aboard the U. S. Bureau of Commercial Fisheries research vessel Black Douglas reported catching 3 albacore tuna--the first of the season. The albacore were taken about 350 miles west of San Pedro (34° 56' north latitude, 124° 27' west longitude) in waters with a temperature of 59.9° F. The research vessel was engaged in a 3-week albacore-oceanographic cruise which began on June 1, 1961.



United States Fishing Fleet^{1/} Additions

APRIL 1961:

A total of 34 vessels of 5 net tons and over were issued first documents as fishing craft, during April 1961, a gain of 10 vessels over April 1960. The Pacific area led with 14 vessels, while the Chesapeake

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft By Tonnage, April 1961

Net Tons		Number
5 to 9	.....	14
10 to 19	.....	13
20 to 29	.....	1
30 to 39	.....	2
40 to 49	.....	2
50 to 99	.....	1
190 to 199	.....	1
Total	.....	34

^{1/}Includes both commercial and sport fishing craft.

Table 1 - California Landings of Albacore Tuna, 1945-1959

Year	Landings from South of International Border	Landings from California Waters
	..... (Million Pounds).	
1959	0.00	32.52
1958	0.72	25.39
1957	20.91	22.61
1956	21.06	15.87
1955	19.69	9.31
1954	11.82	14.29
1953	20.49	13.30
1952	26.70	23.10
1951	17.62	13.28
1950	23.60	38.14
1949	23.58	20.40
1948	25.93	10.50
1947	5.76	7.40
1946	8.96	9.10
1945	12.26	8.78
Annual Average	15.94	17.60

followed with 9, and the Gulf with 7. The New England, South Atlantic, and Great Lakes areas contributed the remaining 4 vessels.

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft By Areas, April 1961

Area	April		Jan.-Apr.		Total 1960
	1961	1960	1961	1960	
	(Number)				
New England	2	2	11	5	34
Middle Atlantic	-	-	1	5	13
Chesapeake	9	4	21	13	76
South Atlantic	1	1	12	15	45
Gulf	7	3	31	16	85
Pacific	14	14	37	33	138
Great Lakes	1	-	4	3	17
Puerto Rico	-	-	2	-	-
Total	34	24	119	90	408

Note: Vessels assigned to the various areas on the basis of their home ports.

A total of 119 vessels were issued first documents as fishing craft during the first 4 months of 1961--29 more than during the same period of 1960.



U.S. Fish Meal and Solubles Production and Imports, January-April 1961

During the first four months of 1961, the United States production of fish meal amounted to 13,800 tons, compared with 16,100 tons for the same period in 1960. In

Item	January-April		Total 1960
	1961	1960	
	(Tons)		
Fish Meal:			
Domestic production:			
Menhaden	4,165	2,119	218,423
Tuna and mackerel	6,490	10,655	26,325
Herring, Alaska	-	-	6,071
Other	3,080	3,344	38,897
Total domestic production	13,735	16,118	289,716
Imports:			
Canada	9,879	14,786	30,982
Peru	45,324	22,388	68,156
Chile	3,582	5,245	21,183
Angola	1,433	-	888
Union of South Africa	3,036	3,195	7,073
Other countries	139	87	3,279
Total imports	63,393	45,701	131,561
Available fish meal supply	77,128	61,819	421,277
Fish Solubles (wet weight):			
Domestic production^{1/}	7,820	8,841	98,929
Imports:			
Canada	465	273	869
Denmark	-	1,858	1,858
Other countries	264	179	447
Total imports	729	2,310	3,174
Available fish solubles supply	8,549	11,151	102,103

^{1/}Based on reports from firms which accounted for 93 percent of the 1960 total production.

^{2/}Includes production of homogenized-condensed fish.

1961 there was a drop of a little more than 4,000 tons in tuna and mackerel meal, but menhaden meal was up 2,000 tons. Production of other types of fish meal in 1961 was below the comparable period in 1960.

Imports of fish meal for the first 4 months in 1961 totaled 63,400 tons--17,700 tons more than in the same period in 1960. Imports from Peru (45,300 tons) during January-April 1961 comprised about 70 percent of the total, and were more than double the imports from that country in the same period of 1960. Canada was the next largest supplier with 9,900 tons, but still imports were down 5,000 tons as compared with the first 4 months of 1960. The British Columbia 1960/61 herring fishing season started in November 1960 following a tie-up of the fishing vessels for about a year because of an ex-vessel price disagreement. The season closed early in March.

The remaining 8,000 tons of imported fish meal during the first 4 months were from Chile, Union of South Africa, and Angola. Only very small quantities were received from other countries. Market conditions for domestically-produced and imported fish meal improved considerably since the end of 1960, and prices advanced steadily from the beginning of the year through April.



Loaded menhaden purse seiners awaiting turn to unload catch at industrial products plant in Empire, La.

During the first 4 months of 1961, the domestic production of fish solubles amounted to 7,800 tons--a drop of 1,000 tons as compared with the same period in 1960. Imports of fish solubles January-April 1961 totaled only 700 tons as com-

pared with 2,300 tons for the comparable period in 1960. Very low prices were responsible for the drop in domestic production and imports of fish solubles.

Both in the United States and in foreign countries the solubles are being added to the meal to produce "whole meal." Markets for fish solubles also showed some improvement in the early months of 1961 although not to the same extent as for fish meal.



U.S. Foreign Trade

EDIBLE FISHERY PRODUCTS, APRIL 1961:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during April 1961 decreased by 16.3 percent in quantity and 24.5 percent in value as compared with March 1961. The decrease was due primarily to lower imports of fillets other than groundfish fillets (down 1.2 million pounds), frozen albacore (down 2.8 million pounds), canned tuna in brine (down 1.8 million pounds), lobster and spiny lobster (down 1.6 million pounds), and frozen shrimp (down 1.1 million pounds). The decrease was partly offset by an 0.4-million-pound increase in the imports of frozen tuna other than albacore.

Compared with April 1960, imports in April this year were lower by 7.8 percent in quantity and 7.5 percent in value due to lower imports of canned tuna in brine (down 1.7 million pounds), lobster and spiny lobster (down 1.4 million pounds), and canned salmon (down 1.0 million pounds). Compensating, in part, for the decrease was an increase of about 1.5 million pounds in the imports of frozen shrimp.

Item	Quantity		Value		
	April 1961	Year 1960	April 1961	1960	Year 1960
	. (Millions of Lbs.) .		. (Millions of \$) .		
Imports:					
Fish & shellfish:					
Fresh, frozen & processed/ . . .	70.1	76.1	1,011.2	20.9	22.6
Processed/ . . .					304.8
Exports:					
Fish & shellfish:					
Processed only 1/ (excluding fresh & frozen) . . .	1.7	3.5	48.7	1.1	1.3
1/ Includes pastes, sauces, clam chowder and juice, and other specialties.					19.2

United States exports of processed fish and shellfish in April 1961 were higher by 2.1 percent in quantity and 10.0 percent in value as compared with March 1961. Compared with the same month in 1960, the exports this April were lower by 51.3 percent in quantity and 15.4 percent in value. The lower quantity of exports in April this year as compared with the same month in 1960 were due mainly to sharply lower exports of California canned sardines and squid.

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IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, JANUARY-MARCH 1961:

Imports: The leading suppliers of groundfish and ocean perch fillets and blocks--Canada, Iceland, Norway, and Denmark--sent increased quantities of these products to the United States the first quarter of 1960. Principal increases were in imports of fish blocks from Canada and Iceland. The increase in fresh and frozen tuna imports was primarily the result of greater shipments from west Africa and from Trinidad into Puerto Rico.

Table 1 - U. S. Imports of Selected Fishery Products, January-March 1960 and 1961

Commodity	Jan.-Mar. 1961	Jan.-Mar. 1960
	. . . . (1,000 Lbs.)	
<u>Groundfish and ocean perch:</u>		
Fillets	20, 891	19, 015
Blocks or slabs	27, 514	13, 179
Total	48, 405	32, 194
Flounder fillets	3, 008	2, 733
Swordfish	6, 644	4, 852
<u>Tuna, fresh or frozen:</u>		
Albacore	25, 883	23, 861
Other	28, 985	25, 736
Total	54, 868	49, 597
<u>Tuna, canned in brine:</u>		
Albacore	6, 130	2, 284
Other	5, 779	6, 649
Total	11, 909	8, 933
<u>Tuna, canned in oil</u>	133	334
Bonito, canned	3, 164	2, 951
Shrimp	31, 617	24, 798
Crab meat, canned	996	929
Scallops, fresh or frozen	1, 026	887
Fish meal	88, 666	70, 608
Fish solubles	1, 018	4, 352
<u>Lobsters:</u>		
Northern	3, 031	2, 857
Spiny	11, 362	10, 319
Oysters, mostly canned	2, 429	1, 477
<u>Salmon:</u>		
Fresh or frozen	1, 718	1, 427
Canned	1, 332	10, 083
<u>Sardines:</u>		
Canned in oil	7, 375	5, 483
Canned not in oil	3, 830	3, 079

The rise in imports of tuna canned in brine was mainly caused by an increase in

Japan's albacore shipments. Country-by-country data on shrimp imports show that, all leading suppliers, except Japan, increased their shipments to the United States. Mexico's shipments increased by 22 percent; those from El Salvador and Iran nearly doubled. Imports of fresh or frozen lobster and spiny lobster from the Union of South Africa and Canada increased while imports from Australia declined. The drop in canned salmon imports was largely accounted for by the 91-percent decrease in imports from Japan.

Norway supplied more than half of the canned sardines in oil, and Portugal sent nearly 30 percent. Japan increased shipments of canned crab meat by 8 percent and continued to be practically the only supplier of that product. Likewise, Japan again sent over 95 percent of the total canned oyster imports. A decline in receipts of fresh or frozen sea scallops from Japan was more than offset by an increase in receipts from Canada. Fish meal imports from Peru increased 76 percent as that country supplied 69 percent of these imports. Shipments from the Union of South Africa also were up, but those from Canada and Chile were down considerably. Denmark, supplying 85 percent of the imports of fish solubles one year ago, did not send any to the United States in the first quarter of 1961.

Exports: In the first quarter of 1961, the two leading foreign markets of the United States for canned sardines not in oil--the Philippines and Ecuador--took only one-fourth the quantity taken during January-March 1960. No exports went to Cuba. The United Kingdom took 42 percent of the total canned salmon exports, and Canada and Australia increased their purchases substantially. Exports of fresh or frozen salmon to Canada

were down about two-thirds. Canada took 62 percent of the canned and fresh or frozen shrimp. A sharp reduction in canned squid exports is the result of an unfavorable change in Philippine exchange classification putting squid in the non-essential consumer category. Exports of fish oils increased by sizable amounts, i.e., Canada, over 100 times; Norway, almost 3 times; and Belgium, from nothing to 1,322,000 pounds. This trade to Sweden declined from 6,642,000 pounds to nothing, and West Germany took less than half its January-March 1960 quantity.

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IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1961 at the 12½-percent rate of duty is 57,114,714 pounds. Any imports in excess of the quota will be dutiable at 25 percent ad valorem.

Imports from January 1-June 3, 1961, amounted to 20,035,659 pounds, according to data compiled by the Bureau of Customs. From January 1-June 4, 1960, a total of 18,262,874 pounds had been imported.

* * * * *

FISHING TACKLE IMPORTS, 1960:

Imports of fishing tackle by the United States, valued at \$10,197,461 in 1960 declined 4.7 percent from the 1959 all-time peak of \$10,696,808.

A combination of causes probably brought about the 1960 decrease in imports. Among these was the exceptionally high influx of imports in 1959 which increased 56.0 percent over 1958 imports. This was the largest year-to-year percentage increase since 1950 and contrasted sharply with the annual average rate of increase of 20.7 percent in the growth of imports from \$1,552,992 in 1950 to the 1960 figure.

Despite the over-all decline, four classes of tackle imports increased in value in 1960. These were leaders and casts, fishing rods, baskets and creels, and tackle and parts, not specially provided for, except lines, nets, and seines.

The number of reels imported fell 1.3 percent to 3,377,457 in 1960 from the 1959

Table 2 - U. S. Exports of Selected Fishery Products,
January-March 1960 and 1961

Commodity	Jan.-Mar. 1961	Jan.-Mar. 1960
	. . . . . (1,000 Lbs.)	
Fish oils	36,549	29,053
Oysters, shucked	249	218
Salmon:		
Fresh or frozen	197	389
Canned	2,649	1,350
Mackerel, canned	976	474
Sardines:		
Canned not in oil	3,085	6,912
Canned in oil	65	57
Shrimp:		
Frozen	638	636
Canned	561	604
Squid, canned	413	4,577
Misc. canned fish, mostly Calif. anchovies	156	238

figure of 3,420,411 and the value declined 4.3 percent to \$5,976,152 from \$6,246,153. In both years reels accounted for 58 percent of all tackle imports.

Purchases from Japan declined in quantity from 2,681,891 in 1959 to 2,657,700 in 1960, but the value increased from \$2,194,965 to \$2,326,316. As a result the unweighted average price or value of Japanese reels in 1960 increased to 88 cents each from 83 cents in the prior year. Quantitywise, reel imports from Japan held steady at 78 percent of the total while dollarwise her share increased from 35 to 39 percent.

Most noteworthy in the reel import data is the loss in sales by Sweden. Quantity dropped from 175,048 to 141,280 and value fell off from \$1,093,537 to \$885,218. Percentage-wise this was a drop of about 20 percent in both unit and dollar volume.

Fishhooks, other than snelled, the second largest of current classes of tackle imports, made the largest drop percentage-wise of all classes in 1960. The 19.9 percent fall from \$1,310,710 in 1959 to \$1,050,598 in 1960 was sustained almost entirely by shipments from Norway and Japan. Imports from Norway, traditionally the largest supplier to the U. S. market, fell 18.4 percent from \$920,913 in 1959 to \$751,896. Percentage-wise, imports from Japan for the same period fell off 40 percent and amounted to \$246,875 in 1959 and \$149,561 in 1960.

Contrariwise, hook imports from the United Kingdom, the third largest supplier by volume, increased from \$116,041 to \$129,325.

Prior to 1960, the second largest class of imports was described as fishing tackle and parts n.s.p.f. (not specially provided for) except fishing lines, nets, and seines, including artificial baits, fly books, fly boxes, artificial flies, and snelled hooks. This class in 1959 accounted for imports valued at \$1,996,879. In 1960 this major class was divided into four classes for each of which imports were as follows: Artificial baits not including flies, \$742,773; artificial flies, \$148,051; snelled hooks, \$230,599; and other fishing tackle, including fly books and fly boxes, \$883,133. Had the class remained intact, the 1960 value would have been \$2,004,556 for an increase of about 4 percent.

Trade with the United States in the foregoing four classes is dominated by Japanese products. In 1960 these accounted for 76.5 percent or \$1,534,261 of the total; 57.4 percent of artificial baits, amounting to \$426,513; 95.1 percent of artificial flies, \$140,910; 84.2 percent of other tackle, \$743,720; and 96.8 percent of snelled hooks, \$223,121. France and Sweden also participated in this trade. France supplied 19.4 percent or \$144,132, and Sweden, 17.5 percent or \$130,083 worth.

Imports of Japanese fishing rods averaged 71.5 cents each in 1959 and 81.8 cents each in 1960. Trade reports indicate this increase may be due to a higher ratio in the total of fitted fiberglass rods than heretofore. Virtually all the imports were supplied by Japan.

Rod imports from all countries were valued at \$486,939 in 1960 and showed a 10.4-percent increase over the 1959 figure of \$440,878. Unit volume, however, declined from 609,809 rods to 594,816.

Rod parts are supplied to the U. S. market principally by Japan, Germany and Portugal. In every instance the 1960 figures are lower than those for 1959. Moreover, excepting Portugal, the percentage decreases for each were lower than those for the entire class. Total imports fell off 13.6 percent from \$278,512 to \$240,504. Imports from Japan fell 19.3 percent from \$46,904 to \$33,168; Germany, 22 percent, from \$77,550 to \$60,521. Portugal's sales dipped only 6.8 percent from \$145,675 to \$135,845. Six other countries participated in a small way in this trade in either 1959 or 1960 but only Spain had trade in both years: 1959, \$4,780; 1960, \$2,675.

Leaders and casts increased 16.6 percent in 1960 in dollar volume and decreased 31.8 in unit volume from 1959 levels. Total unit volume decreased from 431,268 dozen to 291,614. Dollar volume rose from \$68,454 to \$79,857. Japan supplied all but a small part.

Baskets and creels, supplied principally by Japan and Hong Kong, increased 8 percent in unit and 18 percent in dollar volume. Japanese shipments to the United States decreased from 7,474 units, valued at \$63,588, in 1959 to 71,544 units, valued at \$67,592, in 1960. Those from Hong Kong in the 1959-

60 period increased from 48,775 units to 61,976 and gained in value from \$26,551 to \$38,358.

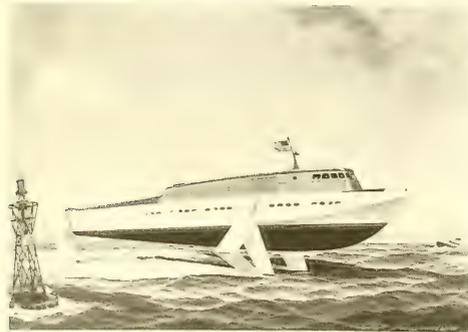
On the basis of dollar volume of shipments, the nations supplying the major U. S. imports of tackle remained in the same relative positions in 1960 as in 1959, except that the United Kingdom moved up from eighth to seventh place while Portugal dropped from seventh to eighth. (Foreign Commerce Weekly, May 15, 1961.



Vessels

FIRST OCEAN-GOING HYDROFOIL CRAFT NEARING COMPLETION:

In the next year or two, Americans living along major rivers, on the Great Lakes, or the bays and harbors of the United States may see a 60- to 100-foot ship skimming along at some 60 to 70 miles an hour with its hull completely out of the water. Such craft exist today and more are on the way. They are hydrofoil craft which, put simply, skim the water on skis. Raising the entire hull out of the water eliminates much of the resistance to forward motion, thereby achieving the relatively high speeds.



Artist's conception of an 80-ton, 60 to 80 knot ocean-going hydrofoil craft. Forward motion of craft will lift the ship out of the water where it will run supported by the hydro-dynamic lift of its foils, thus avoiding the drag of the friction created by contact of the hull of the ship with the water.

One such craft, a massive 104-foot, 80-ton hydrofoil to be christened the Denison, is being built for the U. S. Department of Commerce's Maritime Administration in a research and development program that may

have wide implications for the future, both in domestic waters and offshore travel.

The first hydrofoil craft in the world to be designed specifically as an oceangoing vessel, the H.S. (Hydrofoil Ship) Denison is nearing completion at Bethpage, Long Island, N. Y., under a Maritime Administration contract with Dynamic Developments, Inc., an affiliate of Grumman Aircraft Engineering Corp., and should be ready to take to the water by late summer or early fall, the U. S. Department of Commerce announced on July 4, 1961.

The contract to build the craft was negotiated after design studies had indicated its feasibility. The government is paying about \$1.5 million of the estimated \$5 million value of the ship, the remainder of the production costs being borne by interested firms. The ship will utilize a 19,000 shaft horsepower gas turbine power plant and be capable of speeds up to some 60 knots or about 70 miles per hour.

Constructed of aluminum alloy, the 104-foot Denison will have a 21½-foot beam, 6½-foot draft (17½ feet with the foils down), 80 tons displacement, and be capable of carrying a payload of 37 tons of cargo and fuel combined.

With the foils retracted, the ship can maneuver in some 6 feet of water at a speed of 8 knots under auxiliary power.

The 37 tons of weight which the ship is capable of carrying must be distributed between cargo in the form of individuals or goods, and the necessary fuel and operating personnel. Obviously, if the range is short, less fuel will be required for a trip with an attendant increase in commercial cargo carrying capacity. It is estimated that a trip of 850 miles would permit the carriage of 10 tons of paid cargo or the equivalent in passengers.

Designed to cruise at 60 knots, the "take-off" speed, or speed required to lift the hull out of the water, when fully loaded will be 30 knots. While foil-borne, the craft's turning radius will be approximately 1,000 feet. The design hull clearance is 5 feet above the surface of the water, and the craft should be capable of operating in 5- to 7-foot waves without undue slamming.

Test and technical evaluation of the H. S. Denison should be completed in early 1962, at which time plans call for placing the ship in commercial service.

Already 28 firms have applied for consideration as operators of the ship. Applicants proposed a wide variety of projected services, ranging from commuter service in metropolitan areas, service from the United States mainland to Bermuda, and also to Nassau, an inter-island service for the State of Hawaii, other contiguous and noncontiguous domestic services, and U. S.-Foreign in the Caribbean and Gulf of Mexico. Other areas of suggested commercial operation included deep-seafishing, offshore drilling operations, and use on the Atlantic Missile Range.

In addition to interest of private companies in commercially operating the Denison, two companies have been inspired by the Maritime Administration's research and development into hydrofoil craft and their possible use to begin planning the construction and operation of their own ships.

It is known that the Russians have built at least two experimental commercial hydrofoil motor ships suitable for operation on their many rivers, lakes, and canals. One vessel, the Raketa, is of 24 tons, has a seating capacity of 66 persons, and travels at a speed of 40 miles per hour. The other, the Meteor, is of 53 tons, has a capacity of 150 passengers and a speed of 45 miles per hour. The Russians have announced plans to build 200 Raketa-type and 85 Meteor-type ships. Reportedly, 60 of the smaller craft are already in operation.

To date, however, the nearly completed H. S. Denison is the first such craft in the world designed for ocean-going operation. It is also believed to be the largest built to date, and may well be the forerunner to a new era in transportation.



Virginia

SCIENTIST EXPRESSES HOPE FOR OYSTER INDUSTRY:

A ray of hope for improvement of the Virginia oyster industry within the near future was expressed by a scientist of the Virginia Institute of Marine Science. Virginia oysters

are currently in the throes of an epidemic caused by the infectuous organism called MSX.

"Evidence is building that oysters exposed to MSX from spat size have much lower mortalities later as adults than oysters first exposed to the disease as large oysters," reports the scientist. "This acquired resistance is a very important and conspicuous feature of our resistance to so-called children's diseases such as measles, chickenpox, and polio. Perhaps in a year or two we can begin using seed from such places as Brown Shoal and Wreck Shoal (where the disease has been active) with much better success than we are having now with James River seed. This means that the future of the oyster industry may depend more upon using seed from infested areas than from disease-free areas."

The Gloucester Point laboratory of the Institute has been conducting a full program of research and field study of the oyster disease since its introduction into Chesapeake waters in 1959.

There is no cure-all in sight for the complex problem presented by the oyster disease. The use of chemicals to eradicate the organism is questionable since the tremendous water mass of the bay and rivers would make this prohibitive.

The Institute staff is cooperating with other scientific groups (including Rutgers University, Maryland Department of Research and Education, U. S. Fish and Wildlife Service at Oxford, Md., and the University of Delaware) in discovering the life history of the MSX organism. This information will be useful in developing oysters resistant to the disease.

Turning to the present extent of damage by MSX, the scientist pointed out: "In the past year the lower half of the James River seed area has become infested, and the Rappahannock beds below Towles Point (Urbanna) have shown a rapid increase in intensity of disease.

"Infected material from Hampton Roads has apparently followed the channel up the James to form a 'tongue' of infested area in the seed beds. Wreck Shoal is badly infested (about one-third of larger oysters, but fewer spat and yearlings) although few

deaths have occurred yet. Infections are much less severe inshore of the channel on either side of the river. Brown Shoal has already had a big death rate, and over half the survivors are infected. Heavy losses are expected in infested areas throughout the rest of the summer.

"MSX is still rare above Hoghouse (Ur-banna) in the Rappahannock River, although it can be expected to go higher before the year is out. At present no mortality in upper Rappahannock is expected before August, and whether a late summer loss occurs will depend upon how effectively the lower Rappahannock River oysters provide infective material to the upper river. Upper Rappahannock River oysters are essentially free of disease now."

It has been determined that MSX is an organism that affects oysters only, and is harmless to humans.



Whaling

CALIFORNIA WEST COAST LAND STATIONS LICENSED FOR 1961 SEASON:

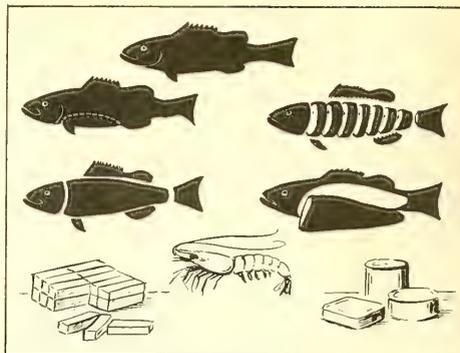
For the United States 1961 whaling season, 2 California land stations, 2 secondary processing stations, and 5 whale catchers had been issued licenses as of the end of April. In addition, there was one license pending for a land station with one catcher vessel in Oregon.



Wholesale Prices, June 1961

Due to changes made periodically in the weightings assigned to the product groups used in the wholesale price index, some slight revisions have been made in the wholesale price index for edible fishery products. The over-all price index for edible fishery products (fresh, frozen, and canned) for June 1961 was 129.5 percent of the 1947-49 average--0.7 percent higher than in May and 2.4 percent higher than in June 1960.

The fresh and frozen drawn, dressed, and whole finfish subgroup index in June 1961 was about unchanged from the preceding month, but was higher by 1.5 percent from June last year. From May to June, price increases of 11.2 percent for fresh large drawn haddock at Boston and 6.2 percent for fresh drawn halibut at New York City were just about offset by a slight price decline for fresh king salmon plus a more substantial decline for Lake Superior drawn whitefish (down 7.6 percent) and Lake Huron or Lake Michigan yellow pike (down 21.0 percent). This June as compared with June a year ago, prices were up for fresh dressed halibut by 10.4 percent, fresh dressed salmon by 3.9 percent, and Lake Superior whitefish by 7.0 percent. Price declines of 15.0 percent for Great



Lakes yellow pike at New York City and 1.6 percent for fresh large haddock at Boston partially offset the increases.

From May to June this year the fresh processed fish and shellfish subgroup rose 2.3 percent. Higher prices for fresh shrimp (up 1.2 percent) and fresh oysters (up 3.5 percent) were responsible for the increase. As compared with June 1960, the prices in the subgroup this June were up slightly (0.4 percent). A price increase of 9.1 percent for fresh oysters more than compensated for price declines of 21.6 percent for fresh small haddock fillets and 5.0 percent for fresh shrimp at New York City.

Wholesale prices this June for frozen processed fish and shellfish were up almost 1.0 percent from a month earlier due to increases of less than one cent a pound for frozen flounder and haddock fillets and frozen shrimp at Chicago. During the same period, the wholesale price for frozen ocean perch fillets dropped 1.7 percent. Compared with June last year, the subgroup price index this June was down 4.4 percent due to a 14.0-percent lower frozen shrimp price at Chicago. Price increases of about 30.0 percent for frozen haddock fillets and 3.6 percent for ocean perch fillets failed to offset the lower price for shrimp.

The canned fishery products subgroup index in June this year remained unchanged from the preceding two months. However, the subgroup index was up about 6.9 percent from last June due to substantially higher prices for canned salmon (up 14.3 percent) and canned California sardines (up 11.8 percent). As compared with June 1960, wholesale prices this June were slightly lower for canned tuna and unchanged for Maine sardines. Packing seasons for Maine sardines and Pacific salmon were under way in June. The early Maine sardine pack was very small, but that for Pacific salmon was encouraging.

The Bureau of Labor Statistics has made a routine revision of the weighting structure of the Wholesale Price Index, including the All Fish and Shellfish Group Index. The weights of the fish group and subgroups have been adjusted in accordance with the value of fishery products for the year 1958 as published by the U. S. Bureau of Commercial Fisheries. This revision is in accord with established policy that the weighting structure be revised periodically.

The revised weights for 1958 were first introduced in the index for January 1961. "Unofficial" indexes, however, were published for the months of January through May 1961 until the computations based on the new weights were completed. Beginning with the June 1961 index, the computations of the indexes were based on the new weights.

The weight adjustment does not result in a break in the series. The adjustments in indexes based on the new weights for all the months this year prior to June are only slight in all cases as far as fishery products are concerned, and only the groups and subgroups are affected. The individual commodity indexes (for example, the index for fresh shrimp at

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, June 1961 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/		Indexes (1947-49=100)					
			(\$)		June	May	June	May	Apr.	June
			1961	1961	1961	1961	1961	1960		
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					4/129.5	4/128.6	4/126.2	126.5		
Fresh & Frozen Fishery Products:					2/	3/140.6	3/136.1	142.0		
Drawn, Dressed, or Whole Finfish:					4/151.9	4/151.8	3/139.0	149.7		
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.09	.08	86.9	78.1	55.8	88.3		
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.37	.35	114.5	107.8	103.1	103.7		
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.88	.88	196.6	197.7	191.0	189.3		
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.61	.66	151.2	163.6	114.0	141.3		
Yellow pike, L. Michigan & Huron, rnd., fresh .	New York	lb.	.57	.72	132.5	167.7	119.6	155.9		
Processed, Fresh (Fish & Shellfish):					4/145.4	4/142.1	3/143.4	144.8		
Fillets, haddock, siml., skins on, 20-lb. tins . .	Boston	lb.	.29	.29	98.7	98.7	90.2	125.9		
Shrimp, lge. (26-30 count), headless, fresh. . .	New York	lb.	.78	.77	122.4	120.9	124.0	128.8		
Oysters, shucked, standards	Norfolk	gal.	7.50	7.25	135.6	179.4	179.4	170.1		
Processed, Frozen (Fish & Shellfish):					4/113.2	4/112.2	3/113.7	118.4		
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	102.1	100.8	100.8	102.1		
Haddock, siml., skins on, 1-lb. pkg.	Boston	lb.	.33	.32	102.0	100.5	100.5	78.5		
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	114.8	116.8	116.8	110.8		
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.69	.69	106.5	105.7	107.2	123.8		
Canned Fishery Products:					4/112.0	4/112.0	3/112.2	104.8		
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . .	Seattle	cs.	23.00	23.00	146.1	146.1	146.1	127.8		
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.),	Los Angeles	cs.	11.00	11.00	79.3	79.3	79.3	80.0		
48 cans/cs.										
Sardines, Calif., tom, pack, No. 1 oval (15 oz.),	Los Angeles	cs.	4.50	4.50	105.0	105.0	105.0	93.9		
48 cans/cs.										
Sardines, Maine, keyless oil, 1/4 drawn	New York	cs.	8.75	8.75	93.1	93.1	93.1	93.1		
(3-3/4 oz.), 100 cans/cs.										

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/Will not be available until computations are completed.
 3/Old series indexes. Revision based on new weighing structure not available until later.
 4/New series index based on new weights.

New York City) are not affected. It means that the new indexes based on the new weights can be regarded as continuous with and comparable to series for earlier years.

The present index reference base, 1947-49=100, will be continued throughout 1961. The new reference base (1957-59=100), which has been established by the Office of Statistical Standards of the Bureau of the Budget for use by

all Government statistical agencies, will probably be introduced in January 1962.

One commodity has been dropped in the fishery products index as of January 1961--"whitefish, Lake Erie pound or gill net, round, fresh, New York City." The weight assigned to this specification has been assigned to "whitefish, Lake Superior, drawn, fresh, Chicago."





International

INTERNATIONAL PACIFIC HALIBUT COMMISSION

SURVEY OF HALIBUT AND BOTTOMFISH OFF ALASKA:

The Governments of Canada and the United States are undertaking a comprehensive survey of the distribution and abundance of halibut and other bottom-living fish in the waters on the continental shelf off Alaska. In this region of the Pacific coast, Canada and the United States have jointly participated in an important fishery for halibut for nearly half a century.

The two Governments requested the International Pacific Halibut Commission to plan and conduct the survey in conjunction with its regular investigational program. This Commission has managed the Pacific halibut fishery on behalf of Canada and the United States for the past 35 years and has rebuilt the once-depleted Pacific Coast halibut stocks that produced only 44 million pounds annually prior to regulation but now yield in excess of 70 million pounds each year. Such improvement is unparalleled in any other marine fishery in the world. Most fisheries for other bottomfish are uncontrolled and are in the declining stage.

The program calls for continuous trawling operations during the next 12 months, rigorous winter weather notwithstanding. It will cover the region from the northeastern end of Kodiak Island as far west as Unimak Pass, a distance of 550 miles along the coast involving about 40,000 square miles of area.

From 15 United States and Canadian vessels that tendered bids, 3 have been chartered for the year's operations, the Arthur H., the Morning Star, and the St. Michael.

At the outset each vessel will work a section of the survey area but during the rigorous and lonely months of winter the vessels, though sturdy, will work together.

Each vessel will be manned by its captain, three experienced trawl fishermen, and three members of the Commission's staff who have been secured from the University of British Columbia for the purpose. At the outset of the operation and from time to time during the year permanent members of the Commission's staff will accompany each vessel in a supervisory capacity.

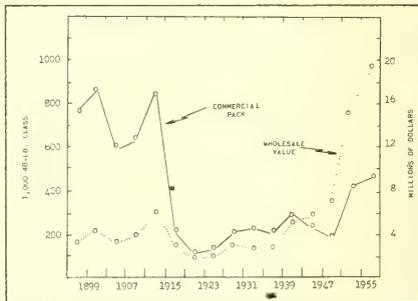
Agencies in both countries, the Fisheries Research Board of Canada and the U. S. Bureau of Commercial Fisheries, have provided all possible aid to the project and will integrate any offshore exploratory fishing for bottomfish with the program of the Commission.

In scope and intensity the program eclipses anything that has ever been done before by Canada and the United States in this field. The program will contribute information of inestimable value to Canada and the United States in their joint management of the Pacific halibut fishery.

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

RESEARCH ON FRAZER RIVER SALMON RUNS PLANNED TO MEET CHANGING CONDITIONS:

Production of Fraser River sockeye or red salmon for the last four-year period has increased 450 percent over similar cycle periods following the Hell's Gate slide. Wholesale value of the catch has increased 10 times, partially due to higher selling prices for the canned product.



Fraser River sockeye salmon packs averaged for each four-year cycle from 1896 to 1959 inclusive. The Johnstone Strait catch is included only for 1958, when unusually large numbers of Fraser River sockeye were taken in that fishery. Average packs and values calculated from data in Pacific Fisherman (1914-1960).

The Commission is confident that complete rehabilitation of Fraser sockeye as well as pink salmon can be accomplished in a few years. However, it is concerned about how to further develop and protect this great job-producing resource to fulfill the needs of a rapidly increasing population.

To meet the challenge of industrialization and the required protection of the fisheries resource, the Commission has substantially increased its activities during the past year.

International (Contd.):

Construction of a unique laboratory will commence shortly in which the water supply can be completely controlled with respect to temperature and chemical content. Proposed research at the laboratory will include studies into the weaknesses of salmon hatcheries, adverse effects of environmental changes due to potential flood control and hydroelectric projects, and the limits of adjustability of salmon populations in transplantation from one watershed to another.

Some of these studies should provide methods for artificially developing the latent potential of the salmon resource. There is also a drastic need for information to protect the resource where possible from the serious effects of industrialization as experienced elsewhere.

The Salmon Commission is working on the problem of development and protection of the salmon resource with increasing vigor to avoid the trial-and-error methods in conservation that have proven to be expensive and often unsuccessful.

Man-made spawning streams are also being studied on a full-scale experimental basis. An artificial spawning channel 3,500 feet long has just been completed for pink salmon at Seton Creek near Lillooet, B. C. The channel is expected to provide spawning area for 10,000 pink salmon of this year's run.

To further meet the problem of poor salmon runs due to unstable spawning grounds, a full-size experimental hatchery has been completed and is now in operation on Upper Pitt River. New methods based on previous

Commission studies are being used to improve the operating efficiency of the Station. Other improvements in the operation of the Station will be added when experimentally justified.

New field projects will be undertaken as rapidly as experiments at the new laboratory justify the expense so that the Fraser salmon resource will continue to provide increased wealth to the region. Close liaison will be maintained with other fisheries research agencies to permit the testing and application of any new information as rapidly as possible.

JAPAN-SOVIET NORTHWEST FISHERIES COMMISSION

JAPAN-U. S. S. R. SALMON PACT SIGNED:

Japan and the Soviet Union signed an agreement on May 21, 1961, which established Japan's salmon catch quota for this year in the North Pacific treaty area under the Northwest Pacific Fisheries Commission at 65,000 metric tons--2,500 tons less than last year. The Japan-Soviet Commission's fifth annual meeting began in Tokyo on February 6, and was marked by compromises on the part of both countries as to the size of the quota. At the outset, the Soviet Union had proposed a 50,000-ton catch for Japan, while the Japanese delegation negotiated for 80,000 tons. The Soviet Union's 1961 salmon catch target is 80,000 tons, 10,000 tons above the target for 1960.

The Commission also reached agreement on the following restrictions for Japanese fishing in the North Pacific treaty area: (1) establishment of a new closed area 151.5° to 155° E. and south of 48° N.; (2) establishment of a restricted area north of 56° N.;

Japan and U.S.S.R., North Pacific Salmon and Trout Catches, 1960

Species	U.S.S.R.	Japan				Total	Asian Total
		Gill-net Catches		Long line	Coastwise ^{1/}		
		Mothership	Land-Based				
..... (Metric Tons)							
Red	4,000	28,047	2,454	74	-	30,575	34,575
Chum	43,300	20,584	19,070	3,278	533	43,465	86,765
Pink	19,600	2,459	28,080	5,534	2/21,950	58,023	77,623
Silver	1,900	2,387	3,362	228	-	5,977	7,877
King	700	499	519	99	-	1,117	1,817
Total	69,500	53,976	53,485	9,213	22,483	139,157	208,657

^{1/}Data available through August only.

^{2/}Includes Masou salmon, a species peculiar to Oriental waters.

International (Contd.):

(3) observance of the two closed areas south of 48° N, agreed on at the 1960 meeting (during the negotiations, Japan had demanded the abolishment of the no-fishing area established in 1960 on the understanding that it would be in effect for only one year); (4) total catch of red salmon to be limited to 7,750,000 red salmon (about 14,000 tons); (5) catch of red salmon in area west of 165° E, longitude to be limited to 2.5 million reds (that means that the balance of 5,250,000 fish is to be taken between 165° E, and 175° W.); (6) catcher vessels to carry maximum of 330 tans (one tan equals approximately 150 feet) of gill nets per vessel; (7) catcher vessels to carry gill nets of which at least 50 percent are composed of nets with mesh size (knot to knot) of 65 millimeters (about 2.56 inches); and (8) Japan's king crab quota is 260,000 cases (48 6.5-oz. cans). Russia's king crab quota was set at 390,000 cases (96 6.5-oz. cans). (Suisan Keizai Shimbum, March 17, May 13, 21, & 29; Nippon Suisan Shimbum, May 24, 1961.)

NORTHWEST ATLANTIC FISHERIES COMMISSION

ELEVENTH ANNUAL MEETING:

Greater protection and conservation of fish and seal populations in the Northwest Atlantic fishing areas were promised at the eleventh annual meeting of the International Commission for the Northwest Atlantic Fisheries (ICNAF) concluded in Washington, D. C., on June 10, 1961.

Representatives of 12 nations engaged in fishing operations in the ICNAF area, which comprises more than one million square miles, adopted measures designed to produce greater uniformity in the ICNAF conservation regulations.

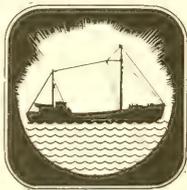
The six-day meeting also produced agreement among the delegates to take steps toward the conservation of the fast-declining population of harp and hood seals in the area. Following a report by the Canadian delegation that the harp and hood populations "during the last decade have been reduced by 50 to 65 percent," the Commission passed a resolution to amend the present Convention to provide (1) that harp and hood seals of the

Northwest Atlantic area be brought under the provisions of the International Convention for the Northwest Atlantic Fisheries and (2) that a separate panel be established for the purpose of dealing with the conservation requirements of the harp and hood seal populations.

The Commission elected the following officers to serve for two years: Commission Chairman: George R. Clark, Deputy Minister of Fisheries, Ottawa, Canada, Commission Vice Chairman: B. Dinesen, Under Secretary of the Fisheries Ministry, Copenhagen, Denmark. The following were elected to serve one-year terms: Chairman of the Standing Committee on Research and Statistics: R.H.J. Beverton, Deputy Director of Research, Ministry of Fisheries Laboratories, Lowestoft, Suffolk, United Kingdom. Chairman of the Standing Committee on Finance and Administration: J. H. MacKichan, General Manager of United Maritime Fishermen, Limited, Halifax, Nova Scotia.

The International Commission for the Northwest Atlantic Fisheries was established under a convention between ten North American and European countries which came into force on July 3, 1950. Since then, two additional Governments have become parties to the convention, namely, the Federal Republic of Germany (1957) and the U. S. S. R. (1958). The present member-nations are: Canada, Denmark, France, Federal Republic of Germany, Iceland, Italy, Norway, Portugal, Spain, Soviet Union, United Kingdom, and United States.

The Commission is engaged in planning and coordinating programs of fisheries research which are carried out by the fisheries agencies of the member governments in the Northwest Atlantic Ocean. Its meetings are largely devoted to reports and discussion of current research and plans for future years. In addition, from time to time, the Commission recommends to Governments the adoption of regulations for certain fisheries of the area, for purposes of conservation of the resources. The Commission is composed of one to three Commissioners from each contracting government and meets annually at Halifax, Nova Scotia, its headquarters, or at some other place in North America or Europe.



International (Contd.):

FOOD AND AGRICULTURE ORGANIZATION

FISH IN NUTRITION MEETING PLANS
ALMOST COMPLETED:

A total of 25 major articles summarizing the world's knowledge on nutrition and public health attainments in five major divisions of fishery technology will be presented at the International Conference on Fish in Nutrition to be held in Washington, D. C., September 19-27, 1961. In addition there will be 44 short manuscripts, each presenting the results of research into the many nutritional aspects of fishery products.

Six outstanding nutrition and public health authorities from the United States, Europe, and the Far East have been called to FAO headquarters in Rome, Italy, to thoroughly review and edit the papers. In addition, two fishery technologists of the Bureau of Commercial Fisheries and a consultant from the National Institutes of Health have gone to Rome to offer technical assistance in the editing.



The meeting is sponsored by the Food and Agriculture Organization of the United Nations. The Department of State is the official host. The Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, is in charge of arrangements with travel funds for foreign researchers being provided by a U. S. Public Health Service grant. An official insignia for the meeting has been adopted by the Food and Agriculture Organization.

The Conference on Fish in Nutrition, which is the first of its kind ever held, will be held in the auditorium of the new State Department building. Fifty nations will be represented by approximately 400 delegates. Representatives of the fishing industry of the United States met in Washington some months ago and pledged their support of the meeting. Some segments of the industry will provide varied entertainment for the guests, while others will acquaint the visitors with United States fish processing and distribution methods by providing tours in certain key industries and areas.

The agenda now being considered includes as main topics such things as the role of fish in world nutrition, the chemical composition of fish and fishery products, contribution of fish and fishery products to the diets of various nations; fishery products in animal nutrition; and possibilities for increasing fish consumption.

Under the main titles are reports on the amino acid composition of the protein in fishery products; fish oils and their role in nutrition; food values of fresh fish, compared with processed fishery products; minerals and vitamins in fish; fish in dietetics, including geriatric diets; incidence of world malnutrition, by regions; fish flour and its importance in preventing malnutrition; fish derivatives in feed for swine, calves, poultry, and furbearing animals; economic and social incentives for increasing production; and methods of consumer education.

IRRADIATION OF FOOD

EUROPEAN INFORMATION CENTER
ESTABLISHED IN FRANCE:

A European Center of Information about the irradiation of foodstuffs has just been created following an agreement between the European Agency of Productivity of the Organization for European Economic Cooperation (O.E.E.C.) and the Center of Nuclear Investigations, Saclay, France. M. Pierre Leveque was nominated Director of this Center, the headquarters of which are also in Saclay.

The functions of the Center especially include the publication of an information bulletin on the irradiation of foodstuffs which will be issued 4 times a year in English and in French. The Center will also be a linking element between scientific workers and technicians specialized in food problems and between government spheres and the manufacturers interested.

INTERNATIONAL JOINT COMMISSION
(UNITED STATES AND CANADA)PASSAMAQUODDY TIDAL POWER
PROJECT NOT ECONOMICALLY FEASIBLE:

The Canadian Secretary of State for External Affairs announced on May 1, 1961, the release of the International Joint Commission's Report on the International Tidal Power Project in Passamaquoddy Bay in Maine and New Brunswick. The Commission found that the price of power from the Tidal Power Project, either alone or in combination with auxiliary power sources, would not be competitive with the price of power from alternative steam-electric plants and that, therefore, the project is not economically feasible under present conditions. The Commission recommended, however, that development of the project be viewed as a long-range possibility which would have better prospects of realization when other less-costly energy sources available to the area were exhausted. The Commission also pointed out that the economic feasibility of the project might be affected by future changes in the costs and benefits considered in the present evaluation and added that Governments might wish to consider the desirability of crediting the Tidal Project with certain public benefits not included in the Commission's determination of economic feasibility.

International (Contd.):

In determining the impact of the project upon the local economies of Maine and New Brunswick, the Commission found that industrial development would not be appreciably affected, although short-term benefits resulting from expenditures for goods and services might be expected. The Commission noted that the creation of two large salt-water lakes would provide additional facilities for recreation and that the tidal dams, locks, and gates could serve as foundations for an international highway connecting the present coastal highways in Maine and New Brunswick. The Commission recognized that the existence of a high pool in Passamaquoddy Bay might stimulate greater traffic to shipping points in the area. In the Commission's view, the project would not be detrimental to the region's important sardine industry and would have only a minor effect on other fisheries if appropriate remedial measures were undertaken.

Note: See Commercial Fisheries Review, June 1960 p. 68, May 1960 p. 36, March 1960 p. 38.

CENTRAL AMERICAN ECONOMIC INTEGRATION

TREATY COMES INTO FORCE:

According to officials of the Organization of Central American States (ODECA), the General Treaty of Central American Economic Intergration came into effect on June 3, 1961, eight days after Nicaragua deposited its ratification with ODECA.

1. General Treaty of Central American Economic Integration ratifications: Guatemala--May 5, 1961; El Salvador--May 8, 1961; Nicaragua--May 26, 1961. In force among the three countries.
2. Constitutive Agreement of the Central American Bank of Economic Integration ratifications: Guatemala--May 5, 1961; El Salvador--May 8, 1961; Honduras--May 5, 1961; Nicaragua--May 24, 1961. In force among the four countries.
3. Protocol to the Central American Agreement on Equalization of Import Charges (Second Protocol) ratifications: Guatemala--May 5, 1961; El Salvador--May 8, 1961; Nicaragua--May 26, 1961. In force among the three countries. (United States Embassy, San Salvador, June 9, 1961.)

LATIN AMERICAN FREE TRADE ZONE AND FREE TRADE ASSOCIATION

TREATY RATIFIED:

On May 2, 1961, representatives of Argentina, Brazil, Chile, Mexico, Peru, and Uruguay deposited in the Uruguayan Ministry of Foreign Relations, Instruments of Ratification of the Treaty of Montevideo, signed in that city February 18, 1960, which establishes the Latin American Free Trade Zone and the Latin American Free Trade Association. (United States Embassy, Lima, May 19, 1961.)

EUROPEAN FREE TRADE ASSOCIATION

REDUCTION OF DUTIES BETWEEN MEMBER COUNTRIES:

The British Government announced on June 2 an order on import duties which was scheduled to take effect on July 1, 1961, in accordance with the decision of the EFTA (European Free Trade Association) in February to reduce by a further 20 percent the duties on industrial products traded between the member countries.

Following the initial 10 percent reduction with which the EFTA group went into business in July 1960, this will mean that the EFTA countries will have cut their tariffs to 70 percent of the basic rates. This step is in accordance with the policy of the EFTA Seven to keep in step with the tariff reductions of the EEC (European Economic Community) Six: the latter group has also achieved a 30 percent reduction. (British Record, June 8 1961, issued by British Information Services.)

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FINLAND AND OUTER SEVEN COUNTRIES SIGN AGREEMENT OF ASSOCIATION:

Finland and the seven member countries of the European Free Trade Association (EFTA) have signed an agreement whereby Finland is to become associated with the EFTA.

All the countries are expected to ratify this agreement and deposit the proper instruments of acceptance before July 1, 1961. Assuming ratification, the first tariff reductions and the first relaxation of quantitative import restrictions between Finland and the EFTA countries will take place on that date.

Under the agreement Finland will reduce its duties toward EFTA member countries by

International (Contd.):

30 percent for most products and the member states of EFTA will extend to Finland the 20-percent reduction already made among the members as well as the further 10-percent reduction to be made on July 1, 1961. Finland also is accorded the same rights and assumes like obligations in the commercial and economic fields as the EFTA countries have among themselves.

The reduction and eventual abolition of tariff and other trade barriers between Finland and the members of EFTA are to take place, with a few exceptions, according to the time schedule established by the members of EFTA in the Stockholm Convention originally creating the European Free Trade Association.

Finland is authorized to reduce its duties on some goods competing with products manufactured by developing industries at a slower pace. The date of final elimination of the duties, however, will be the same as for other duties--January 1, 1970.

A significant part of Finland's foreign trade is regulated by bilateral trade agreements. To allow Finland to meet its commitments under these agreements, existing quantitative import restrictions may be maintained on a limited number of goods. Finland must, however, apply these restrictions in such a way that suppliers in the EFTA countries are given the opportunity of competing with other suppliers on fair and equal terms for a reasonable share of the Finnish market in these products.

Under the agreement between Finland and the EFTA countries, a new council, known as the Joint Council, will be established to deal with all matters pertaining to relations between Finland and the EFTA member states. The Joint Council will function independently from the EFTA Council; however, a considerable degree of coordination between the two bodies is expected.

The agreement of association was signed on March 27, 1961. (Foreign Commerce Weekly, May 15, 1961.)

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CONVENTION TO APPLY TO GREENLAND:

The Danish Government, pursuant to provisions of the EFTA convention, has formal-

ly declared that the convention applies to Greenland effective July 1, 1961.

In view of Greenland's special economic, social, and demographic conditions, however, certain special arrangements have been accepted by the other EFTA member states. Benefits from an "equalization fund" for the purpose of stabilizing the income of Greenland producers and the right to establish and operate business concerns in Greenland will remain conditional upon Danish nationality and permanent residence in Greenland. Furthermore, Denmark retains its right to extend at any time before July 1, 1970, the Danish customs duties and quantitative import restrictions to Greenland, provided that such duties and restrictions are reduced and eliminated progressively in accordance with Articles 3, 10, and 11 of the EFTA convention. At present all imports are admitted into Greenland duty-free. (United States Embassy, June 15, 1961.)

GENERAL AGREEMENT ON TARIFFS AND TRADE

REPORT ON EIGHTEENTH SESSION OF THE CONTRACTING PARTIES:

The Contracting Parties to the General Agreement on Tariffs and Trade (GATT) concluded their Eighteenth Session at Geneva on May 19, 1961. At this meeting, which began May 15, 43 countries participated. In addition a large number of newly-independent countries, which are in process of deciding on the question of their future participation in the Agreement, attended as observers.

Principal matters affecting the expansion of international trade discussed at the meeting were: Plans for a ministerial meeting to be held in late November; tariff negotiations, the second phase of which was scheduled to start on May 29; a new program for offering technical assistance in the commercial policy field to newly-independent countries; the new arrangements recently concluded in connection with Finland's association with the European Free Trade Association (EFTA); efforts to accelerate the removal of import restrictions; and the admission of Sierra Leone to the ranks of the Contracting Parties.

Finnish Association with EFTA: Finnish association with EFTA was supported by the United States. It will offer Finland scope for strengthening her economy and for developing traditional ties with her Scandinavian neighbors, as well as with other members of EFTA. The agreement bringing about this as-

International (Contd.):

sociation generally follows the lines of the Stockholm Convention, establishing the EFTA, and has been referred to a working party for further examination.

In presenting this agreement to the Contracting Parties, Finland drew attention, however, to a trade agreement concluded with the Soviet Union under which Finland will gradually extend free entry to Soviet goods, though like treatment is not to be extended to other countries outside the EFTA. It was generally agreed that this action conflicts directly with the most fundamental obligation of the General Agreement, namely the commitment to conduct commercial relations with one another on the general basis of equality of treatment, or non-discrimination. As concerns tariffs, this "most-favored-nation principle" means that, with certain exceptions including special arrangements which create thorough-going customs unions or free trade areas, the trade of each Contracting Party is to be treated no less favorably than that of any other country. The Fenno-Soviet agreement is a clear violation of this fundamental obligation, since Soviet goods will eventually enjoy tariff treatment far more favorable than goods of other countries.

The United States and other countries expressed serious concern with this deviation from the most-favored-nation principle, but took no immediate stand on what their ultimate attitude might be. It was agreed that the matter would be given further consideration at the Nineteenth Session.

Ministerial Meeting Arranged: The most important decision of the session was to convene next fall a meeting of officials in the trade policy field at the ministerial level. Over the past three years, the countries associated in the work of the General Agreement have been working on a program to attack three major problems within the field of governmental barriers to trade.

First, it is widely felt that tariffs remain an important obstacle to the expansion of trade. Second, the ministers will be expected to address themselves to ways of finding a coordinated approach to the problem of excessive tariff and non-tariff protection in agriculture. Preliminary work in this field indicates that both tariff and non-tariff barriers to agricultural trade have widely impaired benefits expected from the

Agreement. Third, the time has come for policy-level attention to the problem of lowering barriers encountered by less-developed countries in the expansion of their international trade. Since, to a large extent, these three major problems are inter-connected, the ministerial meeting offers an opportunity for action on a broad front.

Technical Assistance for Newly-Independent Countries: A start was made at this session in affording newly-independent countries assistance in the development of sound trade policies. The Contracting Parties agreed that upon request from a newly-independent state, the Executive Secretary should take appropriate action to furnish qualified technicians or technical advice. This could mean undertaking to train officials and offering them the benefit of the Secretariat's experience in trade policy problems. Or, it could mean sending a mission to study a country's trade problems and submitting to it a comprehensive report with recommendations.

Action on Import Restrictions: Reports were made to the Contracting Parties on consultations which the United States initiated with Italy and France on their remaining import restrictions. The United States was able to express satisfaction with new liberalization steps to be taken shortly by Italy and hoped that additional action to eliminate quantitative import restrictions would be announced in the near future. In discussing the consultation with France, the United States observed that while it found encouragement in the relaxation of French import restrictions over the past six months, there was still much to be done in liberalizing imports of agricultural commodities.

Admission of Sierra Leone to the GATT: With the admission of Sierra Leone, the number of full Contracting Parties was raised to 39.

Discussion of External Tariff of EEC: There was considerable debate on the trade difficulties which some contracting parties, particularly the less-developed countries, believe will be created by the common external tariff of the European Economic Community and the trade advantage resulting from the association of the overseas territories with the EEC.

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International (Contd.):

**SECOND PHASE OF CONFERENCE
ON TARIFF NEGOTIATIONS:**

In the second phase of tariff negotiations under the General Agreement on Tariffs and Trade, which began on May 29, 1961, the United States expects to negotiate for the reciprocal exchange of tariff concessions with the Commission of the European Economic Community (EEC) on behalf of the Member States (Belgium, France, Germany, Italy, Luxembourg, and the Netherlands) and with other countries which are contracting parties to the GATT or which are expected to negotiate for accession to the General Agreement.

During the first phase of the conference, which began on September 1, 1960, the United States, along with other GATT contracting parties, has been negotiating with the EEC Commission concerning the establishment of a new schedule of tariff concessions for the EEC as a whole to replace the present individual schedules of the member states. The United States has also been negotiating, under provisions of Article XXVIII of the GATT, with 15 other contracting parties concerning their modification or withdrawal of individual concessions in existing GATT schedules.

In accordance with the plan to increase participation by non-governmental representatives in the United States Delegation to the 1961 GATT tariff negotiations conference at Geneva, the Secretary of State has named 12 public advisers to serve as members of the delegation on a rotating basis in the second phase of the conference. This plan was developed by the United States cabinet-level Trade Policy Committee, which is chaired by the Secretary of Commerce.

**JOINT UNITED STATES-JAPAN COMMITTEE ON
TRADE AND ECONOMIC AFFAIRS FORMED**

With an exchange of notes, Japan and the United States agreed to establish a Joint United States-Japan Committee on Trade and Economic Affairs. The Committee will consist: for the United States, Secretaries of State, the Treasury, the Interior, Agriculture, Commerce, and Labor; for Japan, Ministers for Foreign Affairs, Finance, Agriculture and Forestry, International Trade and Industry, and Labor, and the Director General of the Economic Planning Agency; together with such other officials of Cabinet rank as either

Government may designate from time to time, as the need arises.

Among the Committee's functions shall be, in particular, to exchange information and views on matters which might adversely affect the continued expansion of mutually profitable trade on questions relating to the economic assistance programs of the two countries which require joint consideration; to report to the respective Governments on such discussions in order that consideration may be given to measures deemed appropriate and necessary to eliminate conflict in the international economic policies of the two countries, to provide for a fuller measure of economic collaboration, and to encourage the flow of trade. (U. S. Department of State news release of June 22, 1961.)

WHALING

**CERTAIN NATIONS MEET TO DISCUSS
DIVISION OF ANTARCTIC WHALE
CATCH INTO NATIONAL QUOTAS:**

Representatives of Japan, the Netherlands, Norway, and the United Kingdom met in Vancouver, B. C., Canada, April 19 to 21, 1961, to discuss a division of the Antarctic whale catch into national quotas. G. R. Clark of Ottawa, Chairman of the International Whaling Commission, headed the meeting. While Canada is not engaged in Antarctic whaling, it does have an interest in international cooperation in conservation measures for marine resources.

The U. S. S. R. is also a major whaling country and operates like the other four countries in the Antarctic. It shares the views of the other countries regarding the need for an allocation system and agreement had previously been reached on an allotment of the Antarctic catch for the Soviet Union. The U. S. S. R. was invited to the Vancouver conference but was unable to send a representative.

The four countries represented at the conference met to consider an allocation scheme between themselves. Progress was made and agreement was reached on the general framework within which an allocation system could be worked out. The details, including a number of practical problems, will be further considered between the Governments concerned and it was proposed to hold another meeting later in the year.

The meeting followed the pattern of a similar one held in England earlier in the

Angola (Contd.):

Angola's Exports of Fishery Products, 1959 and 1960				
Product	1960		1959	
	Quantity	Value	Quantity	Value
	Metric Tons	US\$ 1,000	Metric Tons	US\$ 1,000
Fish meal	45,085	3,754	51,228	7,188
Dried fish	13,165	2,561	13,965	2,653
Canned fish	1,123	621	1,342	745

Exports of fish meal in 1960 amounted to 45,085 metric tons (valued at US\$3,754,000) as compared with 51,228 tons in 1959 valued at \$7,188,000. Average prices per ton dropped from about \$140 in 1959 to about \$83 in 1960. Other exports of fishery products in 1960 and 1959 included small quantities of canned fish and fair quantities of dried fish. (United States Consulate, Luanda, April 21, 1961.)



Australia

HIGHER TARIFF RATES FOR CANNED TUNA IMPORTS RECOMMENDED:

At a public hearing on tariff rates for canned fish held in Melbourne on May 16, 1961, by the Australian Tax Commission, Australian tuna industry members strongly recommended that a higher tariff rate be placed on imports of canned tuna. Industry members claimed that tuna is found in abundance in the waters off Australia; that the Australian tuna industry is rather small but this was unavoidable due to the constant threat of cheap imports hanging over the industry; and that the domestic industry should be protected from cheap imports of canned tuna from Peru and Japan, which have been increasing the past few months.

The tuna industry asked that an ad valorem duty of 50 percent or a duty of one shilling six pence (about 16 U. S. cents) per pound (net weight) of canned tuna, whichever is higher, be placed on imports. (Suisan Tsushin, June 12, 1961.)

FINFISH LANDINGS,
FISCAL YEAR 1959/60:

Australia's 1959/60 (July 1959-June 1960) finfish catch of 78.1 million pounds increased nearly 3.7 million pounds from the previous year. Mullet was the leading species by weight, and comprised almost 16 percent of the total finfish landings. The bulk of the mullet catch consisted of sea mullet but in-

cluded several other species commonly known to Australia's fishing industry as mullet.

Shark landings (mainly school and gummy) ranked second and made up about 11 percent of the national finfish catch. The 1959/60 Australian salmon (*Arripis trutta*) landings of 7.6 million pounds dropped 11 percent from the previous year and were displaced from second place by shark landings which increased by 11 percent during the same period. The greater part of the season's Australian salmon catch was from fishing grounds in Western Australia, New South Wales, and Victoria. Australian salmon accounted for almost 10 percent of the finfish catch.

Australian Marine and Fresh-Water Finfish Landings, Fiscal Years 1959/60 and 1958/59		
Principal Species	1959/60	1958/59
	. . . (1,000 Lbs.) . . .	
Mullet	12,336	14,061
Shark	8,457	7,375
Australian salmon	7,601	8,544
Barracouta	5,871	4,301
Tuna:		
Southern bluefin	3,164	} 5,494
Northern bluefin	3,931	
Yellowfin	1	
Other fish	36,778	34,641
Total	78,139	74,416

The tuna catch of 7 million pounds was up 1.6 million pounds from the previous year and comprised over 9 percent of the total finfish catch. Landings of the two varieties fished in South Australia and New South Wales--southern bluefin (*Thunnus thynnus maccoyi*) and the northern bluefin (*Kishinoella tonogol*)--were nearly equal.

The 1959/60 finfish catch was supplemented by shellfish landings of 36.8 million pounds, bringing the total Australian fish and shellfish catch for the year to 114.9 million pounds. The spiny lobster harvest of 28 million pounds accounted for 76 percent of the year's total shellfish landings. (Australian Fisheries Newsletter, March 1961.)



Belgium

FISH MEAL PRICES, MAY 1961:

Belgium fish-meal prices early in May 1961 were up sharply from a month earlier for both imported meal and domestic meal. Imported Meal: Peru, 65 percent protein, US\$120 a metric ton or about \$108.86 a short

Belgium (Contd.):

ton, c.&f. Antwerp (80-90 percent digestible). Domestic Whole Meal (fish solubles added): 62 percent protein minimum, \$135 a metric ton or about \$122.47 a short ton f.o.b. plant (93-94 percent digestible).

A special duty on imported fish meal of \$40 a metric ton or \$36.29 a short ton became effective on March 18, 1961. The effect of this duty has been to reduce fish meal imports drastically. However, it is believed that the Belgium fish meal importers as of May had large stocks of fish meal imported in the months preceding the decree. The importers are anticipating a change in the Government's attitude towards fish meal imports, the United States Consulate in Antwerp reported on May 15, 1961.

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FISH MEAL PRICES, JUNE 1961:

Belgium price quotations for fish meal of Peruvian origin as of early June 1961 showed a further increase as compared with the preceding month. A more appreciable rise occurred in the price of the Belgian fish meal but, as a result of the special import duty of \$40.00 per metric ton (\$36.29 a short ton) which has been levied since March 18, 1961, on foreign fish meal, the price of the local product was still lower than the Peruvian fish meal. Prices early in June this year were: Imported Meal; Peru, 65 percent protein, US\$123.50 a metric ton or about \$112.04 a short ton, c.&f. Antwerp (80-90 percent digestible). Domestic Whole Meal (fish solubles added): 62 percent protein minimum, \$150.00-\$160.00 a metric ton or about \$136.08-\$145.15 a short ton f.o.b. plant (93-94 percent digestible).

Due to the relatively high import duty, Belgian imports of fish meal, which rose sharply during 1960, have now declined to an extremely low level. Belgium importers of fish meal and manufacturers of feedstuffs prefer to adopt an expectant attitude in the hope that the Belgian Government will revise the decree on the special import duty. It is rumored that the Government contemplates reducing the import duty on fish meal from the present \$40.00 per metric ton to \$20.00 per metric ton (\$18.14 a short ton), according to the United States Consulate in Antwerp, June 14, 1961.

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CONSUMPTION OF
FISHERY PRODUCTS, 1960:

Belgium's apparent total consumption of fish and shellfish in 1960 remained about the same as during 1959. The principal demand was as usual for fresh groundfish which accounted for about 40 percent of total consumption of fishery products. There was an appreciable increase in the consumption of canned shellfish, but the total demand for canned fishery products remained relatively low because of the population's preference for fresh

Belgium Consumption of Fish and Shellfish, 1960				
Species	Fresh	Prepared	Canned	Total
	(Metric Tons)			
Marine Finfish:				
Herring	1/9, 808.6	10, 804.4	383.5	20, 996.5
Sprat	1/1, 347.4	-	-	1, 347.4
Mackerel	1/3, 019.7	128.5	-	3, 148.2
Pilchards	-	-	2, 211.1	2, 211.1
Sardines	-	-	4, 021.4	4, 021.4
Salmon	-	48.4	3, 863.0	3, 911.4
Other sea fish	2/45, 479.3	369.3	4, 826.3	50, 674.9
Total marine fish	59, 655.0	11, 350.6	15, 305.3	86, 310.9
Shellfish:				
Shrimp	2/891.9	-	629.8	1, 521.7
Lobster & crawfish	2/1, 239.1	-	712.9	1, 952.0
Mussels	2/22, 094.2	-	-	22, 094.2
Oysters	2/1, 597.2	-	-	1, 597.2
Other shellfish	2/876.1	-	1, 045.2	1, 921.3
Total shellfish	2/26, 698.5	-	2, 387.9	29, 086.4
Total marine fish and shellfish	86, 353.5	11, 350.6	17, 693.2	115, 397.3
1/Used mostly for canning.				
2/Used mostly for fresh consumption.				
Note: Actual consumption figures are not available in Belgium. These statistics have been compiled on the basis of total landings plus imports minus exports for "fresh" fish and shellfish, and imports minus exports for prepared and canned fishery products.				

fish. The consumption of shrimp experienced a notable decrease, principally due to a substantial drop in total Belgian landings. (United States Consulate, Antwerp, May 10, 1961.)



Brazil

TUNA FISHING BY BRAZILIAN VESSELS:

The March 1961 issue of the Review (p. 46) contained a news item indicating that on December 20, 1960, the first tuna caught by a Brazilian vessel was landed at Santos. Actually, the article should have indicated this was the first large-scale venture. The Superintendencia do Desenvolvimento do Nordeste, an agency of the Brazilian Government, has written us that the information in the article cited above was not completely accurate.

Brazil (Contd.):

The Agency letter points out that Brazilian, long-line tuna fishing, although on a small scale, has been conducted and developing around Recife for the past three years. Usually boats stay out from 6 to 10 days per trip.

Brazilian tuna fishermen sell their product locally. There are at present 8 boats (39 to 66 feet long) employed in tuna fishing, including 2 from Escola de Pesca Tamandare, a short distance south of Recife. One of the boats of this Government school has this year landed a trip of four 440-pound tuna among a total catch of almost 2 metric tons. Also, small sail boats fishing for tuna are traditional from the State of Rio Grande do Norte to Pernambuco.

The principal contribution to the Brazilian tuna market is the result, of course, of landings by two Japanese fishing companies operating from Recife and Santos, according to the letter.

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SAO PAULO FISHING INDUSTRY:

A total of 9 foreign and 225 domestic fishing vessels are registered at Santos, Sao Paulo. The vessels operate not only from the port of Santos, but also out of Ubatuba, Iguape, Registro, Itanhaem, Peruibe, and Sao Sebastiao.

A Japanese firm is the only foreign company in the State of Sao Paulo. The firm owns and operates a fleet of 8 trawlers and 1 purse-seiner. These vessels are modern and well equipped, and are equipped with motors of 300 to 500 hp. Their fishing trips, which range from northeast to south Brazil, last from 12 to 25 days. The Japanese firm's vessels fish mainly for tuna, "cod," "weakfish," and groupers.

The Japanese firm is one of the three Japanese fishing companies which were especially authorized by the Federal Government in 1957 to operate out of Brazilian ports with all-Japanese crews. As the Brazilian Fishing Code requires that two-thirds of the crews and all masters be Brazilian nationals, the Government authorization was valid for only two years. The authorization has since been renewed for another two years (ending during the second half of 1961).

Domestic vessels include: (1) A total of 57 "parelha gôl a sol"—small vessels of some 25 to 35 feet in length, made of hollowed logs, seating 8 to 10 fishermen, and using outboard motors of 25 to 80 hp. The parelhas operate in pairs and drag a net between them. They fish mainly for sardines. They are used in coastal waters only. As their name indicates, they go out at dawn and return to port by sunset.

(2) A total of 39 purse-seiners, which are larger vessels, of 45 to 65 feet in length, usually with decks or half-decks, manned by a crew of 10 to 15 fishermen, and equipped with motors of 150 to 220 hp. The purse-seiners are generally out of port for 4 or 5 days.

(3) A total of 117 small trawlers, of about the same size as the purse-seiners; and 12 large trawlers, of 70 to 100 feet in length, manned by a crew of 15 to 20 fishermen, and equipped with motors of 250 to 450 hp.

The domestic vessels are 12 to 30 years old and their motors 8 to 10 years old.

The fish catch is broken down into three categories: Popular, special, first-class. Total fish production in Sao Paulo in 1960 was approximately 67 percent popular, 24 percent special, and 9 percent first-class. Popular species include sardines, dogfish, swordfish, catfish, mackerel, croakers, rays, and small groupers. Major special species are large dogfish, small shrimp, mullet, sea trout, and tuna. First-class species are large shrimp, prime shark cuts, spiny lobsters, "cod," "weakfish," dolphin (*Coryphaena hippurus*), large groupers, snooks, and jewfish.

The only fish processed on an industrial scale are sardines, which represent approximately 40 percent of the popular species of fish sold on the Sao Paulo consumer markets. Approximately 15 percent of the sardine catch is sold to 5 canning factories which sell their product on the Sao Paulo and Rio de Janeiro markets and in towns in the interior of the State, as well as in the States of Minas Gerais, Goias, Mato Grosso, and Parana.

Research work on the canning of "manjuba" (sand smelts), carried out jointly by the Sao Paulo and Federal Government at a pilot plant at Registro, is expected to lead to the industrialization of this species by the canning industry. So far, however, the project is still in its early stages and it may be some years before canning on a commercial scale is undertaken. (United States Consulate, Sao Paulo, May 12, 1961.)



British Guiana

WORLD BANK LOAN INCLUDES LENDING PROGRAM FOR FISHING INDUSTRY:

The World Bank, with the participation of two private banks, on June 23, 1961, made a loan equivalent to \$1.25 million to British Guiana Credit Corporation with additional funds for its lending program for farming, forestry, animal husbandry, and fishing.

The British Guiana Credit Corporation is the only institution providing development credit for agriculture and industry in British Guiana. It was established in 1954 along general lines recommended by the General Survey Mission organized by the World Bank in 1953. Its purpose is to promote economic development through credits for agriculture, industry, forestry, fisheries, and rural and urban housing. Its capital is provided by the Government in the form of advances with no fixed repayment date.

Funds from the World Bank loan will be used for agricultural development credits and will provide the foreign exchange needed for imports. Credits will be made for the purchase of machinery to further mechanized farming; breeding stock; fencing and other materials and equipment for dairying and poultry farming; equipment and materials for the construction and improvement of rice mills and of plants processing other agricul-

British Guiana (Contd.):

tural products, for the expansion of logging operations and sawmills, and of marine and river fisheries.

The Bank loan is for a term of 8 years and bears interest of $5\frac{1}{2}$ percent annually including the 1-percent commission which is allocated to the Bank's Special Reserve. Amortization will begin November 1, 1963. The loan is guaranteed by the United Kingdom.



Canada

GOVERNMENT PROPOSES TO INCREASE ASSISTANCE FOR CONSTRUCTION OF FISHING VESSELS:

On May 12, 1961, the Canadian Government announced a program to assist in the modernization of its fishing fleet. A proposed capital subsidy of 50 percent of approved costs will be paid for those costs incurred after May 12, 1961, towards the construction in Canada of steel fishing trawlers where the new trawler will replace one old vessel, which will then be withdrawn from service. In addition, the present special assistance of up to \$165 per gross ton payable toward the cost of construction in Canada of wooden fishing vessels over 45 feet in length will be increased to \$250 per gross ton.

In the case of all vessels currently under construction, the new assistance will apply only to work which may actually be carried out from May 12, 1961, and not to construction work performed before that date. The methods of determining approved costs will be prescribed by regulations yet to be announced. The regulations will include the proportion of non-Canadian content to be included in costs eligible for subsidies. (United States Embassy, Ottawa, May 17, 1961.)

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LARGE TRAWLERS ON ATLANTIC COAST STILL RESTRICTED TO FISHING BEYOND TWELVE MILES:

Until zones have been designated off Canada's Maritime provinces where large Canadian fishing trawlers can operate to within the three-mile limit, they are still required to stay beyond 12 miles, the Canadian Fisheries Minister announced on June 2, 1961.

The amendments to the Canadian Fisheries Act (Bill C-86) passed the House of Commons, received the third reading in the Senate, and Royal Assent on June 1, 1961.

In clarifying the first major amendment to the Fisheries Act since 1932, the Minister pointed out that until the zones have been defined and published in the Canada Gazette, the large Canadian fishing vessels are still prohibited from fishing closer to shore than 12 miles. The Minister made it clear that the interests of local fishermen would be considered when certain zones are established allowing large trawlers to operate in areas between 3 and 12 miles from the coast of the Maritime or Atlantic Coast provinces.

* * * * *

PRICES FOR BRITISH COLUMBIA HERRING OIL DELIVERED AT TORONTO, APRIL 1961:

The following prices for British Columbia herring oil delivered at Toronto, Canada, were furnished on June 2, 1961, by the United States Foreign Agricultural Service in Ottawa: In Canadian cents per pound: 1960: January 8.58; February 8.32; March 8.25; October, November, and December 8.93. 1961: January 9.07; February 9.57; March 9.67; and April 9.92.

The prices in April 1961 for British Columbia herring oil delivered at Toronto, Canada, amounted to 9.92 Canadian cents a



Working from boats in a circle, sardine fishermen of Black's Harbour, New Brunswick, Canada, take up the slack in the net to make it easier to brail out the fish.

Canada (Contd.):

pound as compared with the price of 9.67 cents in March this year. Since the start of the 1960/61 British Columbia herring fishing season, prices have advanced about 11.1 percent from the 8.93 cents a pound for sales made in October-December 1960 and were up close to 20.2 percent from the March 1960 price of 8.25 cents a pound. (United States Embassy, Ottawa, June 2, 1961.)

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NEW BRUNSWICK FISH MEAL PRICES, JUNE 1961:

Fish-meal prices (60-percent protein) quoted by New Brunswick producers early in June 1961 averaged about C\$114 a short ton (\$1.90 a protein unit) for both exports and domestic sales. Due to short supply and good demand, fish-meal prices have advanced steadily since May and as of early June were up about \$12.00 a ton from the \$102 a ton (\$1.70 a protein unit) quoted by producers in mid-May this year. (United States Consulate, St. John, June 20, 1961.)

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NEW OCEAN RESEARCH VESSEL FOR NORTH PACIFIC:

Canada has awarded a contract for the construction of an ocean-going research vessel to operate in North Pacific waters to a British Columbia shipyard. To be named the G. B. Reed, after a former chairman of the Fisheries Research Board of Canada, the 177-foot vessel will be the newest addition to the fleet of the Board, the scientific arm of the Canadian Department of Fisheries.

The new vessel will cost C\$1,786,817, and will be a sistership to the Board's deep-sea research vessel A. T. Cameron which was launched in May 1958, and operates in the Northwest Atlantic.

The G. B. Reed will be, in essence, a floating scientific laboratory and her facilities will incorporate the latest developments in fisheries research vessel design. She will have ample laboratory space and the most up-to-date equipment to enable scientists sailing on her to carry out all aspects of scientific research related to Canada's Pacific fish stocks. Such research programs are essential not only for the conservation

and development of these fish stocks but also to meet Canada's commitments in high-seas investigation under the International North Pacific Fisheries Commission.

The vessel, the hull of which will be of welded steel construction, will be propelled by a single modern marine Diesel engine capable of a cruising speed of 12 knots. She will be able to cruise for 8,500 miles without refueling, and will carry a complement of 36, including scientists.

The G. B. Reed will be equipped for fisheries research purposes employing bottom and mid-water trawls, gill nets, long lines, and other specialized fishing gear as well as winches and rigging for conventional oceanographic survey operations.

Refrigerated holds and dry storage will be provided and will enable the vessel to remain at sea for a period of six weeks. Navigational equipment will include radar and echosounders. (Facts on Fish, May 1961.)



Curacao

NETHERLANDS APPROVES ESTABLISHMENT OF JAPANESE FISHING BASE:

The Netherlands Government has announced through its Embassy in Tokyo that a Japanese fishing company's plans to use Curacao in the Caribbean Sea for an overseas fishing base will be approved. The possibility of the plans materializing was strengthened with the prospects of the Japanese Fishery Agency giving permission for the establishment of the base.

The Netherlands Government is said to be welcoming the Japanese firm's plans that are in keeping with its policy of fostering new industries. The Netherlands side has concluded with the company an agreement to lease about 6 acres of land and begin the establishment of a large fishing base. The Japanese firm plans to store fish landed by Japanese tuna vessels fishing in the Atlantic and prepare the fish for export to the United States and Europe. At the same time, it will export for other producers and also buy tuna. By careful handling and storing of fresh fish, the firm hopes to prevent claim problems on exported tuna.

Some US\$55,556 will be invested in the base, and to establish a cold-storage facility

Curacao (Contd.):

of 1,500 tons and a fish ham-fish sausage manufacturing plant of a small size to utilize the fish that are not suitable for export.

Yearly landings of some 10,000 metric tons and one-twentieth of the total tuna exports, including canned goods, will be the firm's production goal. Cristobal, Canal Zone, where Japanese tuna vessels dock at present, is too far from the fishing grounds, and while Curacao has 15-16 foreign vessels constantly at anchor, only a few ships are at Cristobal, making it difficult to load the fish for shipment when they are landed. Even on this score, Curacao has a promising future as an overseas fishing base with free access to carriers. (Fisheries Economic News, June 7, 1961.)



Czechoslovakia

JAPANESE FIRMS DELIVER FROZEN TUNA:

Two Japanese fishing companies planned to deliver a total of 1,050 metric tons of frozen tuna to Czechoslovakia. The announcement that Japan had concluded a frozen tuna trade agreement with Czechoslovakia was made in April 1961. One Japanese firm expected to deliver 600 metric tons of frozen tuna to Czechoslovakia in late June 1961. This shipment was to be transhipped from Monrovia, Liberia, by carrier vessel and delivered to Hamburg, Germany, and then shipped by rail to Prague, Czechoslovakia. The other Japanese firm expected to ship 450 metric tons of frozen tuna to Czechoslovakia in late July. This shipment was to be hauled directly to Hamburg by fishing vessels. A Japanese trading corporation located in Hamburg was to handle both transactions.

Negotiations for future deliveries of frozen tuna are reported to be under way, although Czechoslovakia will not commit herself to any future purchase until she has examined the above-mentioned shipments. Should they prove satisfactory, Czechoslovakia has indicated that she may stop importing frozen tuna from Norway (present imports from Norway are given as 4,000 to 5,000 tons) and shall purchase tuna from Japan instead. According to an official of one of the Japanese firms, his firm has ac-

cepted malt in exchange for the frozen tuna. (Suisan Keizai Shimbun, May 31, 1961.)



Denmark

FISH FILLETS AND BLOCKS AND FISHERY BYPRODUCTS EXPORTS, MARCH 1961:

Denmark's exports of fresh and frozen fish fillets and blocks during March 1961 amounted to 7.7 million pounds, an increase of 2.5 million pounds as compared with March 1960 exports. Of this total, 2.7 million pounds (principally frozen cod fillets and blocks) were shipped to the United States.

In the first quarter of 1961, Denmark shipped slightly over 4.4 million pounds of frozen fish fillets and blocks (almost entirely cod and related species) to the United States.

Total exports of fresh and frozen fillets and blocks from Denmark in the first 3 months of 1961 totaled 19.1 million pounds, or 8 million pounds more than the comparable period in 1960. Exports of fillets and blocks of cod and related species during the first three months of 1961 were up 50 percent, and flounder and sole increased 55 percent as compared to the same period in 1960. Nearly 3 million pounds of herring fillets were exported in the first three months of 1961, compared with only a small quantity in the first three months of 1960.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks, and Fishery Byproducts, January-March 1961

Product	March	March	January-March	
	1961	1960	1961	1960
	. . . . . (1,000 Lbs.)			
Fillets and blocks:				
Cod and related species	4,956	3,856	11,312	7,556
Flounder and sole	1,739	1,265	4,772	3,082
Herring	912	-	2,774	-
Other	102	1/ 98	238	1/381
Total	7,709	5,219	19,096	11,019
	. . . . . (Short Tons)			
Byproducts:				
Fish meal, fish solubles, and similar products	4,741	2,096	9,923	6,768
1/Includes herring fillets.				
Note: Shipments from the Faroe Islands and Greenland direct to foreign countries not included.				

In March 1961, Denmark's exports of 4,741 tons of fish meal, fish solubles, and similar products were more than double the quantity shipped in March 1960. Exports of fishery byproducts for the first quarter of 1961 were 47 percent more than in the comparable period of 1960.

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FISH MEAL AND SOLUBLES PRICES, MAY 1-6, 1961:

During the week ending May 6, 1961, export prices for Danish herring meal were quoted at 850-960 kroner a metric ton (US\$111.81-126.28 a short ton) f.o.b. Esbjerg. Demand for Danish herring meal has been in-

Denmark (Contd.):

creasing, due mainly to the failure of the Norwegian winter herring fishery.

Light sales of fish solubles averaged only 490 kroner a metric ton (\$64.46 a short ton). This price represents a substantial decrease from an early April price of about \$94.06 a short ton. (United States Embassy, Copenhagen, May 23, 1961.)

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FISH MEAL PLANTS WIDELY DISTRIBUTED:

A Danish manufacturer in Esbjerg has delivered 24 complete fish meal plants, Dansk Fiskeritidende (a fishery trade periodical) reported on May 19, 1961. Eleven are in operation in Europe, 5 in Africa, 2 in Turkey, 3 in the Far East, 1 in Mexico, and 2 in South America. The most recent orders are for 2 plants for the Philippines and 1 for Nigeria. The cost per plant is about 250,000 Danish kroner (US\$36,100).

A Copenhagen manufacturer has made five fish meal plants for Japan. They are to be installed in factoryships and will utilize the catch of 25 small trawlers.



East Africa

STUDY OF ROCK COD SPECIES:

The 35 species of rock cod in the Indian Ocean off Kenya and Tanganyika are being studied by the senior scientific officer of the East African Marine Fisheries Research Organization at Zanzibar.

The purpose of the study is to identify the rock cods, Serranidae. Along the East African coast some 35 varieties are caught and sold in the local markets. The fish average 20 to 40 pounds each.

The job is to identify the commercially important species, and because so far no one knows just what they are, he catches them from the Research Organization's vessel Manihine, and then in the laboratory examines them to see what they have been feeding on and their breeding condition.

The study in March 1961 was focused on the fishing potential of the North Kenya Banks, which are about 40 miles long and 30 miles wide, with a steep valley separating the southwest part, and probably composed of alluvial soil swept from the Tana River centuries ago. They may prove to be a very valuable and quite new source of fish food for Africa. (The African Shipping News and Fishing Industry Review, April 1961.)



Ecuador

BAIT FISHING BY FOREIGN VESSELS PROHIBITED:

A law prohibiting foreign vessels from bait fishing off the coast of Ecuador was signed by the President of Ecuador in May 1961 and will enter into effect when published in the Registro Oficial. Bait fishing is prohibited between Point Santa Elena, Guayas Province, and Cape Pasado, Manabí Province.

An official of the Department of Fisheries, Ministry of Development, has explained that no distance into the ocean was mentioned in the law since bait fishing is done within "about three miles" of shore and, therefore, allegedly does not involve the problem of territorial waters.



France

MULTIPURPOSE SIXTY-FOOT FISHING VESSEL:

The sardine purse-seine fishery of Lorient, France, has found increasing difficulty in obtaining a full crew for its vessels during the summer season when a 60-foot vessel normally carries a crew of 13-14 men. When the season is over, the boats fit out for trawling or shellfish dredging with a crew of 6-7.

In an effort to overcome this problem, one French company has introduced a new design, which utilizes a "power block" to haul the sardine nets, and so cut crew requirements by half. Two of these new vessels, which are 52 ft. 9 in. in length, were to go into service in May 1961. These represent the first of six.

The new vessels are built of steel instead of the traditional wood, have a crew of 7 men,

France (Contd.):

and can make 6-day trips. A trawl winch, mounted aft of the forward-placed wheelhouse, carries over 300 fathoms of warp. Starboard gallows are fitted for trawling and other gallows on the port quarter can be used for dredging.

The fish hold has two insulated tanks of refrigerated sea water with a total capacity of 424 cubic feet. One of these could, it is suggested, be used as a live-bait container for tuna fishing by cutting out the cooling system. The refrigerator compressor is powered by the main engine, which will be of 180 hp., or two engines of 80-90 hp. driving through a common gearbox.

The use of refrigeration is a new concept for this fishery. Present vessels return to port each day, regardless of their catch. On the new vessels, the fish will be placed in perforated aluminum containers before being stored in the tanks; the total capacity will be 4 metric tons of fish. (World Fishing, May 1961.)



French Guiana

EXPANSION OF FISHING INDUSTRY PLANNED;

An economic plan ("Plan de Development Economique de la Guyane Francaise") published last year, includes plans for expanding the fishing industry of French Guiana.

The coast off of French Guiana is rich in untapped fish and shrimp resources. However, the fishing industry is primitive and unorganized. French Guiana imports about \$90,000 worth of fish. To reduce this drain on the country's economy and to realize the export potential of the shrimp and fish, the Plan proposes the modernization of the domestic fishing industry and the encouragement of heavy private capital investments for large-scale exploitations. (United States Consulate, Martinique, May 24, 1961.)



Gabon

FISH RESOURCES OFF COAST REPORTED TO BE PLENTIFUL:

According to reports, fish are plentiful off the coast of Gabon (formerly part of French equatorial Africa), and the area is fished by a number of Gabonese and Dahomey natives. However, thus far the fishing, with one exception, has been for the domestic market. The one exception is a Franco-Norwegian whaling company, operating off the coast of Gabon.

The processing of whales is done at the company's facilities near Port-Gentil. This Company began operations in 1949 and captured 4,000 whales in its first three seasons. In 1952, the whales disappeared, and the company was forced to suspend operations. In 1959, the Government renewed the Company's permit for one year and authorized the company to take 600 whales. The factory near Port-Gentil resumed operation but, only 178 whales were taken during the entire year. With the decline of the whaling industry, oceanographic research is being conducted with the hope that additional commercial fishing possibilities may eventually be found. (United States Embassy, Libreville, May 15, 1961.)



German Federal Republic

NEW STERN-TYPE FACTORYSHIP TRAWLER RETURNS WITH RECORD TRIP:

The new West German stern-type factoryship trawler Henrich Kern, 1,244 gross tons, returned from its maiden 37-day trip to West Greenland's cod banks with a record catch, according to the May 12, 1961, issue of Dansk Fiskeritidende, a Danish fishery periodical. It caught 900 metric tons of fish, of which 600 tons were processed on board into 220 metric tons of frozen fillets worth 300,000 marks (about US\$75,000).

In addition, the trawler landed 4,250 boxes (50 kilos or 110 pounds each) of iced fish (mostly cod) at the auction, plus 1,410 sacks of fish meal and 110 barrels of fish oil.

The skipper reported that the trawler fished for some time in below zero weather off Greenland and in the beginning was in the company of 10 British and German trawlers.

German Federal Republic (Contd.):

A great advantage for the Henrich Kern was that the catch immediately could be sent below deck for processing.

Every half hour the trawl was hauled in with a catch of 10 to 15 metric tons (22,000-33,000 pounds) of cod, so that soon the crew and filleting equipment could not keep up with the catch. Thereafter, the trawler drifted for 12 to 14 hours without fishing while two watches worked on the catches. During the end of the trip, the hold was filled with 215 tons of round fish in a period of four days and six hours.

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DIRECT LANDINGS BY SWEDISH FISHERMEN REGULATED:

At a meeting some time ago between Swedish and German fishery representatives in Hamburg, the Germans requested that direct landings of herring by Swedish fishermen be limited to fixed quantities in order to protect the price structure.

The Swedish fishery representatives said they were unable to comply with the request as stated, but that they could through a system whereby Swedish fishermen receive directives as to which German port to proceed to for direct landings be able in the future to prevent boats from landing herring in places where the demand had already been met. These directives are issued by the Vastkust-fiskarnas Fiskforadling (West Coast Fishermen's Fish Processing) organization in Goteborg. They are the result of an agreement reached with Swedish west coast trawler owners whereby the Swedish boat teams give the West Coast Fishermen's Fish Processing organization at least 36-hour notice of their intended landing port.

West Germany in late years has become a very important sales area for Swedish-caught North Sea herring. Cuxhaven is the direct landing goal for most of the Swedish fishermen, although landings are also made in Hamburg and Bremen. (United States Consulate, Goteborg, May 16, 1961.)

**Ghana**SEINERS AND TRAWLERS ORDERED FROM GREAT BRITAIN:

The Government of Ghana has signed in Accra a contract for £1 million (US\$2.8 million) worth of seiners and trawlers to be built in British shipyards. Six vessels are to be built--four tuna purse-seiners and two stern trawlers.

The contract is scheduled to be completed by April 1962, all vessels being constructed on the hydroconic hull design after some months of research and test by a British firm in consultation with the Ghana Fisheries Department.

A British shipyard firm has agreed to train in Britain a selected number of Ghanaians in the steel shipbuilding industry during the period of construction of the new fishing vessels. The trained personnel will, on their return to Ghana, form the nucleus of the repair and maintenance staff for the vessels in operation.

The tuna purse-seiners will consist of single-screw vessels, approximately 130 feet over-all, each propelled by a single Diesel engine of about 1,000 hp. with accommodations for a crew of 18, including four single berth cabins for officers and a spare two-berth cabin for scientists, marine biologists, etc., who may accompany the vessel for research work. Refrigeration machinery will be manufactured in Denmark, and the electrical generators will supply 440 v., 3 phase, 50 cycles, a. c. power throughout, with suitable connections for shore supply to maintain refrigeration, etc., when in port. The tuna purse-seiners' equipment will be of United States design.

The stern-trawlers will be of similar dimensions and power but with the Unigan stern-gantry arrangement. Many features are being embodied for the handling and treatment of the catches, including a large blast-freezing plant.

Both the seiners and trawlers will have fuel capacity to undertake long voyages at comparatively high speeds. In the case of the stern-trawlers, provision is made for alternate types of fishing to take advantage of the abundance of fish which occurs in African coastal waters at certain times of the year. Up-to-date navigational and fishing aids will be provided.

Ghana (Contd.):

The first two vessels to be completed are expected to commence fishing early in November 1961.

The vessels are intended to form the nucleus of a state-owned fishing fleet. (The Fishing News, May 12, 1961.)



Guatemala

JOINT JAPANESE-GUATEMALAN SHRIMP FISHING COMPANY PLANNED:

A large Japanese exporting firm (major tuna exporting company) hopes to establish a joint shrimp fishing company in Guatemala. The firm plans to send a fishing vessel to the Caribbean Sea off Guatemala in August or September 1961 to conduct exploratory fishing for shrimp for two months. Should this operation be successful, the firm will then proceed with its plans to establish a joint firm, contributing 39 percent of the capital outlay, and construct an ice plant and a 300-ton capacity cold-storage plant.

According to available information, the Guatemalan fishermen employ small fishing boats with 2- to 3-men crews, and catch an average of 827 pounds of shrimp per vessel per day. The local fishing boats make about 15 trips a month and land about US\$2,500 worth of shrimp monthly. (Nippon Suisan Shimbum, May 29, 1961.)

Editor's Note: One other Japanese trade paper states that the Japanese firm will contribute 49 percent of the capital. On February 18, a news release in The Suisan Tsushin reported two Japanese firms were planning to set up a Japanese-Guatemalan firm to fish for shrimp off Central America. The report had indicated the company was to start operating in April-May 1961, but no more has been heard about this venture.



Iceland

NEW TWELVE-MILE FISHING LIMITS REGULATIONS ISSUED:

Government on March 11, 1961, issued regulations relating to fishing (principally trawling) in waters off Iceland. The regula-

tions are applicable both to foreign and Icelandic vessels.

The new regulations are complicated, but the basic points are:

(1) By drawing new base lines, the old fishery limits have been pushed seaward to include an area embracing 5,065 square kilometers of fishing grounds on which trawling is barred.

(2) No trawling operations are permitted by vessels of any nation within the new closed areas.

(3) Within the old 12-mile fishing limits zone around Iceland, Icelandic trawlers can continue the trawling operations they were permitted under previous trawling regulations, the most recent being those of August 29, 1958.

(4) The British obtained concessions to trawl in certain pockets within the old 12-mile Icelandic fishing limits. Under the new March 11, 1961, regulations, Icelandic trawlers are likewise permitted to trawl in those areas made available to British vessels. Like the British, the Icelanders can only trawl in these pockets during specified times of the year over the next three years.

Therefore, Icelandic trawlers have been given all concessions for trawling within the 12-mile zone during the next three years which the British trawlers obtained from the fishery settlement. Icelandic trawlers retained the rights they previously had for trawling at certain places and times within the old 12-mile zone, but like all other trawlers, they are barred from the new protected areas formed by pushing the base lines seaward.

The Icelandic trawlers will have a smaller area open to them after the three years are up than before the British settlement, providing the regulations remain the same. Even during the next three years they will be in a less favorable position than before because the new barred zones contain some of the best fishing areas off Iceland.

Vessels of all other nations--those particularly concerned being Belgian and West German--are also barred from fishing within the new 12-mile fishing limits.

The chief beneficiaries of the new regulations will be the smaller non-trawling Ice-

Iceland (Contd.):

landic fishing vessels, as all trawling has been prohibited within the rich base areas off the southwest coast of Iceland. Only they will be allowed to fish those areas. (United States Embassy, Reykjavik, April 17, 1961.)

Note: Also see Commercial Fisheries Review, May 1961 p. 48.

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ICELAND'S FISH PRODUCTION,
JANUARY-FEBRUARY 1961:

How Utilized	January-February	
	1961	1960
	.. (Metric Tons) ..	
Herring^{1/} for:		
Oil and meal	5,437	135
Freezing	4,860	125
Salting	2,383	78
Fresh on ice landed abroad	2,470	562
Other fish (cod, etc., 2/) for:		
Fresh on ice landed abroad	2,065	5,342
Freezing and filleting	3/18,818	33,133
Canning	3/30	-
Salting	6,699	10,282
Stockfish	4,597	7,251
Home consumption	1,211	1,487
Oil and meal	504	591
Total production	52,074	58,986

1/Whole fish.

2/Drawn fish.

3/Also includes shrimp--14 tons for freezing, and 30 tons for canning in 1961.

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FISHERY TRENDS, MAY 1961:

Although the main fishing season officially ended May 11, 1961, a number of Icelandic trawlers recently sailed for fishing grounds off Greenland. The herring fishery continued sporadically, encouraged by higher fish meal and oil prices. New shrimp grounds were discovered off the northwest tip of Iceland.

Fishing was almost entirely for Western markets since no agreement has been reached on ocean perch sales to the Soviet Union. A reason for the departure of the trawlers to Greenland waters was to put them out of reach of impending strike action at home. A full assessment of the main fishing season has still to be made, but it was obviously less profitable than that of 1960 and left a number of localities, particularly the Westman Islands, in a worse position than last year.

Despite the large number of ocean perch to be caught off the coast of Newfoundland, the Freezing Plants Corporation stopped processing these fish in May and ordered the

trawlers to stop the ocean perch fishery until a 1961 sales contract was made with the Soviet Union. On May 11, the daily Morgunblaðid (Conservative Party) stated that the price for frozen perch should rise to compensate for the decline in prices of fish meal.

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PRODUCTION OF PROCESSED
FISHERY PRODUCTS, 1959-60:

Iceland's production of processed fishery products and byproducts in 1960 amounted to 236,600 metric tons (521.6 million pounds), valued at \$55.5 million. As compared with 1959, this represented a decrease of 9 percent on the basis of weight with a drop in value of \$10.8 million. The value of frozen and cured fishery products was lower than the previous year. The more pronounced decline in value was for fishery byproducts with a drop of nearly \$8 million from the previous year. The world market for fish meal and oil was depressed in 1960, and affected prices for Icelandic fishery byproducts. (See table on following page.)

Less fish was frozen in 1960 than the previous year. This was partly due to a shortage of fish which confronted the Icelandic trawler industry late in 1959, and which became gradually worse in 1960. Frozen fillet production was lower by 13 percent, and the amount of herring frozen was 40 percent less than in 1959. More fish waste, mainly used for animal feeding, was frozen in 1960 than the previous year.

Iceland's 1960 cured fish production declined 11 percent when compared with 1959 principally due to the lower output of salted herring. The drop in salted herring production was mainly due to the larger proportion of lean and inferior quality herring which was processed into meal and oil. Stockfish production in 1960 was up about 40 percent from the previous year with a value increase of \$1.7 million.

The 1960 Icelandic fish meal and oil production was 16 percent less than the previous year. Less meal was processed from herring, ocean perch, and fish fillet trimmings and waste than in 1959.

Fish on ice landed abroad (United Kingdom and West Germany) directly by Icelandic vessels in 1960 amounted to 27,800 metric tons valued at \$2.9 million. This was

Iceland (Contd.):

Icelandic Production of Processed Fishery Products and Byproducts, 1959-60						
Product	Quantity		Value			
	1960 (1,000 Metric Tons)	1959	1960		1959	
			Million Kronur	US\$1,000	Million Kronur	US\$1,000
Frozen						
Fillets	58.8	67.9	851.7	22,413	935.7	24,624
Fish waste	10.8	2.4	17.1	450	4.4	116
Herring	8.8	14.7	46.4	1,221	74.6	1,963
Fish roe	0.7	1.2	8.3	218	15.1	397
Shrimp	0.1	0.1	} 35.9	} 945	} 14.7	} 387
Lobster	0.3	0.1				
Other	0.1	0.3	0.1	3	3.7	97
Total Frozen	79.6	86.7	959.5	25,250	1,048.2	27,584
Cured						
Salt fish, wet	22.7	19.0	205.3	5,403	171.0	4,500
Salt fish, dried	5.5	7.3	97.2	2,558	108.1	2,845
Stockfish	9.4	6.6	213.8	5,626	149.6	3,937
Herring	25.7	33.8	199.3	5,245	283.6	7,463
Fish roe	0.4	4.6	3.1	82	35.2	926
Other	0.2	0.5	2.2	58	3.5	92
Total Cured	63.9	71.8	720.9	18,972	751.0	19,763
Canned						
Unclass. (includes shrimp) . . .	2/0.5	3/0.3	2/21.3	2/561	3/21.7	571
Byproducts						
Meal:						
Herring	19.5	22.1	75.5	1,987	141.7	3,729
Ocean perch	10.1	16.9	33.0	868	95.8	2,521
Wolfish	0.5	1/	1.6	42	-	-
Lobster	0.2	1/	0.1	3	-	-
Liver	0.4	1/	2.4	63	-	-
Other	22.9	25.9	79.7	2,097	168.5	4,434
Oil	31.0	36.7	169.3	4,455	251.7	6,624
Solubles (50% solids)	1.2	-	2.0	53	-	-
Total Byproducts	85.8	101.6	363.6	9,568	657.7	17,308
Miscellaneous						
Fish skins	0.1	1/	0.2	5	-	-
Whale products	6.7	1/	43.3	1,139	40.0	1,053
Total Miscellaneous	6.8	-	43.5	1,144	40.0	1,053
Grand Total	236.6	260.4	2,108.8	55,495	2,518.6	66,279
Fish landed abroad	27.8	13.8	108.8	2,863	61.5	1,618
Home consumption	17.0	1/	45.0	1,184	58.3	1,534

1/Not shown.

2/Mostly mussels, includes 60 tons canned shrimp valued at US\$135,600.

3/Canned shrimp data not shown separately.

Note: Values converted at rate of 38 kronur equals US\$1.00 in 1959 and 1960.

double the quantity landed abroad the previous year and the value was up \$1.2 million.



Italy

JAPANESE FROZEN TUNA IMPORTS WILL NOT BE TAXED UNTIL 1971:

The Italian Government, in response to questions submitted by the Japanese Frozen Food Exporters Association, announced that Italy will not tax imports of Japanese frozen tuna until 1971. The announcement did not clarify what the Italian Government intends to do after 1971. The Italian Government also stated that in the future it will cooperate with the Japanese Government on matters pertaining to the import of frozen tuna to Italy. This message was relayed to Ja-

pan through the Italian Embassy in Tokyo. (Shin Suisan Shimbun, May 22, 1961.)

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PRODUCTION OF MARINE FISH AND SHELLFISH, 1953-60:

Italy's landings of marine fish and shellfish in 1960 amounted to 188,100 metric tons (414.7 million pounds). This was only slightly below the 1959 landings, and held at about the same average as during the years 1953-59. The 1960 finfish catch accounted for 78 percent of the total landings for that year while shellfish (molluscs and crustaceans) accounted for the remainder. The sardine and mackerel harvest in 1960 comprised 40 percent of the total fish landings. Tuna and tunalike landings (not including those landed directly by foreign fishing craft or reefer ships) in 1960 amounted to 1,393 tons, substantially less than the 2,064 tons landed in 1959.

Italy (Contd.):

Italy's Landings of Marine Fishery Products, 1953-1960						
Year	Fish			Molluscs	Crustaceans	Grand Total ^{1/}
	Total	Sardines, Anchovies, & Mackerel	(1,000 Metric Tons)			
1960 . .	146.0	58.3	33.1	9.0	188.1	
1959 . .	143.9	61.2	37.1	8.5	189.5	
1958 . .	141.8	60.4	35.9	8.2	185.9	
1957 . .	146.7	67.1	32.4	7.6	186.7	
1956 . .	157.2	75.9	31.6	6.5	195.3	
1955 . .	155.2	67.6	32.8	6.8	194.8	
1954 . .	159.8	69.3	28.2	6.6	194.6	
1953 . .	160.6	69.1	22.5	6.0	189.1	

^{1/}Does not include sponge production; and quantities landed by Italian fishing craft in foreign ports and quantities landed by foreign fishing craft in Italian ports.

The 1960 total finfish landings of 146,000 tons did not change greatly since 1957, but were 10 percent less than the 1953 finfish catch. The mollusc catch in 1960 dropped 10 percent from the previous year but exceeded production for each of the years 1953 through 1957. (United States Embassy, Rome, June 1961.)



Japan

EXPORT TARGETS FOR FISHERY PRODUCTS FOR 1961:

Japanese export targets for fishery products during 1961 were approved at a meeting of the Agricultural-Fisheries Product Export Council held by the Ministry of International Trade and Industry (MITI). Approved programs are to be submitted to the Highest Export Council.

The value of 1961 export targets for fishery and aquatic products other than canned amounts to US\$78,340,000; for all types of canned products (including fish and shellfish) \$140,930,000; and for whale oil \$21,865,000. Compared with 1960, the export target for fishery products other than canned is up \$6,650,000, for all canned products it is up \$3,635,000, but for whale oil it is down \$1,570,000.

In order to achieve the targets, the Government is requested by the Council to consider the (1) establishment of bases on the Atlantic coast for frozen tuna, (2) a publicity program in overseas markets for cultured pearls, (3) accelerate imports of scallops and kelp from the Soviet Union, and (4) orderly measures for agar-agar imports from Korea for export.

The 1961 export targets for fishery and aquatic products other than canned are: frozen tuna \$36,300,000, frozen broadbill swordfish \$5,250,000, cultured pearls \$27,270,000, agar-agar \$1,200,000, dried cuttlefish \$2,640,000, kelp \$840,000, scallops \$750,000, and salted and dried fish \$2,250,000. For canned fishery products the targets are: tuna \$26,732,000, salmon and trout \$54,145,000, crab meat \$11,821,000, sardines \$6,220,000, mackerel-pike \$4,803,000, and horse-mackerel \$3,608,000. For whale oil the target is \$21,865,000.

With regard to frozen tuna, the Council asks bases be established in the Atlantic; also provide financing to adjust demand and supply. For cultured pearls, the Council asks for a study of overseas markets, strengthening of publicity activities, together with an effort to obtain long-term financing for production. For salted dried products, the Council suggest that dried cuttlefish be imported from Korea, using similar procedures as for agar-agar, for the purpose of re-export. Government's appropriate guidance is wanted for full execution of the Japan-Taiwan Trading Agreement as to its trading plans. Consideration is requested for import of Russian scallops and kelp in view of domestic demand.

On canned products, the Council asks for counter-measures to import restriction and advancing import tariffs in the United States; Government subsidy for continued publicity to stimulate demand and exhibitions overseas; ask for a change in United States import quota on canned tuna-in-brine to a country-by-country quota based on previous import records; request increases in import quotas of canned sardines and mackerel-pike by Southeast Asiatic countries, but particularly, Burma, Indonesia, and Egypt; continue trading on the basis of letter of credit; and reduce the price of tinplate for manufacturing cans to the international price level.

Also, in order to compete favorably in the international market on whale oil, an effort should be made to improve redemption ratio on vessels, lower interest, and to secure markets for steady and permanent exports. (Suisan Keizai Shimbun, June 2, 1961.)

FISHERY AND MARINE PRODUCTS EXPORTS TO UNITED STATES DECLINE IN 1960:

The bulk of Japanese exports of fishery and marine products to the United States in 1959-1960 was made up of fresh or frozen

Japan (Contd.):

Item	1960		1959	
	Quantity	Value	Quantity	Value
	Metric Tons	US\$ 1,000	Metric Tons	US\$ 1,000
Tuna, fresh or frozen . . .	64,924	18,977	65,482	19,479
Tuna, canned	9,651	9,473	9,905	10,493
Crab meat, canned	1,941	5,359	3,114	7,542
Other canned fish	17,737	14,035	29,549	23,839
Oils from fish and marine animals	1,891	2,124	1,661	1,911
Pearls, worked	1/	12,753	1/	11,759

tuna. But exports of that commodity decreased from 65,482 metric tons valued at US\$19.5 million in 1959 to 64,924 tons valued at US\$19.0 million in 1960. Exports of canned tuna were also off slightly. The greatest decline, however, was in the exports of other canned fish which dropped from 29,549 tons valued at US\$23.8 million in 1959 to 17,737 tons valued at US\$14.0 million in 1960 (see table). (United States Embassy, Tokyo, May 22, 1961.)

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JAPANESE FEEL TUNA FISHERY MAY EVENTUALLY BE REGULATED INTERNATIONALLY:

The feeling is spreading in Japan that there will come a time in the future when the tuna fishery will be regulated on an international basis, like the salmon, bottomfish, and whale fisheries. This feeling is supported by the fact that many more countries are now engaged in tuna fishing or are interested in engaging in tuna fishing, and the fact that the Inter-American Tropical Tuna Commission, which had been established to study the tuna resource in the Eastern Pacific, is now reported to be favoring the enactment of regulations to control the Eastern Pacific tuna fishery.

The Japanese National Federation of Tuna Fisheries Cooperative Associations is concerned over what appears to be a growing trend in the world to establish regulations to control the tuna fishery and hopes to have this matter fully explored by the National Tuna Research Council. The Federation hopes to have the Council analyze trends and developments in other countries, as well as conditions of the tuna resource throughout the world, for the purpose of clarifying Japan's position in regards to the establish-

ment of international agreements to control the tuna fishery. (Suisan Keizai Shimbun, June 16, 1961.)

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SUMMER ALBACORE TUNA FISHING OFF JAPAN:

Fishing conditions in this year's summer albacore tuna fishery off Japan in mid-May were reported promising as compared with the past three years. Landings of small albacore were becoming heavy as in 1956, a bumper catch year. However, the decline in the number of vessels fishing--about 30 percent less than last year--is expected to adversely affect the season's catch. At last year's peak, 280 vessels were fishing, and this year a little more than 200 vessels are expected to operate.

The fishing ground as of mid-May was located at 137°-144° E, longitude, 28°-30° N, latitude in the sea area south of the Kii Peninsula. Some 100 vessels were fishing the area. Fish weighing 13-15 pounds (considered to be extremely small) and medium 37-39 pound fish were mixed in the catches. Ex-vessel prices were down around \$276 per ton because of lack of enthusiasm on the part of the canners. Bait, which was scarce last year, is abundant this season. (Suisan Tsushin, May 15, 1961.)

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ALBACORE TUNA FISHING REPORTED POOR:

Early in June albacore fishing off Japan was reported very poor. As of June 10, 1961, albacore landings at the two major Japanese ports of Yaizu and Shimizu totaled 8,086 short tons. This was about 60 percent of the production of 13,282 short tons for the same period last year.

The price of albacore gradually rose since the start of the season and on June 10 the price of albacore (28-pound size) was 128 to 131 yen per kilogram (US\$322 to \$330 a short ton), with practically all fish being used for canning. In mid-May, albacore sold for 110 yen a kilogram (\$277 a short ton). (Suisan Tsushin, June 12, 1961.)

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SKIPJACK TUNA FISHING IN FULL SWING NEAR TOKYO:

On May 23 a total of 122 metric tons of skipjack arrived at the Tokyo Central Market.

Japan (Contd.):

This was about two times as much as on previous days. Besides skipjack, 38 tons of bluefin, 74 tons of yellowfin, and 80 tons of big-eyed arrived at the market.

The striped tuna schools that had been delayed from appearing by the cold-water mass which appeared just to the south of Kii Peninsula, suddenly began their northward movement and the spearhead of the run arrived at only 10 miles from the tip of Izu Peninsula. As of May 24, a good fishing ground was reported around 34° N. latitude, 139° E. longitude. Vessels from the port of Shimoda in one or two hours arrive in the fishing area, but the capacity of each vessel is only 5 to 10 tons of skipjack. The skipjack on the Tokyo market was caught two-thirds by seine and only one-third by poles. Skipjack is generally recognized as poled fish, but this year's seine catches contradict this assumption.

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CATCH OF TUNA MOTHERSHIPS
IN SOUTH PACIFIC:

The two Japanese tuna motherships presently fishing in the South Pacific are reported to have caught the following amounts of fish:

	No. 3 Tenyo Maru (as of June 6)	Nojima Maru (as of May 31)
	(Metric Tons)	(Tons)
Yellowfin	793	294
Albacore	417	104
Big-eyed	-	56
Other tuna	105	-
Spearfish	206	82
Shark	68	26
Other species	10	11

No. 3 Tenyo Maru early in June was fishing in the area 10° S. latitude, 176° E. longitude; Nojima Maru was fishing in the area 11°31' S. latitude, 174°10' E. longitude. (Suisan Keizai Shimbun, June 8, 1961.)

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TUNA CANNERS PROPOSE LIFTING
OF LICENSING RESTRICTIONS ON
MEDIUM-CLASS TUNA VESSELS:

The Japanese Canned Tuna Packers Association is instigating a movement to have the Japanese Fishery Agency remove the license restrictions on medium-class tuna fishing vessels (vessels between 40 and 100 gross tons). At present, only tuna vessels under 40 gross tons do not require fishing

licenses. The Association hopes that by having the restrictions on licenses removed more vessels will enter the tuna fishery, resulting in an increased supply of tuna. The cannery claim that liberalization of regulations permitting larger tuna fishing vessels has brought about a situation where there are now fewer pole-and-line vessels in the 40- to 100-ton size category, thereby contributing to the present critical shortage of tuna in Japan.

The Fishery Agency opposes the proposal, as does the National Federation of Tuna Cooperatives Associations. Figures compiled by the Cooperative Association show that the pole-and-line tuna vessels have declined in numbers since the peak years of 1952 and 1953 and presently total 348 vessels. Of these, 140 vessels fall within the category of medium-type vessels (40 to 100 gross tons). The Association claims that an increase in numbers of fishing vessels in the medium-class will cause tuna prices to drop. For this reason, it opposes the proposal by the cannery. (Suisan Keizai Shimbun, May 31, 1961.)

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THREE FISHING COMPANIES ASK TO
USE PURSE SEINES IN
ATLANTIC TUNA FISHERY:

Three Japanese fishing companies (all affiliated with one large fishery firm) filed applications with the Fisheries Agency for permission to operate the American-type tuna purse seines in the Atlantic fishery.

The Japanese have been studying the success the United States fishing industry is having purse-seining tuna in the coastal waters of California and off Central and South America. The three companies intend to adopt the purse-seine fishing method for skipjack and other tuna fishing.

The plan presented calls for the construction of tuna purse-seine vessels of the 450-ton class for tuna fishing off the west coast of Africa and off the eastern coast of Central America. According to the three companies' estimates, some 300 tons of tuna may be expected to be caught during one trip of some 40 days. Since the fishing grounds are far, the catch will naturally be landed in Africa or Central and South America. Sales to the United States and European markets will be handled entirely by the large fishery firm with which the three companies are affiliated since they will be concerned only with fishing.

Japan (Contd.):

The Fisheries Agency has not indicated its attitude towards the venture. The undertaking is not without problems, according to well-informed sources, particularly (1) as to what extent success is assured of the American-type tuna purse-seining in the Atlantic and it is realized that it can't be successful if fish schools are scattered; (2) since new vessels are being constructed, the initial investment will be large and failure will mean a large loss. (Suisan Shimbun, May 30, 1961.)

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FISHING COMPANY PLANS TUNA BASE IN CARIBBEAN AREA:

A large Japanese overseas fishing base at Curacao, Lesser Antilles (island in Caribbean Sea north of Venezuela, which belongs to the Netherlands), appears to be well on its way to becoming a reality. On May 25, 1961, a large Japanese company received word from the Netherlands Government that it fully supported the company's proposal and hoped that the company would immediately proceed with its plans. The company was awaiting approval from the Japanese Fishery Agency to start this undertaking. Approval was expected to be granted about mid-June.

The port of Curacao is a one-industry oil-refining town. The Netherlands Government wants to bring in new industry and, for this reason, is openly welcoming the plan to establish a Japanese fishing base at Curacao.

The Japanese company will lease more than 215,000 square feet of land and invest about 200 million yen (US\$555,555) for the construction of a 1,500-ton capacity cold-storage plant, a small fish sausage plant, and other base facilities. The base will be used to handle tuna caught by Japanese fishing vessels. Catch will be sorted at Curacao for export to the United States and Europe. Tuna unsuitable for export shall be used for the production of fish sausages and fish hams. Present plans call for landing about 10,000 metric tons of tuna per year at Curacao and for this base to eventually produce about one-twentieth of all Japanese tuna (including canned tuna) for export.

At present Japanese fishing vessels are using the port of Cristobal, Panama, but this port is far from the tuna fishing grounds. Also, since few foreign vessels call at Cris-

tobal, it is not possible to ship out frozen tuna immediately from this port. In this respect, Curacao has no shipping difficulties since a number of foreign ships call at Curacao. (Suisan Keizei Shimbun, May 27, 1961.)

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REGULATIONS FOR EXPORTS OF FROZEN ATLANTIC TUNA TO EUROPE AND AFRICA:

The Japan Export Frozen Tuna Association in mid-May 1961 decided on the regulations on frozen Atlantic tuna for export to Europe and Africa in 1961 (July-August).

There is little difference from the previous year's regulations. For Europe and Africa, the production quota for each vessel is 2 fishing trips (up to 3 trips are possible for those that are less than 150 tons). For Italy, the top limit is 12,000 metric tons for the fixed-base quota added to a quantity equivalent to what is produced by one-half a trip per vessel. For a new market the quota will be outside of the two-trip limit if approved by the board of directors. (Suisan Tsushin, May 16, 1961.)

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EXPORTERS DISCUSS EXPORTS OF FROZEN TUNA TO EUROPE:

The Japanese Frozen Tuna Exporters Association met on June 13, 1961, to discuss the amount of frozen tuna to be exported to Italy in the second quarter (July to September), frozen tuna exports to Czechoslovakia, and the matter of sending a delegation to Italy to negotiate changes in the present trade agreement.

On the question of exports to Italy, the Association set an export target of 3,000 metric tons of frozen tuna for July 1961. By agreement, Japan is to export 30,000 metric tons of frozen tuna to Italy in 1961 (April 1, 1961, to March 31, 1962) and the Association sets quarterly targets to meet that goal. The fishing companies and exporting firms had supplied figures as to the amount of fish they could supply for the second quarter, but the Association set an export target for July only, and not for the entire quarter due to poor fishing conditions. This matter of targets was to be explored further at the next meeting scheduled for June 20.

Concerning the question of frozen tuna exports to Czechoslovakia, the Association dis-

Japan (Contd.):

cussed a letter from Czechoslovakia that stated that Czechoslovakia would decide whether or not to import additional Japanese frozen tuna after first inspecting the initial shipments of frozen tuna from Japan, which were expected to be delivered sometime in late June; that, if the quality of the initial shipments was good, Czechoslovakia would then import from Japan 2,500 to 3,000 metric tons of frozen tuna which had previously been imported from Norway.

On the subject concerning sending a delegation to Italy to negotiate changes in the trade agreement which Japan now has with Italy, it was pointed out that Italy wants to revise the clause in the present agreement which states that Japan will not be responsible for claims once a transaction has been completed, although in practice Japan has been adopting corrective measures whenever claims were filed.

A Japanese delegation of four members was selected to leave for Italy sometime around mid-July to study the tuna situation in Italy. The visit of this delegation was requested by tuna buyers in Italy. One of the problems that this group will explore involves claims. (Suisan Keizei Shimbun, June 15, and Suisan Tsushin, June 20, 1961.)

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FROZEN TUNA EXPORTS TO YUGOSLAVIA:

Japanese frozen tuna exports to Yugoslavia are expected to total about 12,000 metric tons in 1961. In 1960, frozen tuna exports to that country amounted to 11,364 metric tons, or approximately 18 percent of the 40,000 metric tons of Atlantic Ocean tuna which was exported by Japan. The fish, mainly yellowfin, sold for approximately \$260 to \$270 a metric ton. These are c.i.f. prices and include five percent commission. In mid-June it was reported that there were two tuna buyers from Yugoslavia in Japan. (Suisan Keizai Shimbun, June 14, 1961.)

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OVERSUPPLY OF ATLANTIC TUNA THIS SUMMER NOT LIKELY:

The Japanese Export Frozen Tuna Packers Association and Frozen Food Exporters Association held a joint meeting on May 19,

1961, to discuss the marketing situation of frozen Atlantic tuna this summer. Ordinarily there is an oversupply of Atlantic Ocean tuna in July and this meeting was convened to discuss measures of meeting the problem.

The joint committee takes the view that there is not a great likelihood of an oversupply of tuna occurring this year. Japanese landings of tuna from the Atlantic Ocean fishery as of May were about half of what they were in 1960 for the same period. Due to the poor fishing conditions, some of the vessels normally engaged in the tuna fishery off West Africa switched to other fishing grounds.

The price of Atlantic tuna as of May was holding firm at about \$280 a metric ton. Should poor fishing continue, it is expected that tuna (species unidentified) will sell for \$300 a metric ton towards fall. (Shin Suisan Shimbun Sokuho, May 23, 1961.)

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TUNA SHORTAGE CREATING PROBLEM FOR CANNERS AND EXPORTERS:

Tuna cannery and frozen tuna exporters in Japan continue to be plagued by the tuna shortage. Frozen tuna exporters presently cannot compete for the high-priced fish, and cannery, in order to maintain their export quota which is annually allotted to each firm on the basis of production, must pack tuna even if it means operating in the red for a while. The high ex-vessel prices are proving a great hardship on the smaller cannery in particular.

Fish sausage producers, on the other hand, are reported to be able to pay higher prices for tuna than tuna cannery and still show a margin of profit. They are said to be paying as much as 130 yen a kilogram (US\$330 a short ton) for tuna, and the fact that they are paying this high price is making it most difficult for tuna cannery, not to mention frozen tuna exporters, to compete for the raw supply. Some circles are requesting that measures be adopted to correct this situation. (Nippon Suisan Shimbun, June 7, 1961.)

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PROSPECTS FOR EXPORT OF FROZEN TUNA TO RUSSIA APPEAR DIM:

The president of a large Japanese company flew to Moscow in early March 1961 to consult with Soviet Government officials on

Japan (Contd.):

the possibility of exporting Japanese frozen tuna to the Soviet Union. He returned to Tokyo in early May and stated that talks had not reached a stage where sales could be made because there are problems connected with exporting frozen tuna to the Soviet Union inasmuch as the Soviet Government classifies frozen tuna as a nonessential item. He added that if Japan should agree to import items such as petroleum, lumber, and iron ore from the Soviet Union, it is possible that the Soviet Union would allow the importation of nonessential goods.

The food situation in the Soviet Union is reported to have improved considerably and marine products such as canned salmon and canned saury are said to be found in many of the Russian stores. The Soviet Government is also reported to be encouraging the consumption of marine products and is reported to be constructing tuna fishing vessels. But hope is still held for exporting Japanese frozen tuna to the Soviet Union sometime in the future. (Suisan Keizai Shim-bun, May 10, 1961.)

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ALBACORE TUNA SHORTAGE MAY FORCE CANNERS TO PACK MORE LIGHT-MEAT FOR EXPORT:

The 47 tuna-canning plants in Japan affiliated with the Canned Tuna Packers Association started to pack tuna in May 1961, but the plants are reported to be faced with a shortage of raw albacore tuna. The Association held a meeting on May 24 to discuss ways and means of meeting this problem, but did not arrive at any concrete plan. It has requested the Japanese Fishery Agency to study the problem.

In the latter part of May the f.o.b. prices of canned tuna for export were \$9.15 a case for whitemeat and \$6.80 a case for lightmeat. The ratio of canned whitemeat to canned lightmeat tuna for export purposes is not fixed, and in the past this ratio was about 2 to 1 in favor of lightmeat tuna, although emphasis was placed on packing whitemeat tuna since it brought a better price. Industry seems to hold the view that it may now have to switch to packing more lightmeat tuna due to the shortage of albacore. (Suisan Keizai Shim-bun, May 27, 1961.)

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TUNA CANNERS IN SHIZUOKA INDICATE OUTLOOK IS UNFAVORABLE:

The outlook for the tuna canning industry in the Shizuoka area is considered unfavorable because of a drop in the sales of canned tuna for export to the United States and a number of difficult problems on materials, labor, and selling policy. Albacore and skipjack tuna catches cannot be expected to increase much because of the decline in the number of fishing vessels fishing seasonally for tuna off Japan. Probably landings large enough to meet the requirements of the canners cannot be expected.

The packing industry in Shizuoka Prefecture has been growing with the packing of albacore, skipjack in summer, and oranges in winter. In recent years, however, the year's production schedule has been disrupted by the continued poor fishing for summer albacore. Statistics on landings in Yaizu, where more than half of the summer albacore is landed, show 8,500 tons landed in 1958, 5,500 tons in 1959, and 11,660 tons in 1960. The large landings of 15,000-20,000 tons in 1955 or thereabouts seem like unattainable goals.

The drop in landings is attributable to the seasonal and unpredictable nature of the summer albacore fishing resource. Also in recent years, vessels fishing seasonally for tuna have found it unprofitable and they have switched to year-round fisheries. This reduced the number of vessels fishing for albacore and was partly responsible for a further drop in catch. For this reason, ex-vessel prices rose from \$251 per metric ton in 1958 to \$301-\$326 per ton. The recognized fact that the profit made on exports of canned products covered or offset the losses on domestic sales is no longer true, since profits have shrunk to almost zero.

As of mid-May 1961 canned whitemeat tuna was exported at \$9.15 per case f.o.b. and, judging from market conditions, it would not be desirable to raise the price even though the ex-vessel price is high. It is considered absolutely essential for the canners to maintain the present price in order to retain the position of the Japanese products on the market. Consequently, the packer is compelled to continue production at the \$9.15 price and he can afford to pay only around \$276 per ton for his raw tuna. Many in the industry feel that buying raw tuna at a price high enough to make packing unprofitable is unavoidable. Under the circumstances, the industry is seriously studying how to reduce costs. Buying the raw fish needed for canning cooperatively is again being considered, a proposal which has been shelved for the past few years. The objective is to get adequate fish and prevent an increase in the ex-vessel price. The canners seem to be thinking about concluding a price agreement with the fishermen.

Obtaining adequate labor is also troubling canners. Up to a few years ago, they were able to get the desired number of workers, but recently, considerable difficulty has been experienced because the labor supply is dwindling. This is due to the fact that food processors, including packers around Yaizu and Shimizu, have increased in number and, at the same time, the packers are in need of more workers to fully utilize their expanded facilities. Also, a number of large industrial plants have sprung up which are siphoning off much of the labor supply.

The industry is making an effort to lure the workers back by modernizing its facilities and establishing a minimum wage system, but the industry finds it impossible to compete with the larger industries. The canners succeeded in obtaining new graduates from schools this spring, but the number was far short of what they needed. They were still plagued with lack of labor in mid-May as the peak in the canning season was approaching.

Usually, May is the peak of the season. Last year, 200-300 metric tons of summer albacore per day were landed at the Yaizu market beginning the latter part of April. This year, however, their vanguard had not yet been seen and the fishing season seemed to be late getting started. The packers who had been packing other minor products, after finishing with orange canning, were impatiently waiting for the beginning of the summer albacore fishing. (Suisan Keizai Shim-bun, May 12, 1961.)

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Japan (Contd.):

STOCKS OF CANNED TUNA IN BRINE:

The Japan Export Canned Tuna Fisheries Association announced late in May 1961 that the stocks of canned tuna in brine on hand in Japan as of March 31, 1961, amounted to 301,789 cases, of which 297,243 cases were white tuna and 4,546 cases lightmeat tuna. (Nippon Suisan Shimbun, May 26, 1961.)

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EXPORT PRICES OF CANNED TUNA IN BRINE RAISED:

The Japanese export price of canned tuna in brine produced from skipjack will be raised 50 cents a case, from \$6.80 to \$7.30 a case f.o.b. Japan. This new price was agreed on at a meeting held between packers and exporters on June 5, 1961. This increase applies to canned skipjack only. On June 6, canned tuna exporters submitted to the packers a proposal to increase the export price on canned yellowfin in brine by 80 cents a case.

Packers came out strongly for the increase due to a shortage of skipjack tuna, which has resulted in higher prices being paid for that species. However, very little skipjack has been canned since January of this year and it will be interesting to see if this price increase will stimulate the production of canned skipjack. Depending on production, this price may possibly be changed again in the future.

The Tuna Standing Committee of the Japanese Canned Food Exporters Association held a meeting on June 6, 1961, to discuss the next sale of canned tuna and raising the export price of canned lightmeat tuna. The Association drafted the following proposals for submission to the tuna packers for their approval:

1. Raise the export price (now about \$6.80 a case) of canned yellowfin tuna in brine by 80 cents a case. However, the sale of canned yellowfin at the next sale (200,000 cases) of canned lightmeat tuna for the period June to August would be limited to a maximum of 100,000 cases, with consideration being given to the sale of large-size cans of canned yellowfin.
2. In addition to 150,000 cases of canned whitemeat tuna, the Association will sell all

the canned lightmeat tuna (6,000 cases of skipjack and 22,000 cases of yellowfin) presently held in stock by the joint sales company. Also, canned skipjack will be sold as supplies become available.

Although the market in the United States for Japanese canned tuna in brine seemed to be fairly firm as of early June, prices for United States-packed canned tuna in oil have shown no tendency to rise. Therefore, Japanese trading firms are inclined not to raise the price of the Japanese pack by \$1.50 a case as asked by the canners.

Canned tuna exporters met again on June 12 to discuss ways of marketing canned skipjack and canned yellowfin under the new prices since both products are sold as lightmeat tuna and it is not possible to differentiate between them. Agreement was reached at this meeting to consider 7-ounce cans of lightmeat tuna as being made wholly from skipjack and 13-ounce and 4-pound cans of lightmeat tuna as being a mixture of yellowfin and skipjack. Definite prices for the different sizes of lightmeat tuna have not been made public as yet, but the exporters will include this information in the proposal which they will submit to the joint sales company. The proposed prices will affect only the 200,000 cases of canned lightmeat tuna in brine to be offered between the period June to August 1961. (Suisan Tsushin, June 6, 7, and 13, 1961, and Suisan Keizai Shimbun, June 8, 1961.)

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CANNED TUNA SUPPLY REPORTED LOW:

The shortage of tuna in Japan appears to be getting more serious. On May 8, 1961, four members of the Export Canned Tuna Packers Association called on the Japanese Fishery Agency to request that a part of the increase of 9,300 metric tons of tuna given to the tuna mothership companies be allotted for the production of canned tuna. Earlier the Japan Fish Sausage Association had approached the Fishery Agency and requested that 80 percent of the increase in the tuna mothership catch quota be allotted for the production of fish sausages. (Suisan Keizai Shimbun, May 10, 1961.)

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CANNED SARDINES NOT BEING OFFERED TO PHILIPPINES:

The National Marketing Corporation (NAMARCO) of the Philippine Government

Japan (Contd.):

planned to hold the second quarterly bid opening for canned sardines in mid-June 1961, but Japan will not be tendering any offers for three reasons: (1) Instability of the Japanese sardine fishery this year. Japan is not confident that a sufficient supply of sardines will be available. (2) The embossed label restriction which prevents Japan from going into production before a contract is agreed upon. (3) The belief that Japan will be able to sell canned sardines to other countries. This belief seems to be influenced by the unhappy experience Japan had with NAMARCO over claims.

On the other hand, some quarters in Japan are suggesting that Japan should perhaps tender offers at about the same price as the United States. In the past, Japan offered canned sardines at \$7.00 to \$8.00 a case; the United States \$10 to \$10.50 a case.

Rumors are spreading that NAMARCO may stop accepting further bids from the Union of South Africa. Also, the Philippine Central Bank is reported to be considering a proposal to reject license applications to import South African products. It appears that the African-Asian bloc of nations which strongly opposes the apartheid policy of the Union of South Africa is advocating the adoption of these measures.

The Philippine Islands is a leading importer of South African canned sardines. Statistics show that the Philippine Islands imported approximately 500,000 cases of canned sardines from South Africa in 1959, or roughly one-third of South Africa's total export of canned sardines. In 1960, the Philippine Islands is estimated to have imported a greater amount of canned sardines from South Africa on a percentage basis, since such countries as Ghana, Malaya, and Burma, which previously imported large amounts of South African canned sardines, began to boycott South African products in 1960. (Suisan Tsushin, June 15, 1961.)

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STANDARDS FOR MANY CANNED FISHERY PRODUCTS PLANNED:

The Japanese Ministry of Agriculture and Forestry on May 20 announced new Japanese agricultural standards for 21 canned aquatic products made of six species such as skip-

jack tuna, other tuna, horse-mackerel, sardine, mackerel-pike, and mackerel. The purpose for establishing the standards is to assure a uniform quality for exports. The date when the standards go into effect is expected to be after August 1961. The Ministry also plans to establish standards for canned orange, salmon, and trout, and crab meat in the near future. Standards for three canned whale meat products were established not long ago.

The standards for canned aquatic products are similar to those issued for canned meat products. Standards provide that (a) labeling which misrepresents the contents is prohibited; (b) the label should clearly state the species, the type and size of the contents, including the seasonings used; (c) the label should clearly state the name of the product, weight of the contents and over-all weight, and the percentage of each major ingredient used, and should contain the standards shield.

The standards for aquatic products differ from those for meat products. For aquatic products: (1) names of the kind of product and brand are not required to be shown together but should be clearly shown; (2) no designation need be made of the weight of solid contents of sardines in oil and various products canned in water, but solid contents must be more than 80 percent of the total weight of the contents; (3) in case of tuna in oil, it should be identified as to whether it is white or light meat.

The 21 canned marine products which are to be covered by standards are: tuna in oil, skipjack in oil, seasoned tuna in oil, seasoned skipjack in oil, tuna in vegetables, skipjack in vegetables, Pacific mackerel natural, Pacific mackerel seasoned, Pacific mackerel in soybean paste, sardines in oil, sardines natural, sardines seasoned, sardines broiled, sardines in tomato sauce, saury natural, saury seasoned, saury broiled, saury in tomato sauce, jack mackerel natural, jack mackerel seasoned, and jack mackerel in tomato sauce. (The Suisan Tsushin, May 29, 1961, ShinSuisan Shimbun, May 22, 1961.)

Note: Japanese make a distinction between skipjack, albacore, and other species of tuna. "Tuna" includes yellowfin, big-eyed, and bluefin.

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SMALL FISH-CANNING COMPANIES TO BE ACQUIRED BY LARGE FIRMS:

The large fishing companies and commercial houses in Japan are reported to be push-

Japan (Contd.):

ing ahead with plans to control the smaller fish-canning companies for the purpose of increasing the production and consumption of their own brands. In this regard, the large fishing companies, which started to expand their marketing activities on a nation-wide scale since last year, are reported to have succeeded in limiting the number of different brands appearing on the market. To meet this competition, the large commercial houses, which own well-known brands and have excellent sales networks in Japan as well as in foreign countries, are reported to be seeking new tie-ups with the smaller fish-canning companies to protect their name brands and to acquire supplies. This competition within Japan has served to focus attention on the need of consolidating brands for the export market, such as in the United States, to meet the competition of other foreign products.

The above trend gained momentum last year following the poor tuna fishing season, and has been further accelerated this year due to the continuing poor season. Many smaller packers, in order to maintain their export quota which is allotted to them on the basis of production, have had to remain in production despite operating in the red. To continue operations, they obtained loans from the large fishing companies and commercial houses to tide them over the successive poor seasons, and have found themselves compelled to tie-up with these larger firms, which attached strings to the loans. (Nippon Suisan Shimbu, June 17, 1961.)

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STEEL COMPANY MAKES
CHROME-PLATED STEEL
SHEETS FOR CANS:

A Japanese iron and steel firm has succeeded in manufacturing chrome-plated thin steel sheets for the manufacture of cans and announced that it would put the product on sale in October 1961. The characteristic of the new product as compared with regular tin plate is that the new product is cheaper and resists corrosion. The manufacturing technique is entirely Japanese and the company intends to apply for a patent in the United States.

The price of the new product is expected to be \$194 per ton, compared with \$250 per ton for tin plate. The only difficulty with the

new product is that it is harder to solder than ordinary tin plate or galvanized steel sheets.

The Japanese firm making the chrome-plated steel sheets is one of the largest iron and steel mills in Japan and was reported to have succeeded in obtaining a loan of \$16,700,000 from the Import-Export Bank in the United States recently. (Japanese newspaper, June 5, 1961.)

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PRODUCTION OF FISH
HAM AND SAUSAGES:

Japanese production of fish hams and sausages for 1960 amounted to 85,442 metric tons, compared with 64,670 tons in 1959--an increase of 32 percent for 1960, according to the Fish-Meat Ham and Sausage Society. Judging from sales during January-May this year, production is expected to amount to more than 100,000 tons in 1961, 30 percent more than 1960, according to estimates by the largest companies producing these products. Nearly all large Japanese fishery companies are engaged in processing fish hams and sausages.

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FISHERY AGENCY HOPES TO ESTABLISH
INTERNATIONAL FISHERIES
ADVISORY GROUP:

The Japanese Fishery Agency hopes to establish a single body called the "International Fisheries Policy Study Committee," which would be staffed by experts from Government and industry and concentrate on problems relating to international fisheries. The primary function of the International Fisheries Policy Study Committee would be to study available data on resources, inasmuch as all international fisheries disputes involve the basic problem of resource, and make recommendations to the Fishery Agency.

At the present time, problems concerning international fisheries involving Japan on the one hand and such countries as the Soviet Union, China, Korea, etc., on the other, are being handled by separate groups composed of Government and industry members. Industry members naturally express views with an eye to their own company's welfare, whereas the Fishery Agency is concerned with the welfare of the nation as a whole.

The idea of establishing an International Fisheries Policy Study Committee is not new.

Japan (Contd.):

Its formation had been considered in the past but this was as far as it got due to difficulties over policy and budget. It is likely that the Ministry of Finance may contend that such foreign activities are the responsibility of the Ministry of Foreign Affairs and may be reluctant to allot funds to establish this activity. (Suisan Keizai Shimbun, June 9, 1961.)

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SALMON OPERATIONS IN THE NORTH PACIFIC OCEAN:

On May 21, 1961, a total of 12 Japanese salmon motherships accompanied by 410 catcher vessels departed from Hakodate and Kushiro in northern Japan for the salmon fishing grounds in the North Pacific Ocean and Bering Sea. The salmon fleet left port as soon as the Northwest Pacific Fisheries Commission (Soviet Union and Japan) concluded its fifth annual meeting at Tokyo on May 21. The fishing fleets were due on the fishing grounds about May 28 and were scheduled to operate until the end of the season on August 10.

Japan's 1961 salmon quota in the Treaty area will be 65,000 metric tons and the Japanese Government has divided this quota as follows: 53,600 metric tons to the salmon mothership fleets and 11,400 metric tons to the land-based gill-net fishing fleet operating in the Treaty waters south of 48° N. No salmon long liners are permitted to operate in the Treaty area. The Soviet Union's 1961 salmon catch target is 80,000 metric tons.

As a result of the new fishing agreement, Japan's salmon catch for this season is expected to be 65,000 tons inside and 70,000 tons outside the Treaty area for a total of 135,000 tons--4,500 tons less than last year.

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SALMON MOTHERSHIP FLEETS IN NORTH PACIFIC MAKE EXCELLENT CATCHES:

Early in June 1961, the Japanese salmon mothership fleets in the North Pacific were reported to be concentrated in the area south of Attu Island and were said to be catching an average of over 100 metric tons of salmon per fleet per day. Red salmon of large size, according to reports, made up the bulk of the landings.

The Japanese salmon fleet departed port two days later this year but was reported to have exceeded last year's catch for the period up to June 1.

Around June 9 the Japanese press reported all 12 salmon motherships concentrated in the area between 170°25' east and 180° and 49° and 52° north. Catches were reported the highest in the postwar period with an average daily catch per fleet of 80 tons (evidently as fleet continued fishing average dropped) as compared to 65 tons in 1960. Catches were composed of 60 percent red or sockeye salmon and about 40 percent chum, with only nominal showings of pink. (United States Embassy, Tokyo, June 9, 1961.)

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KING CRAB FLEETS IN NORTH PACIFIC REPORT GOOD FISHING:

The Japanese king crab fleets operating in the Okhotsk Sea and in Bristol Bay are reported to be having excellent crab fishing. All crab fleets are said to be averaging about 12 crabs per tan of tangle nets. The Okhotsk

Area	Fleet	No. Cases	Percentage Recovery	No. of Crabs Caught Per Tan
Okhotsk Sea	<u>Hakuyo Maru</u>	16,021	30.1	12.0
" "	<u>Yoku Maru</u>	18,900	28.3	12.6
" "	<u>Kaiyo Maru</u>	15,483	30.2	11.4
" "	<u>Shiranevama Maru</u>	14,244	27.8	11.7
Bristol Bay	<u>Tokel Maru</u>	35,658	-	11.9

Sea fleets have packed 25 percent of their quota of 260,000 cases of canned crab meat and the Tokel Maru (Bristol Bay) 45 percent of its quota of 80,000 cases. (Suisan Keizai Shimbun, May 26, 1961.)

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HALIBUT CATCH TARGET OF 28 NORTH PACIFIC BOTTOMFISH FLEETS:

The halibut catch target of the 28 Japanese bottomfish fleets scheduled to operate in the North Pacific (of which 20 are already on the fishing grounds) totals 47,000 metric tons. This represents an increase well over six times that of last year's catch of 7,200 metric tons. Of this year's catch, about 2,000 to 3,000 tons of frozen halibut are expected to be exported to the United States.

In 1960 the price of frozen halibut steaks imported to the United States was 35-38 cents

Japan (Contd.):

a pound, c.i.f. delivery east coast of the United States. In view of the much larger production this year, the export price is expected to fall to 32-33 cents a pound. (Suisan Tsushin, June 2, 1961.)

Editor's Note: Previous reports had announced the halibut catch target for 24 of the 28 fleets as 37,891 metric tons.

GOOD FISHING REPORTED BY SHRIMP FACTORYSHIP IN NORTH PACIFIC:

A large Japanese fishing company's factoryship Eijin Maru (7,400 gross tons) commenced shrimp fishing in the Bering Sea on May 20, 1961. As of May 23, the Eijin Maru packed 723 cases of canned shrimp, and 103 metric tons of frozen shrimp, and 21 tons of other products. Eijin Maru was operating in the vicinity of 57° N. latitude, 170° W. longitude.

The factory ship is scheduled to fish and pack for 130 days and is expected to return to Japan in mid-October 1961. The production target is 60,000 cases (48 7-oz. cans) of canned shrimp and some 3,500 tons of frozen shrimp, rockfish, Alaska pollock, and cod. (Suisan Keizai Shimbun, May 26, and June 8, 1961.)

NORTH PACIFIC BOTTOMFISH FISHERY TRENDS AS OF MAY 22, 1961:

A large Japanese fishing company's stern trawler, No. 50 Akebono Maru (1,470 gross tons), operating in Aleutian Island waters was reported to have caught 1,581 metric tons of fish as of May 22, 1961. Catch by species was: flatfish 1,062 metric tons, cod 37 tons, Alaska pollock 267 tons, rockfish 82 tons, shrimp 133 tons. (Suisan Keizai Shimbun, May 28, 1961.)

FISHING COMPANY PLANS EXPERIMENTAL TRAWLING OFF KODIAK ISLAND, ALASKA:

A large Japanese fishing company is planning to carry out experimental trawling off Kodiak Island, south of the Alaskan Peninsula. It is reported that the area has stocks of halibut, shrimp, and silver cod. Last year two other fishing companies, plus the one planning to trawl this year, conducted indi-

vidual experimental trawling operations and found that catch prospects were good.

This year's operation is expected to be on a small scale, using 2 or 3 research vessels. (Suisan Keizai Shimbun, May 31, 1961.)

ANOTHER COMPANY PLANS TRAWLING OPERATION OFF NORTHWEST AFRICA:

A third Japanese fishing company plans to participate in pelagic trawling beginning next year in the Atlantic off the west coast of Africa. The company will construct two large stern trawlers of the 1,500-ton class. One of the two will be completed by the year-end and the other by April 1962. At first, they will be used for fishing off New Zealand and later for development of fishing grounds off the northwest coast of Australia prior to being sent to the Atlantic off northwest Africa. Previously, two other companies had announced plans for trawling operations off northwest Africa. (Suisan Keizai Shimbun, June 2, 1961.)

GOVERNMENT TO SUBSIDIZE CONSTRUCTION OF TWO COLD-STORAGE PLANTS:

The Japanese Government has launched a four-year plan to subsidize the construction of 12 cold-storage plants and facilities in Japan. To get this program started, the Japanese Fishery Agency was allotted a budget of 100 million yen (US\$277,777) for FY 1961 (April 1, 1961 to March 31, 1962). This sum includes 97,500,000 yen (\$270,833) for subsidizing up to 30 percent of the construction of two cold-storage plants and 2.5 million yen (\$6,944) for subsidizing the construction of refrigerated rail cars.

For 1961 the Fishery Agency has selected the ports of Miyako (Iwate Prefecture) in northern Japan and Fukuoka (Fukuoka Prefecture) in southern Japan to receive this aid. Miyako was selected to help stabilize its saury fishery and Fukuoka was chosen to assist that city's mackerel fishery. Under the Government-aid plan, in addition to financial assistance to construct a freezing plant, Miyako will get two refrigerated rail cars and Fukuoka one. (Nippon Suisan Shimbun, May 26, 1961.)

Japan (Contd.):

FISH MEAL PRICES,
JANUARY-APRIL 1961:

Average domestic wholesale and export fish meal prices for January-April 1961 quoted by the Aquatic Oils Association of Japan were as follows:

	Domestic Wholesale Price		Export Price (f.o.b.)	
	US\$ Per Metric Ton	US\$ Per Short Ton	US\$ Per Metric Ton	US\$ Per Short Ton
1961				
January . .	1/161.67	1/146.67	139.42	126.48
February . .	165.00	149.69	147.20	133.54
March . . .	166.67	151.20	149.00	135.17
April . . .	163.89	148.68	2/	2/

1/Revised.
2/Not available.

The average price for April includes prices for saury, atka-mackerel, launce, jack mackerel-sardine meal, and fish waste cake (45 percent protein of cod and pollock). The price of fish waste cake was \$125 a metric ton while the prices of the other types ranged from \$161.11 to 166.67 a metric ton. (United States Embassy, Tokyo, June 9, 1961)

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LANDINGS OF FISHERY
PRODUCTS IN 1960:

Japan's total landings (excluding whaling operations) in 1960 amounted to 6,192,000 metric tons--5 percent more than the previous year when 5,880,000 tons were reported. For the first time, landings surpassed the 6,000,000-ton mark and established a new record. While in 1960 flatfish landings by mothership-trawling operations in northern Pacific waters almost doubled and horse-mackerel and common mackerel landings increased, mackerel-pike landings dropped as compared to 1959. In spite of increased landings, the average ex-vessel price of 13 cents per kilogram (5.9 U.S. cents a pound) was 18 percent higher than in 1959. Total ex-vessel value was \$922,222,222, about \$150 million more than the previous year. Whaling production amounted to 18,800 blue-whale units, a decrease from the previous year.

Marine landings amounted to 5,812,000 tons, 4 percent over the previous year. The increase is attributed to the catch in the North Pacific of fish for reduction (420,000 metric tons of fish utilized in the production of fish meal, twice as much as in 1959), horse-mackerel landings from the East China Sea, and tuna long-line catches in the Atlantic. Increases in those landings were partially offset by poor fishing for mackerel-pike, dip-netting, and hook-and-line skipjack tuna fishing. But prices were unexpectedly good. Trawling west of 130° in the North Pacific, medium-size trawling, and purse-seining catches were fairly stable. On the basis of species alone, 1960 landings were down by 43 percent for skipjack, 45 percent for saury, and 34 percent for sardines.

The catch of fresh-water fisheries amounted to 73,000 tons, and fish-culture yielded 280,000 tons.

The tuna long-line fishery with bases in Japan in 1960 caught 322,000 tons, 10 percent more than in 1959. Landings by the tuna long-line fishery with bases in the Atlantic were up 44 percent and amounted to 72,000 tons. The landings by the North Pacific mothership trawling operations in 1960 were

Species	1960	1959
	. . . (1,000 Metric Tons) . . .	
Sardine	78	119
Anchovy	349	356
Horse-mackerel	595	432
Mackerel	351	294
Mackerel pike	287	522
Skipjack tuna	94	166
Bluefin tuna	65	51
Albacore tuna	89	68
Big-eyed tuna	72	74
Yellowfin tuna	154	126
Salmon, trout	152	184
Flatfish, flounder	509	262
Cod	67	66
Alaska pollock	379	376
Atka mackerel	115	100
Others	1,166	1,130
Total fish	4,522	4,326
Shellfish	504	464
Other aquatic animals	776	753
Seaweeds	386	337
Grand total	1/ 6,188	5,880

1/No explanation is given as to why this total is less than the total of 6,192,000 tons mentioned in the text.

226 percent more than in 1959. The skipjack hook-and-line fishery landed 109,000 tons, 40 percent less than in 1959. (Japanese newspaper and *Suisan Keizai Shimbun*, June 1, 1961.)

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SCIENTIST SUCCEEDS IN HATCHING
TUNA YOUNG:

The Nankai Regional Fisheries Research Laboratory (Kochi, Kochi Prefecture) reports that one of its scientists has succeeded in rearing big-eyed tuna from the egg stage and obtained valuable information concerning the morphology of the young of that species.

The experiment was conducted by stripping eggs from a ripe female big-eyed tuna and fertilizing them with sperm from a male big-eyed tuna. Water temperature was held between 28° and 29° C. (82.4°-84.2° F.). The first cell cleavage occurred in 40 minutes and tuna young (1.5 millimeters long) emerged after 21 hours.

This hatching experiment was done on the research vessel *Taisei Maru*, 579 gross tons, of Mie Prefectural Fisheries Research Station, while the vessel was engaged in tuna research in the Indian Ocean in February 1961. Three separate experiments were run, two of which met with success and two baby tunas were hatched.

The results of this work are to be reported at the Pacific Science Congress to be held in Honolulu in August. (*Nippon Suisan Shimbun*, May 31, 1961.)

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Japan (Contd.):

MODERN OYSTER CANNING
AND FREEZING PLANT:

In Hiroshima, Japan, there was opened in 1960 a modern oyster-freezing and canning plant. It is owned and operated by a leading Japanese salmon-canning firm.

The oyster processed is *Ostrea gigas*, known on the North American west coast as the Pacific oyster. The oysters are grown in Hiroshima Bay. Raft culture only is employed. The oysters are grown on wires suspended from bamboo rafts and thus never touch the sea bottom. This method keeps them free from mud and drills and in a continuously moving current of water which promotes rapid growth.

The frozen and canned products are for export. Before entering the building, the shell oysters are spray-washed with water containing 100 parts per million of chlorine, and during processing the oysters are washed with water which meets drinking water standards. The oysters are hand-opened because steam opening has a tendency to shrink and toughen them.

Both frozen and canned oysters are hand-packed. The former are frozen individually in polyethylene sheets, formed into individual pockets and with a labeled cover which is heat-sealed before freezing. Freezing is done in 20 minutes at -30° F. Tunnel-freezing capacity is 10 tons of shucked oysters in 8 hours.

Technical guidance in plant design, equipment, and sanitary and quality control was provided by a west coast United States firm, which has been in the oyster business for many years, utilizing spat imported from Japan. This firm has world distribution rights to the oyster products produced by the Japanese plant. (Fisheries Newsletter, March 1961.)

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TOKYO'S FISH MARKET
LARGEST IN ASIA:

Fish dealers throughout Tokyo converge each morning at the Uogashi fish market in Tsukiji, the largest wholesale fish market in Asia. The market is formally called the Metropolitan Central Wholesale Market. Although it also deals with fruits and vege-

tables, it is commonly known as the "fish market," and supplies a daily average of 1,600 tons of fish to the nine million citizens of Tokyo.

Approximately 1,600 licensed brokers and 25,000 retail fishmongers are at the market every morning, where a day's transaction reaches an average of ¥150 million (US\$417,000).

The origin of this market dates back to 1590 (18th year of Tensho) when Ieyasu Tokugawa established his Shogunate headquarters in Tokyo, then called Edo. Chief fisherman Mogoemon Mori, together with 30 others, was ordered by Ieyasu to supply fish required by his headquarters. The fish market was located on the banks adjacent to the Nihon-bashi in the center of Tokyo, and it prospered until destroyed by the 1923 earthquake. Immediately after the earthquake, it was relocated at its present site.

A typical day at the market, except for three regular holidays a month, begins at 4 a.m. The dim lights from the ceiling illuminate a vast variety of fish, some placed directly on wooden boards and others packed in wooden pails and cases. The first trickle of men are the brokers who act as middlemen between wholesalers and retail fishmongers. They check the variety and freshness of the fish displayed for the auction sales. The fish have been carried into the market from all parts of the country by trains, trucks, and vessels, arriving at the market from 10 p.m. of the previous night.

In the market, there are seven wholesale firms to which the fishermen entrust the sale of their fish--at a margin of six percent. About 60 percent of the fish is transported to the market by freight trains, 25 percent by trucks, and the rest by fishing boats. These fish are sorted and displayed by cargo agents who work throughout the night. The fish is sold to the highest bidder at the daily auction. Scores of brokers surround the wholesalers and go through the auctioning procedure with shouts and unique hand-signs. The bidding closes within an hour or so, and the fish is then carried to the stalls of brokers in the market to be sold later in the morning to retailers.

The brokers classify the fish by size and kind for the convenience of the retailers. Among the 1,600 auctioneers engaged in the bidding are several large independent buyers

Japan (Contd.):

for chain restaurants, schools, and institutions such as the Japan Self-Defense Forces and others. When the auction sales are closed, registered fish retailers come to the market. The rush hour created by these retailers is around 8 a.m., when the 200,000-square-meter market is filled with trucks, tricycles, and handcarts.

There are five ice plants inside the area, and five ice rooms capable of storing up to 9,000 metric tons of fish. In addition, there are offices and space for transport companies, restaurants, barber shops, fish companies, and labor unions.

All of the market buildings and the lots are owned by the Tokyo Metropolitan Government, which receives some ¥500 million (\$1,390,000) in annual rentals. About 200 employees of the Tokyo Metropolitan Government work at the market to facilitate its operations and management.

The most popular varieties of fish handled in the market are sardines, tuna and bonito, swordfish, red sea-bream, mackerel, mackerel-pike, flatfish, yellowtail, cuttlefish, whale, and blue shark. (*Japan Report*, May 15, 1961, Consulate General of Japan, New York City.)



Liberia

**TUNA FISHING COMPANY
ESTABLISHED BY JAPANESE:**

As a second venture in West Africa, one of the large Japanese fishing firms has formed the Tuna Fishing Company of Liberia, according to the May 12, 1961, issue of *Dansk Fiskeritidende*, a Danish fishery periodical.

Soon there will be constructed in Monrovia, Liberia's capital, a fishery plant which will can tuna landed by six Japanese tuna vessels. In the next two years the fleet will be expanded to 30 vessels.

It is understood that the Liberian company will form the Japanese mother company's main undertaking in Africa. A similar affiliated enterprise already has started operations in Freetown, Sierra Leone, also on the West African Coast.

Malaya

**JAPANESE-MALAYAN TUNA COMPANY
IN FULL OPERATION:**

During a period of 15 months to the end of April 1961, the Japanese-Malayan tuna company at Penang, Malaya, bought 1,234 metric tons of tuna from Japanese fishing vessels. The Malayan firm produced from the fish 70,610 cases of canned tuna (mainly in oil), 240 tons of frozen fish, and some fish sausages and fresh fish.

Offers for canned tuna from Europe came in as soon as sample cans had been distributed. Forward sales for six months have been contracted.

The firm's needs for Japanese fishing vessels have been filled. (Japanese periodical, June 1, 1961.)



Netherlands

**ANTARCTIC WHALING PRODUCTION
FOR 1959/1960 AND 1960/61 SEASONS:**

The management of the Netherlands Maatschappij voor de Walvisvaart (Netherlands Whaling Company) of Amsterdam has announced final figures on the total production of its Antarctic whaling expedition for the season ending April 6, 1961.

Product	Season	
	1960/61	1959/1960
Whale oil	21,588	23,505
Sperm oil	1,708	337
Whale meal	3,947	4,711
Frozen whale meat	2,139	1,725
Meat for Japanese refrigerating vessel	5,187	-

Since total production of whale oil is over 20,000 metric tons, it is expected that the maximum dividend of six percent will be paid for the fiscal year ending on June 30, 1961. The contract between the Netherlands Whaling Company and the Netherlands Government stipulates that the maximum dividend of six percent will be paid when production of whale oil is over 20,000 tons.

The entire 1960/1961 whale oil production has been sold to a British firm at £73/10 (US\$205.80) a long ton as compared to £72/10 (\$203.00) a ton in the previous year. (United States Embassy, Amsterdam, April 20, 1961.)

Note: Also see *Commercial Fisheries Review*, July 1960 p. 68.

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Netherlands (Contd.):

PROFITS FROM 1960/61 ANTARCTIC WHALING SEASON DECLINE:

The Netherlands Whaling Company of Amsterdam has released preliminary financial figures for the 1960/1961 whaling season. In the statement accompanying the figures the management states that operating profits amounted to approximately fl. 6.5 million (US\$1,796,000) as compared to fl. 6.8 million (\$1,878,000) for the 1959/1960 season. Net profits will reportedly amount to only fl. 100,000 (\$28,000), as compared to fl. 1.1 million (\$304,000) for the previous fiscal year as a result of a loss of fl. 900,000 (\$249,000) caused by the revaluation of the guilder. However, a paper profit on the sale of the former factoryship Bloemendael to a Japanese company will compensate the revaluation loss, since the Bloemendael was sold before the revaluation. The dividend for 1960/1961 is expected to remain unchanged at six percent, the United States Consulate in Amsterdam reported on June 6, 1961.

Note: One guilder (abbreviated fl.) is equal to about US\$0.276.



Nigeria

JAPANESE-NIGERIAN JOINT FISHERY ENTERPRISE PLANNED:

An economic mission of the Nigerian Government was expected to arrive in Japan in mid-June 1961 to ask for a long-term loan to establish a joint Nigerian-Japanese fishing, canning, and reduction company. The company would be capitalized at ¥500 million (US\$1,389,000) at the first stage, consisting of ¥150 million (\$416,000) of cash plus other assets from Japanese interests, ¥200 million (\$556,000) from the Nigerian Government, and ¥150 million (\$416,000) from one Nigerian shipping and trading company.

During the 3-year plan, about a dozen Japanese tuna vessels of 100-150-ton class would be sent to Nigeria to catch annually about 25,000 metric tons of tuna. A cold-storage plant for 2,000 tons of frozen fish, a cannery, a reduction plant, and a processing and salt fish plant would be built.

It is said that most of the products produced would be marketed locally and that in the future a fish school with laboratory

would be constructed. (Japanese fishery periodical, March 31, 1961.)

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SURVEY OF FISHERIES POTENTIAL OF WESTERN REGION PLANNED:

The western region of Nigeria has been allotted \$564,000 from the United Nations Special Fund for a survey of the area's fisheries. In addition to the Special Fund allocation, the Government of Nigeria will contribute the equivalent of \$265,000 towards the cost of the survey, which will be conducted by the Food and Agriculture Organization.

Due to the high consumption of fish in the Western Region of Nigeria, half of which is imported, it has been decided to explore the possibility of setting up a modern system of fish production and distribution. The Special Fund assistance in carrying out a fisheries survey of the area will involve two phases. The first, lasting one year, will consist of a survey to determine the most economical way



A 20-foot aluminum surf boat designed and built in England for the Nigeria Fisheries Department. It is an experimental vessel designed under Food and Agriculture Organization guidance for ring-net fishing. Shows the rudder being placed in position during the first trials of the boat.

of catching fish and of collecting fish from scattered villages and delivering them to a central distribution point on land. This phase will also cover fish production, handling, processing, and possibly the feasibility of fish pond culture. If the survey confirms the feasibility of developing fisheries, the project will then proceed to demonstration and pilot schemes to determine the most economical methods of undertaking development and expansion of the fishing industry.



Norway

NEW DESIGN OF STERN TRAWLER PROVIDES PALLETIZED STOWAGE OF CATCH:

A "look-all-round" wheelhouse and fish stored in aluminum pallets are two of the interesting features in a new shelterdeck stern-trawler design developed by a Bergen, Norway, shipyard. Designs have been developed for trawlers of 186 feet and 213 feet. Before laying the designs, observations were made of the factoryship-trawler Fairtry III, and Russian, German, and Dutch designs for stern trawlers were studied.

Particular attention was paid to factors such as range and versatility, as the vessels must be equally suitable for long salt-fish trips or short trips to provide fresh fish for coastal processing plants.

To facilitate the discharge of raw fish to the processing plants, the catch will be boxed in aluminum boxes or trays stacked on pallets, and the floor of the fish hold will be kept clear for the movement of forklift trucks. The fish hold will have a capacity of 2,900 boxes. Each box will hold a layer of ice and 100-110 pounds of fish. In the lower hold, each pallet will hold 22 boxes and in the 'tween decks, 18 boxes. In the smaller of the two designs, there is provision for two tanks in which it is hoped to store minced waste, if means can be found to preserve it.

The deck layout will be such that there is a minimum trawl deck length of 70 feet, and gear will be handled in a manner similar to that developed on the original Fairtry. Below decks, it is intended to keep the fishing gear operations and fish-stowing and gutting activities sharply separated by means of structural division. The fish will be gutted below the trawl deck aft, and processing machinery and fish meal plant may be installed at the owners' discretion. At present it is planned to keep the bulk of the fish in boxes in a chilled fish hold. Prime fish such as halibut will be frozen in the round and kept in cold storage. (World Fishing, May 1961.)

* * * * *

STERN TRAWLER EXPECTED TO EXTEND FISHING TIME AT SEA:

Norway's first stern trawler, the 630-gross ton, 151-foot long, Hekktind, was built in North Norway at a cost of about Kr. 3.5 million (about US\$489,500). Designed for

deep-sea fishing, it can carry about 380 metric tons of fresh fish in 2,400 standard size aluminum cases. Its refrigerated storage room has a capacity of over 10,000 square feet.

An ordinary Norwegian trawler operates about 250 days a year, but its effective fishing time is much less. With the Hekktind, it is hoped, the effective fishing time can be extended to about 250 days out of 325 operating days a year.

Before the contract was signed for construction of the Hekktind, nearly Kr. 1 million (US\$140,000) was spent on preparatory work and tests in the Ship Model Tank at the Institute of Technology in Trondheim. (News of Norway, May 4, 1961.)

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COD FISHERY TRENDS, JANUARY 1-MAY 5, 1961:

The 1961 season's total landings of mature cod and young cod in Norway January 1-May 5, 1961, amounted to 108,325 metric tons, compared with 96,209 tons last year. Of the landings, 60,263 tons were sold for drying, 24,808 tons for salting, while 23,254 tons were sold fresh (including 14,007 tons for filleting). The fishery also yielded for the season 48,049 hectolitres (4,469 metric tons) of cod-liver oil. (Fiskets Gang, May 11, 1961.)



Peru

FISH MEAL PRICES AND SALES, FEBRUARY 14-APRIL 30, 1961:

In an attempt to help stabilize the world market for fish meal, Peruvian producers have formed an association (Consortio Pesquero del Peru) or Consortium. The Consortium will administer Peru's 600,000-metric-ton export quota and allocate the quota among the Peruvian producers. The Consortium became effective on February 15, 1961, and set up quarterly export quotas for 1961 as follows: first quarter, 200,000 tons; second quarter, 140,000 tons; third quarter, 90,000 tons; and fourth quarter, 170,000 tons.

As a service to the members of the Consortium, a Boletín Informativo is being issued reviewing fish meal prices, market conditions, sales, and other information of value. The following review of fish meal prices and sales in the European market and United States markets were included in the March 15, April 15, and April 30, 1961, issues of the Boletín Informativo.

During February-April 1961, f.o.b. prices for Peruvian fish meal advanced from about US\$70.00 to about \$90.00 a short ton for shipments both to European and United States markets.

When the Consortium began operations, there were offers of only \$90 c.& f. a metric ton or \$81.60 a short ton c.& f.; at-

Peru (Contd.):

Table 1 - Peruvian Fish Meal Prices, February 14-April 15, 1961

Period and Destination	Unit	Price Range in US\$			
		Opening	Highest	Lowest	Closing
Flat Market Prices 1/:					
<u>United States East Coast Shipments:</u>					
March 16-April 15	short ton c.&f.	N	N	N	N
February 14-March 15	" " "	92.08	92.08	92.08	92.08
" " " "	short ton f.o.b., 3/	71.67	71.67	71.67	71.67
<u>European Shipments:</u>					
March 16-April 15	short ton c.&f.	92.53	92.53	92.53	92.53
" " " "	short ton f.o.b., 3/	73.48	73.48	73.48	73.48
February 14-March 15	short ton c.&f.	86.18	92.53	86.18	92.53
" " " "	short ton f.o.b., 3/	67.13	73.48	67.13	73.48
Protein Market Prices 2/:					
<u>United States West Coast Shipments:</u>					
March 16-April 15	protein unit c.&f.	1,497	1,497	1,497	1,497
" " " "	short ton c.&f.	97.30	97.30	97.30	97.30
" " " "	short ton f.o.b., 3/	70.99	70.99	70.99	70.99
February 14-March 15	protein unit c.&f.	1,433	1,497	1,433	1,497
" " " "	short ton c.&f.	93.15	97.30	93.15	97.30
" " " "	short ton f.o.b., 3/	66.84	70.99	66.84	70.99
<u>European Shipments:</u>					
March 16-April 15	protein unit c.&f.	N	N	N	N
February 14-March 15	protein unit c.&f.	1,325	1,475	1,325	1,475
" " " "	short ton c.&f.	86.13	95.88	86.13	95.88
" " " "	short ton f.o.b., 3/	67.08	76.83	67.08	76.83

"N" - No sales.

1/ "Flat" market is for sales made with a guaranteed minimum of protein (usually 65 percent). Any excess of protein is to the buyer's advantage. The most important flat markets for Peruvian fish meal are the east (including Gulf of Mexico) coast of the United States and West Germany.

2/ "Protein" market is based on the price per unit of protein and buyers must pay for any excess protein found by laboratory analysis of shipments on arrival. The most important market on this basis is the west coast of the United States.

3/ The Boletín Informativo showed prices in metric tons c.&f. F.o.b. prices were calculated by subtracting US\$19.05 a short ton (equal to \$21.00 a metric ton) for cost of freight to Europe, \$26.31 a short ton (equal to \$29.00 a metric ton) for freight to the United States west coast, and \$20.41 a short ton (equal to \$22.50 a metric ton) for freight to U. S. Gulf of Mexico ports. Prices per unit converted to prices per short ton on basis of 65 percent protein meal.

Table 2 - Peruvian Fish Meal Prices, April 16-April 30, 1961

Destination and Type of Meal	Unit	Price Range in US\$			
		Opening	Highest	Lowest	Closing
Flat Market Prices 1/:					
<u>United States Shipments</u>					
short ton c.&f.		N	N	N	N
<u>European Shipments:</u>					
Anchovy meal (regular)	short ton c.&f.	96.16	111.13	96.16	109.77
" " " "	short ton f.o.b., 3/	77.11	92.08	77.11	90.72
Anchovy meal (steam-dried)	short ton c.&f.	124.74	124.74	124.74	124.74
" " " "	short ton f.o.b., 3/	105.69	105.69	105.69	105.69
Bonito meal	short ton c.&f.	88.91	100.70	88.91	100.70
" " " "	short ton f.o.b., 3/	69.86	81.65	69.86	81.65
Protein Market Prices 2/:					
<u>United States Shipments:</u>					
protein unit c.&f.		1,796	1,796	1,796	1,796
short ton c.&f.		116.74	116.74	116.74	116.74
short ton f.o.b., 3/		90.43	90.43	90.43	90.43
<u>European Shipments</u>					
short ton c.&f.		N	N	N	N

For footnotes see table 1.

Peru (Contd.):

so that it was not considered desirable to sell at the maximum price for June of \$100 a metric ton or \$90.72 a short ton c.&f., since the average price at the end of the February 15-March 15 period was \$102 a metric ton or \$92.53 a short ton c.&f.

A representative of the Consortium provided the following information about prices between April 21 and the close of the month: The c.&f. price for shipments to Europe was \$121 a metric ton. Since freight to Europe is \$21 a metric ton, the f.o.b. price would be \$100 a metric ton or \$90.72 a short ton. The Consortium made some sales at \$132 c.&f. Belfast. Since the freight rate to that point is \$28, the f.o.b. price would be \$104 a metric ton or \$94.35 a short ton. The higher price for the Belfast sales was because it was steam-dried fish meal which sells at a premium. On May 19 the price for the regular meal was \$100 a metric ton or \$90.72 a short ton f.o.b. Peruvian ports, and for shipment to the U. S. west coast the price was \$1.98 per unit of protein c.&f., or \$90.45 a short ton for 65 percent meal.

Table 3 - Peruvian Fish Meal Sales/, Feb. 14-April 30, 1961

	April 16-30	Mar. 16- April 15	Feb. 14- Mar. 15	Total
	.....(Metric Tons).....			
Flat Market Sales:				
To U. S.	N	N	700	700
To Europe	7,087	200	13,400	20,687
Protein Market Sales:				
To U. S.	200	1,100	7,300	8,600
To Europe	2,287	N	5,200	5,200
Total	7,287	1,300	26,600	35,187
1/Exclusive of future contracts made prior to February 15, 1961.				
"N" - No sales.				

On the basis of payment on the actual protein content, the metric ton price to the United States west coast for the period March to June ranged from \$1.58 to \$1.65 per unit of protein c.&f., and for shipment to Europe the price ranged from \$1.48 to \$1.55 per unit of protein c.&f.

The Consortium received more than 200 firm buying proposals, of which 73 were approved as of mid-May and contracts have been closed for 26,600 metric tons between March and June, with a sales value of about \$2.5 million. These sales represented the total of producers' offerings for sale during that period.

The Consortium contracted for freight rates outside Conference rates at \$20.50 to Europe, \$22.50 to the United States Gulf of Mexico coast, and \$28-\$30 to the United States west coast. But it was reported that the Conference decided upon the rate of \$21.00 to Europe until further notice.

The Executive Committee of the Consortium on March 27 decided to reduce to 1 percent the broker's commission for sales to the United States.

At a meeting in Paris in September 1960, of the representatives of fish meal manufacturers of the five leading fish meal exporting countries, it was agreed that the total exports by the five countries would be a maximum of one million tons for 1961. The agreement was signed on October 1, 1960. Peru was allotted the annual export quota of 600,000 or 50 percent of the total. The Peruvian Government subsequently ratified this agreement by a Supreme Decree of December 16, 1960. (United States Embassy, Lima, May 15, and May 18, 1961.)

Poland

NEW FIVE-YEAR PLAN FOR FISHING INDUSTRY:

Poland is planning to extend the operations of her deep-sea fishing vessels to grounds of the north and central Atlantic, as part of her latest Five-Year Plan for the fishing industry.

The plan also provides for the employment of 7,000 more men in the fisheries during the next five years, over 4,000 of them on land, and the extension of the fisheries training school at Gdynia to teach potential deep-sea captains and future masters of factory-trawlers. A midwater trawl is to be used for catching herring.

Details of this latest Polish plan are given in Polish Maritime News, which recalls that during the last Five-Year Plan, for 1956-60, the Polish fisheries economy recorded considerable rises in fish landings. These totaled 167,700 metric tons in 1960, exceeding the plan by 12,000 tons.

The new Five-Year Plan, for 1961-65, aims at these landings; 1961--173,000 tons; 1962--181,500 tons; 1963--205,200 tons; 1964--235,000 tons; 1965--270,000 tons. Thus the landings fixed for 1965 are greater by 102,300 tons than those in 1960.

This rapid rise is based on the assumption that Polish shipyards are to build 13 factory-trawlers, 6 freezing-trawlers, 28 motor trawlers, 1 steam trawler, 36 79-foot and 20 56-foot cutters.

Improved supplies of fish products on the home market are expected to cut down imports of fish. In 1960 a total of 19,600 tons of fish and fish conserves were imported against only 6,500 tons exported.

Imports in 1965, it is claimed, will be limited to 5,000 tons of herring. "The value of the 10,500 tons of fish and conserves to be exported will be seven times greater than the total value of the imports," says the paper. It also declares that the value of the fishing industry's products will rise in 1965 by 72.2 percent as compared with 1960.

It is assumed that up to 1965 the state-owned fisheries flotilla will require 100 new captains, 213 navigators, 55 radio officers, 217 engineers, 20 chief stewards, and 20 fish-processing technicians.

Poland (Contd.):

The first course at the Gdynia training school is being attended by 26 experienced captains of fishing vessels.

There is also a steady flow of graduates from the Deep-Sea Fisheries School, and various courses for training ship's officers and a second sea fisheries school is foreseen.

Fishing technique is to be improved by adopting midwater trawls on the cutters and drifter-trawlers when fishing for sprats and herring. "Detachable fish-bags" are being adopted this year with trawls and midwater trawls on the Baltic and North Sea fishing grounds, also along the West African coast.

The paper declares that in February 1961, during four days of fishing on the grounds off the SW. Norwegian coast, a 79-foot cutter caught about 75 tons of herring by mid-water trawls. It says the catch average per hour was five times higher than when using the traditional trawl.

Machines for the manufacture of scale ice and for the icing up of boxes to be shipped inland are also to be set up this year, and three firms will soon receive home-made machines for ice.

Plans for the processing industry are also being extended, involving the production of fish conserves reaching 19,900 tons in 1965, against 10,800 tons in 1960. In view of the planned rise in landings of fresh and frozen fish by about 50 percent, and the rapid increase in the manufacture of fillets on the factory-trawlers--16,000 tons in 1965--the rebuilding of refrigerated stores has become urgent. Seven fish refrigeration stores are to be built in various centers by 1966. (The Fishing News, May 12, 1961.)



Portugal

CANNED FISH PACK,
JANUARY-MARCH 1961:

Portugal's total pack of canned fish in oil or sauce for the first quarter of 1961 amounted to 3,738 metric tons. The sardine pack and the anchovy fillet pack combined accounted for 91.8 percent of the total pack.

Product	January-March			
	1961		1960	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	1,715	90	2,301	121
Chinchards	17	1	11	1
Mackerel	32	1	2	-
Tuna and tunalike	178	6	543	19
Anchovy fillets	1,718	172	1,387	138
Others	78	4	148	8
Total	3,738	274	4,392	287

The pack in 1961 was substantially less than in the first quarter of 1960 due to a sharp drop in sardines offset slightly by an increase in anchovy. There was also a sharp drop in the pack of tuna in the early part of 1961. (Conservas de Peixe, May 1961.)

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CANNED FISH EXPORTS,
JANUARY-MARCH 1961:

Portugal's exports of canned fish during the first quarter of 1961 amounted to 16,468 metric tons, only slightly less than in the same period of 1960. Sardines accounted for 83.5 percent of the 1961 exports, followed by anchovy fillets with 10.2 percent.

Product	January-March			
	1961		1960	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
Sardines	13,753	725	14,287	752
Chinchards	277	14	244	13
Mackerel	95	4	58	3
Tuna and tunalike	570	20	456	13
Anchovy fillets	1,685	169	1,203	120
Others	88	4	436	23
Total	16,468	934	16,684	924

Portugal's principal canned fish buyers in the first quarter of 1961 were Germany with 3,060 tons, followed by the United States with 2,192 tons, and Great Britain with 2,151 tons. (Conservas de Peixe, May 1961.)



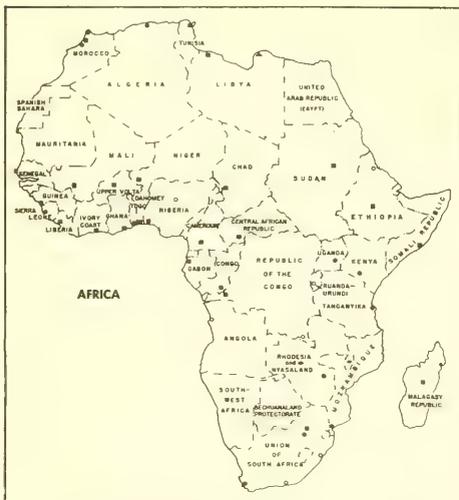
Senegal

1960/61 TUNA FISHING SEASON:

The Senegalese 1960/61 tuna fishing season began November 1, 1960, and came to a close April 30, 1961, one month behind schedule. The catch was still almost 6,000 metric tons short of the 13,500 tons expected from the season's operations. Also, the Senegalese partially committed themselves by agreement

Senegal (Contd.):

to catch that amount for French and other markets.



The 1960/61 season was a discouraging one for Senegal because of the scarcity of tuna in local waters, and some of the vessels were compelled to travel as far as the Ivory Coast for their catch. Further adversity occurred on March 10 when 18 vessels, or more than a third, abandoned the fleet and returned to their home ports.

Fresh and Frozen Tuna Landings at Dakar, Senegal, November 1960-April 1961		
Type	Fleet	Quantity Metric Tons
Frozen tuna	French	2,660
	Senegalese	710
Total frozen		3,370
Fresh tuna	French	4,488
	Spanish	2,918
	Senegalese	162
Total fresh		7,568
Total fresh and frozen		10,938

The number of vessels engaged in the Senegalese tuna fishing season from November 1960 through April 1961 ranged from a low of 31 vessels in November to a high of 50 vessels during January. Of this number, an average of about 10 vessels a month operated as freezer-fishing vessels (principally French and 1 or 2 Senegalese). In addition, Spanish, other French vessels, and one Seneg-

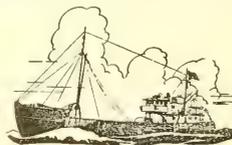
gales vessel accounted for most of the fresh tuna catch for the season.

The season's tuna landings were utilized as follows: 6,300 tons were canned for export to the French market, and 400 tons were shipped to outside markets. If the French commitment is to be met, an additional 3,700 tons would have to be shipped to the French market, and 3,100 tons for export to other markets.

At the start of the fishing season, France had agreed to purchase 10,000 tons of canned tuna from Senegal, and 3,500 additional tons were to be exported to markets outside the franc area. The poor season, however, resulted in most of the canned tuna being exported to France where a high guaranteed price is paid, but commitments to other export markets could not be filled.

In order to fulfill its commitments, the Government of Senegal was seeking to purchase tuna from other suppliers than the French, who were then returning home for the start of their season. France agreed to this, and to provide the necessary dollars, but only under the condition that the canned tuna be shipped entirely outside the franc area. At that time it appeared as if several Spanish clippers would be obtained to provide 500-600 tons of tuna. The remainder of the more than 2,000 tons to be exported could be purchased from the Japanese, although the Senegalese are extremely hesitant about taking such action. But it was believed, too, that the Japanese may not be overly anxious to make sales to Senegal.

Senegal is already looking about for a solution to its problem for the next season. The primary requirement, in the eyes of the Government, is to create a Senegalese fleet. This would be done by inducing French or Spanish vessels to transfer registration to Senegal, and by forming a joint public-private company to purchase additional clippers. Continued emphasis is reportedly placed upon export markets, so as to free the Senegalese from dependence upon France. (United States Embassy, Dakar, May 29, 1961.)



South-West Africa

TUNA FISHING WITH LONG-LINE TESTED:

Early this year, the initiative of two Walvis Bay fishing industrialists has resulted in the first local attempts to catch tuna off the South-West African coast using the Japanese long-line method. Tests of this method followed the encouraging results in Union of South African waters where research into the Japanese long-line method was started by the Division of Fisheries vessel Kunene and by the commercial motor trawler Cape Vessel.

Two Walvis Bay pilchard fishing boats, the Karimona and the Curlew, were equipped with line haulers and with other long-line gear. In a trip lasting six days, they fished successfully about 120 to 180 miles northwest of Walvis in 1,000 to 1,200 fathoms of water. The average surface temperature of the water was 17 to 18° C. (62.6-64.4° F.)

Two to three miles of lines were fished with the baited lines hung 20 fathoms apart. The depth fished was 15 to 20 fathoms. With this test gear, about 100 tuna were caught—bluefin, yellowfin, and albacore—weighing from 20 to 300 lbs. In addition, two blue marlins were taken. The results are considered to be encouraging and have shown that tuna is readily available in South-West African waters. (The South African Shipping News and Fishing Industry Review, April 1961.)

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MORE RUSSIAN FISHING VESSELS OFF COAST:

The total of Russian fishing and transport vessels identified off the coast of South-West Africa has now moved up to nine. In addition to the research trawler Muksun, the stern trawlers Radichev, Izumrud, and Taras Schwetchenko, and the larger vessel Atiubin-sk seen in February 1961, two more stern trawlers, the Marmin Siberyk and the Tchernychewsky, have been seen in company with a tanker and a supply ship.

According to a report in the Namib Times, the previously identified trawlers were sighted about the middle of March about 65 miles west of Pelican Point. In addition, the Tchernychewsky was seen taking fuel from a 7,000-ton tanker. The supply ship Provornyy was lying about 500 yards away from the trawler and tanker.

Interest in this Russian venture into Southern African fishing waters flared early in April when it was announced from Moscow that a Soviet scientific expedition ship had found a huge rich fishing ground "off the Cape of Good Hope." This ship, presumably the Muksun, located an area estimated at 6,000 square miles packed with fish, particularly mackerel and sardines. According to the report, which was given out by Moscow radio, a fleet of refrigerated ships had been sent to the area and one trawler was catching 70 to 80 tons a day.

By early April, however, no Russian ships had been sighted in Union of South Africa Cape waters. The Moscow report, therefore, may well refer to the Kaliningrad fleet operating off South-West Africa.

There seems little doubt that the Soviet vessels are in African waters primarily to exploit the rich fishing resources. Expensive factory trawlers, each costing R2,000,000 (US\$2.8 million) are being used. (The South African Shipping News and Fishing Industry Review, April 1961.)



Spain

PRODUCERS HOPE FOR HIGHER IMPORT DUTIES ON FISH MEAL:

Fish meal manufacturers in Spain's Canary Islands are expressing the hope that higher import duties against foreign fish meal will be recommended by the Customs Board now studying proposals for changes in Spain's tariff.

The Government has issued a decree extending for six months (until December 1961) the period for revising the customs tariff, which went into effect in June 1960. The Tariff Law of May 1, 1960, provided that the Government could make a one-time revision of the tariff within one year after it became effective. The apparent reason for the extension was that there had not been sufficient time to study the many requests received from interested parties, domestic and foreign, for tariff revisions.

It has been pointed out that imports of fish meal into Spain totaled 66,452 metric tons in 1960 as compared with only 886 tons in 1958 and 20,081 tons in 1959. Present production in the Canary Islands approximates 80 percent of Spain's total requirements of fish meal. The press reports plans for the expansion of production in the Canaries with the goal of fully meeting Spain's requirements. (United States Embassy, Madrid, June 2, 1961.)



Sweden

FUTURE OF HERRING FISHERY OFF ICELAND UNCERTAIN:

The future of Swedish herring fishing off Iceland is in an uncertain stage. In 1960 par-

Sweden (Contd.):

ticipation was limited to only 11 of the 23 vessels which had announced their intention to take part. With this in mind, the Swedish Government has declared that if the participation is equally bad this year, the patrol vessel will be redirected to the Fladen fishing grounds in the North Sea.

The lack of interest displayed by Swedish fishermen in herring fishing off Iceland is attributed by the chairman of the Swedish Icelandic Fishing Association to (1) late fixing of prices; (2) freight rates which made cargo-carrying more attractive than fishing; (3) change in ownership of a number of vessels, etc. In addition there is the difficult problem of manning the fishing vessels. This grows out of the circumstance that income from fishing has not kept pace with earnings ashore.

Finally, there is the problem arising out of the size of the new fishing vessels. They have become too big for Icelandic fishing in the opinion of the Association official. By way of explanation he says that a good catch is one of between 800-900 barrels. The new fishing vessels, however, can carry about 1,300 barrels and it is extremely seldom that a catch is that large.

A positive factor, which encourages the Association official to feel that Icelandic herring fishing will continue despite the handicaps, is the relatively large demand for Icelandic herring. Yearly imports total 125,000-150,000 barrels. The canning factories and the salted herring trade never buy less than 100,000 barrels a year, the United States Consulate in Goteborg reported on May 23, 1961.

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MINIMUM EX-VESSEL PRICES FOR COD INCREASED:

In order to stimulate fishing for cod, the Swedish Board of Agriculture decided to in-

crease the minimum prices for cod landed on the Swedish south coast during the period July 1-December 31, 1961.

Prior to that period, the minimum price was 0.59 crowns per kilo (5.2 U. S. cents a pound) for skinned cod with head on and with a length of 50 centimeters (19.7 inches) or more, and 0.56 crowns per kilo (4.9 U. S. cents a pound) for skinned cod with head on and with a length of between 35 and 49 centimeters (13.8-19.3 inches). For unskinned cod the minimum price for the larger type was 0.51 crowns per kilo (4.5 cents a pound) and for the smaller type the minimum price was 0.48 crowns per kilo (4.2 cents a pound). For this type of cod the minimum price increased by 0.04 crowns per kilo (0.35 cents a pound).

For skinned cod without head and with a length of at least 40 centimeters, the minimum price was 0.84 crowns per kilo (7.4 cents a pound), whereas for skinned cod without head and under 40 centimeters (15.7 inches) in length the minimum price was 0.74 crowns per kilo (6.5 cents a pound). The price increase for this type of cod was 0.06 crowns per kilo (0.5 cents a pound) based on the new prices.

An official of the West Coast Central Association stated that the increase in the minimum prices for cod must be considered as an effort to reduce the surplus of herring that normally is landed during the months of August and September. He thought, however, that the increase in price is too small to encourage west coast fishermen to change over from herring fishing to cod fishing. It may, on the other hand, be sufficient to encourage some south coast fishermen to remain with cod fishing rather than turning to salmon at that time of the year. (United States Consulate, Goteborg, May 18, 1961.)

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MARINE OIL SUPPLY AND FOREIGN TRADE:

Sweden's total supply of marine oils was expected to increase in marketing year

Table 1 - Sweden's Supply and Utilization of Marine Oils for Marketing Years (Ending June 30) 1959/60-1960/61

Item	Estimated 1960/61				1959/60			
	Whale Oil Crude	Fish Oil Crude ^{1/}	Other Marine Oil ^{2/}	Total	Whale Oil Crude	Herring Oil Crude	Other Marine Oil ^{2/}	Total
	(Metric Tons)							
Opening stocks, July 1	1,400	4,100	7,900	13,400	1,300	3,700	11,000	16,000
Production	-	1,500	-	1,500	-	1,500	-	1,500
Imports	3,000	7,000	30,000	40,000	1,564	5,846	25,287	32,697
Total Supply & Utilization	4,400	12,600	37,900	54,900	2,864	11,046	36,287	50,197
Exports	-	3,000	7,000	10,000	-	2,698	6,297	8,995
Utilization:								
Food	3/	3/	3/	28,000	3/	3/	3/	27,126
Other	3/	3/	3/	900	3/	3/	3/	676
Ending stocks, June 30	1,000	3,000	12,000	16,000	1,400	4,100	7,900	13,400

^{1/}Mostly herring oil.^{2/}Mainly refined whale and herring oil.^{3/}Not available.

Sweden (Contd.):

Table 2 - Sweden's Foreign Trade in Marine Oils, July 1959-December 1960

Item	Imports		Exports			
	July-Dec. 1960	Jan.-June 1960	July-Dec. 1959	July-Dec. 1960	Jan.-June 1960	July-Dec. 1959
(Metric Tons)						
Whale oil, raw	7,467	1,565	-	-	-	-
Sperm oil, raw	88	71	90	-	-	-
Seal oil, raw	4	22	4	-	-	-
Herring oil, raw	1,232	3,974	1,903	1,302	966	1,732
Vitamin oil products	27	1/13	40	-	-	-
Fish-liver oil, etc.	784	1/395	899	-	-	-
Other marine oils	14,682	9,487	15,058	1/18	1/1	5
Hydrogenated marine oil, including refined	334	377	180	3,499	4,167	2,125
Total	24,618	15,904	18,174	4,819	5,134	3,862

1/Not reported in table 3.

Table 3 - Sweden's Imports of Marine Fats and Oils by Country of Origin, Calendar Year 1959-1960/1

Product and Country of Origin	1960	1959
	(Metric Tons)	
Whale Oil, Raw:		
Holland	-	956
Norway	4	5,102
Japan	9,028	-
Total	9,032	6,058
Sperm Oil, Raw:		
Norway	66	100
Great Britain	92	54
West Germany	1	1/
Total	159	154
Seal Oil, Raw:		
Norway	24	17
Denmark	2	3
Total	26	20
Herring Oil, Raw:		
Norway	72	92
West Germany	2,384	3,755
Denmark	1,204	763
Iceland	1,546	1,647
Total	5,206	6,257
Highly Vitaminized Oil Products:		
Norway	12	16
Japan	12	52
France	3	-
Total	27	68
Medical & Veterinary Fish-Liver Oil:		
Norway	710	752
Iceland	-	37
West Germany	-	54
Denmark	65	91
Japan	9	-
Total	784	934
Fats & Oils, Fish & Marine, Other (also Refined):		
United States	17,645	16,927
Norway	809	754
West Germany	4,787	3,112
Peru	522	488
Denmark	374	48
Iceland	22	-
Belgium	0	-
Great Britain	5	-
Japan	5	-
Total	24,169	21,329
Hydrogenated Marine Fats & Oils, also Refined, but not Otherwise Prepared:		
Norway	706	407
Denmark	2	55
Great Britain	3	-
Total	711	463
Grand Total	40,114	35,283

1/ Table does not include 13 tons of vitamin oil products and 395 tons of fish-liver oil, etc., imported in early half of 1960 as shown in table 2.

1960/61 (ending June 30, 1961) as compared with marketing year 1959/60. Production will remain constant during that period, but imports, utilization, and exports should increase in 1960/61 (table 1).

Sweden's total imports of marine oils amounted to 18,174 metric tons during the last 6 months of 1959. During the first 6 months of 1960 they decreased to 15,904 tons, but increased sharply in the last half of 1960 to 24,618 tons due mainly to increased raw whale oil imports. Exports of marine oils from Sweden are not as impor-

Table 4 - Sweden's Exports of Marine Fats and Oils by Country of Destination, Calendar Years 1959-60/1

Product and Destination	1960	1959
	(Metric Tons)	
Herring Oil, Raw:		
Norway	1,659	1,852
W. Germany	451	315
Denmark	1/	513
Austria	16	10
Italy	91	32
Holland	51	-
Total	2,268	2,722
Hydrogenated Marine Fats & Oils, also Refined, but not Otherwise Prepared:		
Finland	182	440
France	791	744
Morocco	714	479
Jamaica	1,378	1,106
Switzerland	226	113
Iran	15	35
French Antilles	161	119
British Guiana	173	162
Austria	579	342
Norway	224	8
Denmark	817	357
Great Britain	2,117	20
West Germany	-	72
Italy	-	55
Soviet Union	-	1,000
Spain	-	49
Czechoslovakia	100	140
Trinidad	180	-
Haiti	9	-
Total	7,666	5,241
Grand Total	9,934	7,963

1/ Does not include a small quantity of "other marine oils" shown in table 2.

Sweden (Contd.):

tant, but increased slightly in the first half of 1960, due to increased shipments of hydrogenated marine oil (table 2).

The United States was Sweden's leading supplier of marine oils in 1959 and 1960. Japan was the second most important source of marine oils in 1960 due to her large shipments of raw whale oil to Sweden. In 1960, imports of raw whale oil from Norway fell drastically. Imports from West Germany of fish, marine animal, and other fats and oils increased in 1960 as against 1959, but imports of raw herring oil decreased (table 3).

Sweden's exports of marine oils increased from 7,963 tons in calendar year 1959 to 9,934 tons in 1960. Exports consisted mainly of hydrogenated marine fats and oils (sent mostly to Great Britain and Jamaica) and herring oil (most of which was sent to Norway)--see table 4.

Table 5 - Sweden's Utilization of Marine Oils for Food, Year Ending June 30, 1960	
Use	Metric Tons
Table Margarine^{1/}:	
Not hydrogenized	156
Hydrogenized	20,595
Total	20,751
Bakery Shortening:	
With animal fat	1,767
With vegetable fat	4,225
Total	5,992
Total Margarine and Shortening	26,743
Baking Aids:	
11-24 percent fat	19
25-60 " "	193
Over 60 " "	48
Fat Emulsion:	
Cream substitute	11
100-Percent Fat:	
Coconut oil	2/
Artificial lard, etc.	80
Other products	32
Grand Total	27,126
^{1/} Including the margarine part in so-called "restaurant mixture."	
^{2/} Less than one ton.	

In April 1961, f.o.b. export prices of marine oils in Sweden ranged from £71 10s. per long ton (8.93 U. S. cents a pound) for crude hydrogenated oil, to £75 a ton (9.37 cents a pound) for refined hydrogenated oil, £38 10s. a ton (4.81 cents a pound) for distilled oil, and £45 10s. (5.68 cents a pound) for distilled hydrogenated oil. (U. S. Foreign Agricultural Service Report, Stockholm, April 14, 1961.)

Note: See *Commercial Fisheries Review*, August 1960 p. 71.



Taiwan

GOVERNMENT PROMOTING
EXPANSION OF FISHERIES:

Under the program titled "Plan to Develop High Seas Fishery"¹ (part of a Four-Year Economic Plan), the Taiwan Government has actively helped finance the construction of fishing vessels, development of new fishing grounds, establishment of overseas bases, and the repair of port facilities. This Government aid to different segments of the fishing industry has resulted in a tremendous expansion of the fisheries in the last few years.

The catch of the distant-water fishery in 1960, which totaled 85,210 metric tons, increased 94 percent over the 1956 catch of 43,988 metric tons. The number of fishing vessels engaged in the distant-water fishery in 1960 totaled 366 (total of 36,532 gross tons). This was an increase of 162 vessels (total of 18,613 gross tons) over 1956.

Production of the distant-water fishery was boosted by 15,000 tons in 1960 as a result of Government financial aid provided in 1959 to construct 30 130-ton trawlers, which could also be used for pole-and-line fishing, and six distant-water vessels. This aid was provided to fishermen under the "Plan to Develop High Seas Resources."

As of mid-1961, Taiwan was constructing four large tuna vessels of 250 tons each and two 550-ton tuna vessels. The latter two large tuna vessels are scheduled to be sent to the Atlantic Ocean. Taiwan is also planning to construct a research vessel of 700 tons.

Taiwan sent out research vessels in 1959 to the waters off Viet Nam, Malaya, and North Borneo to locate new fishing grounds. Good bottom fishing grounds were discovered off Viet Nam, as well as off Formosa, to which large vessels were immediately dispatched.

As far as overseas bases and overseas operations are concerned, a supply base (for fueling and repairing vessels) has been established at Singapore. In 1960, one vessel of 350 tons was sent to the Atlantic Ocean off West Africa to fish on an experimental basis. This vessel landed 450 tons of fish (presumably tuna) in six months, and Taiwan plans to send another vessel of this size to West Africa this year.

The catch of the adjacent-seas fishery in 1960 amounted to 94,856 metric tons, an in-

Taiwan (Contd.):

crease of 49 percent over the 1956 catch (63,663 metric tons). In 1960 the vessels engaged in this fishery numbered 5,092 (total of 41,326 gross tons). This was an increase of 281 vessels (total of 13,632 gross tons) over 1956, and the Taiwan Government will be subsidizing the construction of 45 vessels in the 30- to 50-ton class and 12 purse-seine vessels in the 25-ton class under the "Plan to Develop High Seas Resources."

Purse-seine vessels contributed the largest amount of the catch of the adjacent-seas fishery in 1960. The pole-and-line tuna vessels produced less tuna in 1960 than in 1959 since their operations were curtailed to some extent due to the dispute with the Philippine Government over territorial waters. Taiwan fishermen are hoping for a quick settlement of the dispute. (Suisan Keizai Shimbun, June 11, 1961.)

Note: Also see Commercial Fisheries Review, April 1961 p. 85; correction: In that issue, the landings shown for "deep sea fisheries" in the table should have been "85,210" instead of 85,310 metric tons.



Union of South Africa

FROZEN TUNA IS EXPORTED FOR FIRST TIME:

The development of a South African tuna fishing industry has taken another step forward by three large fishing concerns working in cooperation with a fishery products export and equipment supply house. Early in 1961, about 100 short tons of frozen tuna, caught by long-line from Union of South Africa boats normally engaged in pilchard fishing, were exported to the United States and Italy.

Initial efforts to assess the potential of the tuna resources off the Cape coast and to attempt to catch the fish by the Japanese long-line method were started last year by the Union's Division of Fisheries and by the South African Museum. The Division of Fisheries has been using the 70-ft. long research vessel Kunene northwest of Slangkop; the South African Museum has had the use of a commercial 70-ft. motor trawler Cape Point. Although both vessels have done their fishing on a comparatively small scale, they have taken some outstanding catches. And, during the 1960 closed season for pelagic shoal fishing, the Kunene took some of the pilchard boat skippers to sea so that they could gain practical long-lining experience.

In September-October 1960 the first commercial attempts at long-line fishing were made and then in November three large fishing concerns placed 6 to 7 vessels in a larger-scale commercial project based on Hout Bay. The long-line gear--synthetic fiber line, hooks, and line haulers--was supplied by a company which had previously supplied gear for the Cape Point. The United States parent company of that firm was among the pioneers of the tuna import-export trade and, through its world-wide network of associate companies, the local company was able to find a ready market for South African frozen tuna.

The boats engaged in long-lining off the Cape are typical pilchard vessels fitted with long-line haulers. They have

been using about 30 baskets each about 300 yards long with six hooks to a basket. Each boat is out for 18 to 20 hours and the line is laid and taken in usually three times during that period.

Fish are gutted and cut aboard the vessel and, on landing, the head and fins are left off. After freezing, the fish are stored for a short period and then glazed ready for shipment at temperatures between 0° and 5° F. in the refrigerated holds of ships destined for the United States or Italy.

Although the shipping of frozen tuna is generally done with the fish unwrapped, Italy's shipping requirements have obliged the exporters to wrap each fish in a stockinette or hessian covering. Exports to Italy and America bring about £100 (US\$260) a short ton and the fish is used in those countries for canning.

The firms carrying out these larger-scale tests of a commercial tuna fishery are reported to be planning further developments in the future, and the useful initial work of the research vessels may lead eventually to the establishment of a substantial tuna industry in the Cape. (The South African Shipping News and Fishing Industry Review, April 1961.)

* * * * *

PILCHARD-MAASBANKER FISHERY, JANUARY-FEBRUARY 1961:

The Union of South Africa Cape west coast pilchard-maasbanker fishery for the first two months of the 1961 season yielded 163,930 short tons pilchards, 7,735 tons maasbanker (jack mackerel), and 8,756 tons mackerel. The total catch was 180,421 tons.

Union of South Africa--Products Produced from Pilchard-Maasbanker Fishery Landings, January-February 1961				
Fish Meal	Fish Oil	Canned		
		Pilchards	Maasbanker	Mackerel
Short Tons	Imp. Gals.	(1,000 Lbs.)		
36,320	3,225,841	8,020	1,953	2,933

The February catch comprised a record 94,051 tons pilchards, 990 tons maasbanker, and 4,935 tons mackerel. These figures compare with 19,609 tons pilchards, 13,037 tons maasbanker, and 17,728 tons mackerel in February last year; and with 26,443 tons pilchards and 9,588 tons mackerel in February 1959.

The February catch this year yielded 19,034 short tons fish meal, 1,883,381 Imperial gallons fish body oil, 5,708,048 pounds canned pilchards, 189,888 pounds canned maasbanker, and 2,113,656 pounds canned mackerel. (The South African Shipping News and Fishing Industry Review, April 1961.)

* * * * *

PILCHARD-MAASBANKER FISHERIES TRENDS, APRIL 1961:

The Union of South Africa's fishing season, which opened on January 1, 1961, was off to a record start, according to the statis-

Union of South Africa (Contd.):

tics on landings of pilchard, maasbanker, and mackerel during the first quarter of 1961. Landings of those species for the quarter totaled 246,622 short tons. Raw fish intake at the factories for the first quarter of 1960 totaled 169,533 short tons. With the April landings expected to reach 80,000 short tons and the season due to run until July 31, the prospects are that the Union fishery will set a new record for this year. The record 1960 pilchard, maasbanker, mackerel catch totaled 453,387 short tons. (United States Embassy, Pretoria, May 17, 1961.)



U.S.S.R.

EXPANSION OF FISHING FLEET CONTINUES:

At the Admiralskij Zavod shipyard in Leningrad there is being built a second large fish-canning factoryship for the Far East, according to the April 20, 1961, issue of Leningradskaja Pravda. The vessel has been given the name Pavel Tsjebotnajakin.

The Estonian fleet has taken over a new large fast trawler of 3,800 tons displacement, 87 meters (285.4 feet) long with a beam of 14 meters (45.9 feet). According to Yodny J Transport of April 25, it was to leave soon for the Newfoundland Banks together with the motherships Johannes Vares and Jan Anvelt. Somewhat later the new freezer vessel Sovjetskaja Rossija was to depart.

The Baltijskij Zavod in Leningrad has begun the building of a series of large freezer trawlers of the Krylov and Ljudas Gira type. This type has modern equipment with large freezing capacity and also equipment for the manufacture of canned products, fish meal and oil. The crew is $4\frac{1}{2}$ times larger than for medium trawlers, according to Sovjetskaja Litva for April 20. (Fiskets Gang, May 18, 1961, a Norwegian fishery periodical.)



United Arab Republic

REGULATIONS GOVERNING FREEZING AND EXPORT OF SHRIMP:

There are no laws or regulations presently in force in the United Arab Republic re-

garding sanitary requirements applicable to the culture, harvesting, or processing of various species of shellfish.

The only fishery product covered by regulations within the United Arab Republic appears to be shrimp, the freezing and processing of which is governed by the Republics Departmental Order No. 271 issued in 1958 by the Ministry of Industry.

The Departmental Order as published in the Egyptian Official Journal No. 62, dated August 11, 1958, listed the following regulations:

"Specifications of Frozen Shrimps:

"I - Frozen shrimps are fresh shrimps fit for food consumption which are exposed to such a degree of cold temperature as to cause the freezing of all the liquids they contain.

"II - Shrimps intended for freezing must be fresh and have preserved their natural properties. Care must be taken, immediately after they are fished, to have them kept in ice or in mechanically refrigerated rooms at a temperature not exceeding 0° Centigrade so as not to expose them to damage.

"III - The freezing of shrimps must take place between -4° C. and -17.7° C. (24.8° F. and 0° F.) and the storing and shipping of frozen shrimps be in refrigerators the temperature of which does not exceed -15° C. (5° F.). Exporters must give evidence that shipments are effected at this temperature.

"IV - Frozen shrimps for exportation must be graded according to size and wrapped in paper impervious to humidity and packed in containers made of wax carton. Frozen shrimps also may be covered with a thin layer of ice and placed in boxes covered with wax paper impervious to humidity and susceptible of sealing by heat.

"V - The containers must bear the name of the factory, that of the product (frozen shrimps), the net weight, and the name and percentage of added substances, if any. To make easy transportation, the containers of frozen shrimps must be placed in larger boxes made of reinforced cardboard or in wooden cases." (United States Embassy, Cairo, May 17, 1961.)



United Kingdom

WHOLESALE FIRM PREDICTS CONTINUED BIG DEMAND FOR FRESH FISH:

"Frozen fish is not a substitute for fresh fish, and never will be," remarked a spokesman of a prominent London, England, wholesale fish firm in an address at a dinner meeting in April 1961. The reference was prompted by a work stoppage at Grimsby and Hull where skippers objected to Icelandic boats landing fish, which resulted in a scarcity of fresh fish.

The speaker went on to say that in the last year or so there had been comments that the fish trade was in the doldrums, and that his firm's policy to concentrate solely on the sale of quality fresh fish had been criticized by those who claimed the future of the industry was in frozen fish. He pointed out that his firm sold more fresh fish in the past year than ever before. Fresh fish, he continued, will maintain its demand for a mighty long time, and that despite the extensive television advertising of frozen fish, there is and will remain an enormous demand for fresh fish. The firm's policy, he stated, was to continue to buy good fresh fish.

The firm's spokesman predicted that in the years ahead there would still be many people who would demand and buy fresh fish. (Fish Trades Gazette, April 15, 1961.)

* * * * *

TRAWLER "PRINCE CHARLES" WINS SILVER COD TROPHY FOR 1960:

The winner of the coveted Silver Cod Trophy for 1960 in Great Britain was the Hull trawler Prince Charles. The total landings of the 691-ton trawler for trips made during 1960 were somewhat more than 39,604 kits or 5,544,560 pounds (valued at US\$425,986), the highest amount landed during the year by any distant-water trawler fishing out of Britain's three main ports. The 1959 winner of the trophy, the Falstaff, came in second in the 1960 competition with total landings only 118,440 pounds less than the Prince Charles. The Falstaff's winning total in 1959 was 39,695 kits or 5,557,300 pounds. (Fish Trades Gazette, January 14, 1961.)

* * * * *

EXPERIMENTS CONDUCTED ON WHETHER OR NOT FISH SEE TRAWL NET:

A question that has puzzled fishermen for countless years is--do fish see the trawl? Experiments have been carried out to obtain the answer by the Marine Laboratory, Aberdeen, Scotland.

In the spring of 1960, the Laboratory was able to establish shoals of herring in some large disused oyster cleaning tanks near Stranraer. The tanks were 50 feet by 40 feet with about 4 feet of water, and it was possible to test the behavior of herring when various types of obstacles were approaching them.

A number of different devices were used--various types of trawl ground ropes, strings of seine-net floats or trawl floats, a string of underwater lights, a curtain of air bubbles, and some netting and model trawls.

In daylight it was found that any device that could be seen easily would herd the herring quite effectively. The fish generally first reacted to the approaching obstacle when it was only 4 to 5 feet away and then swam about the same distance in front of it.

The best herding was obtained with obstacles at the same level as the fish. The speed of approach was also important. In most experiments it was between 1 and 2 knots and there was time for the fish to be herded. At speeds in excess of three knots the fish were quickly overtaken.

As a marked contrast, in darkness, the herring weren't herded by these moving obstacles. When they were pulled through the tank, the herring passed above or below or were struck by them. This held true even with the curtain of air bubbles and string of underwater lights.

These contrasting observations between daylight and darkness suggest the importance of sight when herring react to obstacles.

By doing repeated experiments at dusk as the light became reduced, it was possible to measure the minimum amount of light required for herding. In a later survey at sea it was found that the light on the sea bed will very often be below this minimum, even in broad daylight.

This will occur either in fairly clear water at a good depth or in shallower depths where the water is murky.

United Kingdom (Contd.):

This may mean there will be many times when sight will be ineffective in herding fish. Where sight is important, for instance, in clear or shallow water in daylight, these devices will have to be very effective to perform their function in the short time available at normal trawling speeds before the fish are overtaken.

It is difficult to say at this stage how important other factors such as vibration or noise are. It is not possible to produce the same conditions in a tank as those resulting from the use of a trawl at sea.

The Laboratory hopes this year to start solving this problem by the use of recorded trawl noises and by devices for producing vibrations and to see what effect these have. (The Fishing News, May 26, 1961.)



Viet-Nam

ACHIEVEMENT IN FISHERIES DEVELOPMENT:

Major achievements in the area of fisheries development in Viet-Nam during the first quarter of 1961 were three: the devel-



opment of new export markets, the discovery of large schools of threadfin further north than ever before, and the undertaking of a survey of the nation's fisheries resources.

In the field of exports, new contracts were signed by fishermen's cooperatives--2 with Bangkok firms, 1 with a Singapore firm.

Considerable progress was made toward identification of Viet-Nam's fisheries resources and toward the development of a statistical section within the Fisheries Directorate under the supervision of a Japanese Government fishery statistician employed by a United States consultant firm under a U. S. International Cooperation Administration contract. A series of four questionnaires were used by Vietnamese officials to secure information on the fishing industry--numbers and distribution of fishermen, numbers and type of boats, type of gear used, amount and type of catch, at what seasons and depths, etc. At the end of the reporting period, data from the survey was beginning to come in. ICA technicians say that it will probably not be reasonably complete until September 1961, but will be ultimately important as a basis for scientific fisheries management, and avoiding overexploitation of fishing resources.

At the beginning of March, through the use of one of the fish-finding devices supplied by U. S. Operations Mission to the Fisheries Directorate, a large concentration of threadfin (*Polynemus*) was discovered approximately 35 miles southeast of the fishing port of Ham Tan in Binh Tuy Province, which represented the first discovery of this type of fish in commercial quantities north of Cap St. Jacques, and has resulted in new prosperity for fishermen of the area. (They receive VN\$60 per kilo (almost 78 U. S. cents a pound) for threadfin as opposed to VN\$14 (18 cents a pound) for tuna and VN\$4 (5 cents a pound) for sole.) Threadfin from the Ca Mau area has for several years been an important export item to Singapore, with exports to Bangkok now starting. Fisheries technicians have cause to believe that the discovery of these fish in that area may indicate the presence of considerable schools further north.

In other developments, there was continuing progress in developing new methods of preserving and processing marine fish and shellfish. Two specific achievements of the technology section of the Fisheries Directorate were: (1) the development of a method for reducing nuoc mam (fish sauce, a staple item and important source of protein in the Vietnamese diet) to solid form, which has important military uses, and (2) development of a high-quality agar-agar, a dried sea-

Viet-Nam (Contd.):

weed product made from a blend of 5 types of seaweed found in the coastal waters of central Viet-Nam, a commodity which has not been produced before in Viet-Nam.

Motorization of the Vietnamese bamboo-bottom fishing junks, which continued during the first part of 1961, has vastly expanded the fishing range, and has made possible location of offshore fishing areas previously out of reach by sail or oar. Approximately

300 specially-adapted engines were distributed during the first quarter of 1961, though not all had been installed.

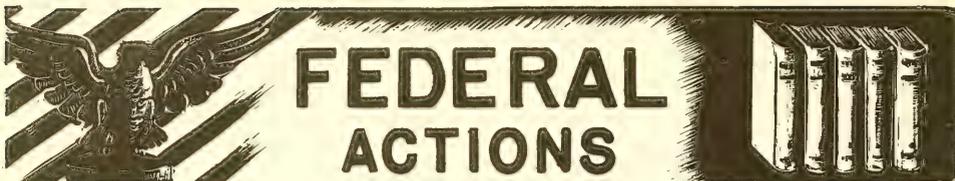
A complete listing of the types of commercial fish commonly found in Viet-Nam was prepared by U. S. Operation Mission and contract technicians. The list identifies the fish by scientific name, Vietnamese name, and common English name. (United States Embassy, Saigon, June 8, 1961.)

Note: Values converted at rate of VN\$35 equal US\$1.



FISHERY BYPRODUCTS SUBJECT TO SPONTANEOUS HEATING

Product	Tendency to Spontaneous Heating	Usual Shipping Container or Storage Method	Precautions Against Spontaneous Heating	Remarks
Cod Liver Oil	High	Drums, Cans, Glass	Avoid contact of leakage from containers with rags, cotton, or other fibrous combustible materials.	Impregnated organic materials are extremely dangerous.
Fish Meal	High	Bags, Bulk	Keep moisture 6% to 12%. Avoid exposure to heat.	Dangerous if overdried or packaged over 100° F.
Fish Oil	High	Barrels, Drums, Tank Cars	Avoid contact of leakage from containers with rags, cotton, or other fibrous combustible materials.	Impregnated porous or fibrous materials are extremely dangerous. Tendency of various fish oils to heat varies with origin.
Fish Scrap	High	Bulk, Bags	Avoid moisture extremes.	Scrap loaded or stored before cooling is extremely liable to heat.
Menhaden Oil	Moderate to High	Barrels, Drums, Tank Cars	Avoid contact of leakage from containers with rags, cotton, or other fibrous combustible materials.	Dangerous on fibrous products.
Whale Oil	Moderate	Barrels and Tank Cars	Avoid contact of leakage from containers with rags, cotton or other fibrous combustible materials.	Impregnated fibrous materials may heat unless ventilated. Tendency varies with origin of oil.



**Department of Health,
Education, and Welfare**

FOOD AND DRUG ADMINISTRATION

**PETITION FILED FOR USE OF SODIUM
NITRITE IN TUNA PRODUCTS:**

A petition filed with the U. S. Food and Drug Administration (Federal Register, May 10, 1961) by a New England tuna products processor proposes a regulation to provide for the safe use of sodium nitrite at 10 parts per million (0.001 per cent) in cured tuna and products made from tuna for fixation of color, improvement of texture, and development of flavor.

**REGULATIONS ON EXTENSION OF
EFFECTIVE DATE FOR
FOOD ADDITIVES AMENDMENTS:**

The U. S. Commissioner of Food and Drugs is authorized (Public Law 87-19, 75 Stat. 42, enacted April 7, 1961) to further extend the effective date of the food additives amendment to the Federal Food, Drugs and Cosmetic Act when facts are presented to support this action. To administer this provision of the law, the Commissioner announced a specific policy which was published in the April 15, 1961, Federal Register. All extensions of the effective date of the food additives amendment as announced previously were continued in effect to July 1, 1961, unless prior to that time regulations had been issued covering the subject matter of the extension or a regulation of further extension had been denied.

Legal action was not instituted under the food additives amendment before July 1, 1961, involving the use of any food additive for which an extension request was pending before the Commissioner prior to March 6, 1961, unless the Commissioner denied the request prior to July 1, 1961.

If certain specific data were submitted, the Commissioner would consider requests

for extensions beyond July 1, 1961. The data to be submitted were indicated in the Federal Register of April 15, 1961.

**SUBSTANCES GENERALLY RECOGNIZED
AS SAFE INCORPORATED INTO FOOD
ADDITIVES REGULATIONS:**

A large number of spices, seasonings, essential oils, oleoresins, and natural extractives (listed in the May 19, 1960, Federal Register with reference to a proposed order listing them as safe for their intended use) have now been determined to be safe within the meaning of section 409 of the Federal Food, Drug, and Cosmetic Act. The Food and Drug Administration made this determination after having considered all comments filed and all data accumulated with reference to the proposed order. The final order incorporating this decision in the regulations appeared in the June 10 Federal Register and it became effective on the date of publication.

The list in the June 10 Federal Register includes almost 280 substances (gives the common name and botanical name of plant source) under the categories of spices and other natural seasonings; essential oils, oleoresins and natural extractives; additives used in conjunction with spices and other natural seasonings and flavorings; natural extractives used in conjunction with spices, seasonings, and flavorings; and a group of miscellaneous items. To mention a few, included are such substances as citrus peels, clove, coriander, dill, lemon peel, lime, onion, nutmeg; saffron, algae, dulse, kelp, allspice, capers, caraway, celery seed, chives, cinnamon, cloves, garlic, ginger, mustard, oregano, paprika, parsley, pepper, sage, thyme, etc. The list of substances has been incorporated in the regulations as "Part 121--Food Additives, subject B, §121.101."

The same Federal Register of June 10 lists a group of substances (four) for which

an additional period of time is given for obtaining tolerances or denials of tolerances or for granting exemptions from tolerances. The extension is until July 1, 1962, with the proviso that a minimum quantity of the additive will be incorporated in the food consistent with good manufacturing practice. This order which became effective on June 2, 1961, is incorporated in the regulations as "Part 121--Food Additives, Subpart A, §121.91."

Also included in the same issue of the Federal Register are certain food additives used in food containers or equipment and food additives otherwise affecting food. These two substances are included in the regulations as "Part 121--Food Additives, Subpart F, §121.2510 for polyethylene and §121.2508 ethylene-butene-1 copolymer."

Note: See Commercial Fisheries Review, May 1961 p. 68, April 1961 p. 91; December 1960 p. 94; July 1960 p. 79; June 1960 p. 67; May 1960 p. 70.

* * * * *

FOOD ADDITIVES REGULATIONS AMENDED TO INCLUDE ADDITIONAL SUBSTANCES USED IN PAPER PRODUCTS FOR FOOD PACKAGING:

A substantial number of substances migrating to food from paper and paperboard products used in food packaging have been indicated as safe for their intended use. The order amending the food additives regulations to include those substances was published in the Federal Register, June 17, 1961, and became effective on the date of publication. The list of substances has been incorporated in the regulations as "Part 121--Food Additives, Subpart B, Section 121.101 (h)."

Among the 67 substances listed in the amendment as safe for their intended use are acetic acid, calcium chloride, casein, copper sulfate, cornstarch, corn sugar (sirup), glycerin, invert sugar, magnesium sulphate, sodium carbonate, and others.



Department of the Interior

FISH AND WILDLIFE SERVICE

PROPOSAL TO PERMIT USE OF EITHER VOLUME OR VALUE OF CATCH IN DETERMINING ELIGIBILITY FOR FISHING VESSEL CONSTRUCTION SUBSIDY:

The U. S. Fish and Wildlife Service, published in the June 13 Federal Register a pro-

posed change in the fishing vessel construction differential subsidy procedures.

It is proposed to amend the fishing vessel construction differential subsidy procedures to provide, in the definition of a fishery, permission for the owner to use either volume or value of the catch in determining eligibility for a subsidy. At present the regulations prescribed the use of only volume.

As proposed, the definition of a fishery provides that a vessel "To be considered as operating in a fishery, the catch of species in that fishery must amount to at least fifty-one percent (51%) (at the option of the owner by ex-vessel weight or ex-vessel value) of the total catch of the vessel during the calendar year."

* * * * *

BUREAU OF COMMERCIAL FISHERIES

ASSISTANT DIRECTOR SELECTED:

Promotion of Harold E. Crowther, Chief of the Division of Industrial Research of the U. S. Bureau of Commercial Fisheries, to the position of Assistant Director of the Bureau was announced on June 27, 1961, by the Department of the Interior.

Crowther replaces Andrew W. Anderson who has transferred after more than 30 years of service to become Fishery Attache to the American Embassy in Copenhagen, Denmark. Crowther's appointment was effective June 14. Anderson began work with the Department of State a few days earlier.

Crowther came to the Bureau in 1949 as a fishery engineer engaged in gear research



Harold E. Crowther

and exploratory fishing. From 1950 to 1953, he was Chief of the Section of Fishery Technology. He resigned to go with a private fishing firm. He returned in 1956 as a Fisheries Products Technologist. In 1957, following the reorganization of the U. S. Fish and Wildlife Service, he became Chief of the Division of Industrial Research and Services, a position he held un-

til his promotion to Assistant Director. For the past year he has been at the Bureau's Area Office at Terminal Island, Calif., on an executive training program.

As fishery attache in Europe, Anderson will work to improve reporting from this important fishery production and trade area, and also be concerned with developments in such organizations as the European Common Market, the European Free Trade Association, and the Organization for Economic Cooperation and Development.

Anderson became Assistant Director of the Bureau of Commercial Fisheries in April 1957

following the reorganization directed in the Fish and Wildlife Act of 1956. He had been Chief of the Branch of Commercial Fisheries of the Fish and Wildlife Service for the previous 14 years.



Andrew W. Anderson

Anderson has been regularly employed with the Bureau since June 1930, although he had summer employment with the organization in 1919. His first regular position was Statistical and Marketing Agent in the Middle Atlantic States. The following February he became Assistant Fisheries Technologist and served successively in Washington, D. C.; Gloucester, Mass.; Seattle and Anacortes, Wash.; Astoria, Oreg.; and Larsen Bay, Kodiak Island, Alaska. He returned to the Washington Office in 1937.



Department of Labor

WAGE AND HOUR DIVISION

HEARING TO INVESTIGATE AND RECOMMEND MINIMUM WAGES FOR AMERICAN SAMOA:

The U. S. Secretary of Labor appointed Industry Committee No. 4 to recommend minimum hourly wage rates under the Fair Labor Standards Act for all industries in American Samoa. The committee was to begin its pub-

lic hearings on July 19, 1961, in Pago Pago, American Samoa.

The Act authorizes industry committees for American Samoa to recommend minimum wage rates at or below the \$1.00-an-hour minimum applicable in the continental United States. These committees are equally representative of employers, employees, and the public, and include residents of both American Samoa and the mainland. Committee No. 4 is also authorized to consider rates for employees who will be newly covered by the Fair Labor Standards Amendments of 1961.



At present the minimum wage rates in American Samoa are 75 cents an hour for fish canning and processing, shipping and transportation, and petroleum marketing, and 55 cents an hour for other industries.

Members of the committee are:

For the Public:

James C. Hill (Chairman), Labor Arbitrator, New York, N. Y.
S. P. Aumoeualogo, House of Representatives, Government of American Samoa, Pago Pago, American Samoa.

For the Employers:

Charles R. Carry, Executive Director, California Fish Cannery Association, Inc., Terminal Island, Calif.
Leonard B. Quamma, Van Camp Sea Food Company, Pago Pago, American Samoa.

For the Employees:

George J. Richardson, Special Representative, Office of the President, AFL-CIO, Washington, D. C.
Philip J. Nomura, Assistant Director of Public Works, Government of American Samoa, Pago Pago, American Samoa.

The formal notice of appointment was published in the June 21 Federal Register.

REGULATIONS ISSUED FOR REVIEW COMMITTEES IN PUERTO RICO AND VIRGIN ISLANDS:

Regulations which set forth the procedures governing applications for appointment of

wage review committees for industries in Puerto Rico and the Virgin Islands were published in the May 27, 1961, *Federal Register*. The regulations, designated as Part 512, Title 29, of the Code of Federal Regulations, were issued pursuant to the Fair Labor Standards Amendments of 1961 by the Wage and Hour and Public Contracts Divisions of the U. S. Department of Labor.

The amendments provide, among other things, that any employer, or group of employers, employing a majority of employees in an industry in Puerto Rico or the Virgin Islands may apply, no later than July 4, 1961, to the Secretary of Labor for the appointment of a review committee to recommend the minimum rate or rates to be paid such employees in lieu of the rate or rates resulting from the 15-percent statutory increase provided by the amendments.

The Secretary may appoint a review committee only if proper application has been made and he has reasonable cause to believe, on the basis of financial and other information contained in the application, that compliance with the statutory rate will substantially curtail employment in the industry.

The amendments indicate that an application for the appointment of a review committee is to be made for an industry, and not for part of an industry.

The regulations specify items of information which would generally be essential for a determination, as a guide to the applicant. Sufficient information must be supplied to permit the Secretary to conclude that there is reasonable cause to believe that the industry cannot pay the 15-percent increase without substantial curtailment of employment. If the information furnished is not sufficient to make such a determination, the application will be denied.

All information submitted with an application will, if the application is granted, be referred to the review committee appointed for that industry. It will also be available to the public after the date that the application is granted. If an application is denied, none of the information will be made available to any persons outside those in the Department whose duties require the examination of such applications.

The regulations also provide that regulations, Part 511, on wage order procedure, will apply to review committees, except where

inconsistent with regulations, Part 512, or the Fair Labor Standards Amendments of 1961. Thus, review committees will operate under the same rules and have the same authority as the usual industry committees. They will be tripartite in membership and will receive prehearing statements from those who wish to participate as parties. They may also establish classifications within an industry and may recommend rates up to the new statutory minimum of \$1.15 an hour.

The regulations as published include sections on scope and application, statutory requirements prerequisite for appointment of review committees, industry, confidentiality, identification and filing date, majority of employers in the industry, financial and other information, payroll and employment data, other information, action on application, review committee procedure, effective period of the 15-percent increase or the review committee wage order, and surety undertaking.



Treasury Department

BUREAU OF CUSTOMS

REGULATIONS AMENDED ON ENTRY OF PRODUCTS OF AMERICAN FISHERIES TRANSFERRED AT SEA:

Relating to entry of products of the American fisheries taken on the high seas when they are shipped to the United States by being transferred at sea to another fishing vessel of the same fleet returning to port, the May 17, 1961, *Federal Register*, amends Customs Regulations, Sections 10.78 and 10.79, as follows:

Title 19—CUSTOMS DUTIES

Chapter I—Bureau of Customs, Department of the Treasury

[T.D. 55384]

PART 10—ARTICLES CONDITIONALLY FREE, SUBJECT TO A REDUCED RATE, ETC.

Products of American Fisheries

Sections 10.78 and 10.79, Customs Regulations, relating to entry of products of American fisheries, amended.

To clarify the phrase "imported by the taking vessel," in § 10.79, and to eliminate the requirement for entry of products of American fisheries taken on the high seas when they are shipped to the United States by being transferred at

sea to another fishing vessel of the same fleet returning to port, the following changes are made in the Customs Regulations:

Section 10.78(a) is amended to read as follows:

§ 10.78 Entry.

(a) Except as prescribed in § 10.79(d), no entry shall be required for fish or other marine products taken on the high seas by vessels of the United States or by residents of the United States in undocumented vessels owned in the United States when such fish or other products are brought into port by the taking vessel, or are transferred at sea to another fishing vessel of the same fleet and brought into port.

§ 10.79 [Amendment]

The first sentence of § 10.79(a) is amended to read as follows: "When products of American fisheries claimed to be free of duty under paragraph 1730 (a), Tariff Act of 1930, are imported from a foreign country or its territorial waters by the taking vessel, or are shipped, except as provided for in § 10.78 (a), to the United States by the master, owner, or agent of the taking vessel otherwise than in the taking vessel, a declaration, customs Form 3295, of the master of the taking vessel, verified by at least two members of the crew, shall be required in connection with the entry."

(R.S. 251, sec. 624, 46 Stat. 759; 19 U.S.C. 66, 1624)

[SEAL] D. B. STRUBINGER,
Acting Commissioner of Customs.

Approved: May 10, 1961.

A. GILMORE FLUES,
Assistant Secretary of the
Treasury.

* * * * *

CANADIAN GREAT LAKES FISHING VESSELS MAY NOT LAND IN U. S. PORTS:

Canadian fishing vessels have been reported operating in United States and/or Canadian waters on Lake Superior and landing their catches in United States Great Lakes ports. These vessels were licensed by the State of Michigan to fish in Michigan waters of Lake Superior.

On April 10, 1961, the Bureau of Customs, U. S. Treasury Department, ruled that Section 251, title 46, United States Code, denies to foreign-flag vessels "the privileges of vessels employed in the . . . fisheries," thus excluding Canadian fishing vessels from taking fish in the territorial waters of the United States. Section 4.96(e) of the Customs Regulations, among other things, permits a Canadian nonconvention fishing vessel to come into a port of the United States for the purpose of securing supplies, equipment, or repairs, sub-

ject to compliance with the usual requirements applicable to foreign vessels in ports of the United States. However, landing the catch of any such vessel is prohibited, regardless of where the catch is taken.

Accordingly, Canadian vessels are prohibited by Section 251 from engaging in commercial fishing in territorial waters of the United States and from landing in a port of the United States fish taken by such vessels regardless of where the catch is taken.



Eighty-Seventh Congress (First Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.



FEDERAL BOATING ACT OF 1958 AMENDMENTS:

On June 14, the Committee on Merchant Marine and Fisheries met in executive session and ordered reported to House S. 883, a bill to extend the application of the Federal Boating Act of 1958 to the Commonwealth of Puerto Rico, the Virgin Islands, and Guam.

FISH AND WILDLIFE AID THROUGH EQUIPMENT

TRANSFER: S. 2173 (McCarthy & Humphrey), introduced in Senate June 29, a bill to provide that excess personal property of the United States may be donated to the States for the promotion of fish and wildlife management activities, and for other purposes; to Committee on Government Operations. Similar to H. R. 4724 (Barry).

FOOD AND AGRICULTURE ORGANIZATION:

United States Contribution to the Food and Agriculture Organization (Hearing before the Subcommittee on International Organizations and Movements of the Committee on Foreign Affairs, House of Representatives, Eighty-Seventh Congress, First Session on draft legislation--Executive Communication 825--to amend the joint resolution providing for membership of the United States in the Food and Agriculture Organization of the United Nations, May 24, 1961), 31 pp., printed. Contains statements of various officials of Department of State, and Department of Agriculture. Proposed legislation would remove the dollar ceiling on the amount authorized to be appropriated annually for United States contribution to the FAO. United Nations program of technical assistance carried out by FAO includes fisheries (fishing resource surveys, fishery technology, and fish processing and marketing);

and among the projects executed by FAO approved by the Special Fund Governing Council is included one on fisheries institutes.

FUR SEAL OPERATIONS: On June 21, Executive Communication 1056, a letter from the Comptroller General of the United States, transmitting a report on the review of fur seal operations and administration of the Pribilof Islands, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Department of the Interior, was submitted to the House; to Committee on Government Operations. Identical report received in Senate same date.

GAME AND FOOD FISH CONSERVATION IN DAM RESERVOIRS: H. R. 7795 (Sikes), introduced in House June 21, a bill to direct the Secretary of the Interior to establish a research program in order to determine means of improving the conservation of game and food fish in dam reservoirs; to Committee on Merchant Marine and Fisheries. Identical to H. R. 2722.

GULF OF MEXICO OUTER CONTINENTAL SHELF RESTRICTIONS: On July 12 and 19, the full House Committee on Interior and Insular Affairs considered H. R. 6745, to provide for the restriction of certain areas in the Outer Continental Shelf, for defense purposes and for other purposes (Matagorda Water Range); and H. R. 6849, to provide for the restriction of certain areas in the Outer Continental Shelf, known as the Corpus Christi Offshore Warning Areas, for defense purposes and for other purposes.

IMPORT COMPETITION ADJUSTMENT: H. R. 7858 (Harvey of Indiana), introduced in House June 26, a bill to regulate the foreign commerce of the United States by providing for fair competition between domestic industries that supply articles imported into the United States; and for other purposes; to Committee on Ways and Means. Also, on June 29 introduced in House, H. R. 7986 (Morrow).

MEDICAL CARE FOR VESSEL PERSONNEL: H. R. 8029 (Hansen), introduced in House July 10, a bill to provide medical care for certain persons engaged on board a vessel in the care, preservation, or navigation of such vessel; to the Committee on Interstate and Foreign Commerce. Identical to S. 367.

METRIC SYSTEM STUDY: On June 29, Subcommittee No. 1 of the House Committee on Science and Astronautics held a hearing on H. R. 269 and H. R. 2049, bills to provide the Secretary of Commerce to conduct a study to determine the practicability and desirability of the adoption by the United States of the metric system of weights and measures. Public witnesses were heard.

NATIONAL SCIENCE ACADEMY: H. R. 8046 (Mrs. St. George), introduced in House July 10, a bill to provide for the establishment, under the National Science Foundation, of a National Science Academy; to Committee on Science and Astronautics. Similar bill H. R. 8085 (Martin), introduced in House July 11.

NATIONAL FISHERIES CENTER AND AQUARIUM: H. R. 8181 (Kirwan), introduced in House July 17, a bill to authorize the Secretary of the Interior to construct a National Fisheries Center and Aquarium in the District of Columbia; to Committee on District of Columbia.

NATURAL RESOURCES DEVELOPMENT: On July 13 Executive Communication 1135 was received in the

House, from the President of the United States, transmitting a draft of a proposed bill entitled "A bill to provide for the optimum development of the Nation's natural resources through the coordinated planning of water and related land resources, through the establishment of a Water Resources Council and river basin commissions, and by providing financial assistance to the States in order to increase State participation in such planning;" to Committee on Interior and Insular Affairs.

NAVAL OCEANOGRAPHIC OFFICE: H. R. 8045 (Geo. P. Miller), introduced in House July 10, a bill to change the name of the Hydrographic Office to United States Naval Oceanographic Office; to Committee on Armed Services.

OCEANOGRAPHIC RESEARCH PROGRAM: Oceanography 1961--Phase I (Hearing before the Subcommittee on Oceanography of the Committee on Merchant Marine and Fisheries, House of Representatives, Eighty-Seventh Congress, First Session, on H. R. 4340), 104 pp., printed. Contains communication from the President; and reports from the Departments of Commerce, Treasury, Interior, and Navy; statements of various officers of Coast Guard and Navy. Also contains "Report of Coast Guard Facilities and Operations in Activities Relating to Fields of Oceanography;" "United States National Oceanographic Program, Fiscal Year 1962," by the Interagency Committee on Oceanography of the Federal Council for Science and Technology; and "Interagency Committee on Oceanography," a roster of membership and panels. New legislation would allow the Coast Guard to collect, analyze, and evaluate scientific data concerning the high seas and the navigable waters of the United States; cooperate and participate with other Federal agencies in the collection, analysis, and evaluation of such data.

On June 19 the Subcommittee on Oceanography of the House Committee on Merchant Marine and Fisheries heard testimony of various Government witnesses on H. R. 4276, to expand and develop the aquatic resources of the United States. Hearings continue. Hearings were continued on June 20, 21, 22, 27. On July 14, the Subcommittee on Oceanography concluded hearings on H. R. 4276.

On June 20 the Senate Committee on Commerce submitted a report (S. Rept. 426) on S. 901, a bill to advance the marine sciences, with amendments. Bill amended in Committee to provide for long-term grants, contracts or other forms of assistance by the Bureau of Commercial Fisheries to scientists, laboratories, or other non-Federal agencies for research, equipment, or facilities to be used in furtherance of bill's objectives.

The section of the bill concerning studies of economic and legal aspects of commercial fisheries and the utilization of marine products was amended to provide that "such studies may be carried out through contracts with institutions, agencies, or organizations competent to make such studies, or by grants to such institutions, agencies, or organizations." Through this amendment, the report explains, the committee wished to make it clear that the Bureau would not be required to undertake these studies itself but could utilize the services of authorities in these fields.

S. Rept. 426, Advancement of Marine Sciences--Marine Sciences and Research Act of 1961 (87th Congress, 1st Session, June 20, 1961, report from Committee on Commerce to accompany S. 901), 103 pp., printed. Con-

tains provisions of S. 901; various discussions such as "Marine Science--the Neglected Frontier;" "Minerals for the Future;" "The Unfenced Pastures of the Sea;" "Health from the Seas;" "The Menace to Health from the Seas;" "The Highways of International Trade and Friendship;" "Where Land and Ocean Meet--Our 12,255-Mile Coastline;" "Service Agency of the Seas and Lakes;" "Weather in the Oceans;" "Research for Security;" "The Role of Research in Undersea Warfare;" "Needs for Oceanographic Research;" "The Need for Legislation;" "The Inland Ocean;" "Genesis of the Program;" "Cost;" "Analysis of S. 901 by Sections;" and "Agency Reports."

House on June 29 disagreed to Senate amendments to H. R. 6845, to expand the functions of the Coast Guard to include oceanographic research, requested a conference with the Senate, and appointed conferees. On July 12 the Senate insisted on its amendment to H. R. 6845, agreed to conference asked by the House, and appointed conferees.

PACIFIC MARINE FISHERIES COMMISSION: On July 17, the Senate received executive communication, a letter from the Chairman, Pacific Marine Fisheries Commission, Portland, Oreg., transmitting, pursuant to law, a report of that Commission, for the year 1960 (with accompanying report); to Committee on Commerce. Same communication received in House July 17; to Committee on Merchant Marine and Fisheries.

POLLUTION OF SEA: On June 20, Executive Communication 1053, a letter from the Secretary of State, transmitting a draft of a proposed bill entitled "A bill to implement the provisions of the International Convention for the Prevention of the Pollution of the Sea by Oil, 1954," was submitted to the House; referred to Committee on Merchant Marine and Fisheries. On June 21, an identical communication was received in the Senate.

S. 2187 (Magnuson), introduced in Senate June 29, a bill to implement the provisions of the International Convention for the prevention of the Pollution of the Sea by Oil, 1954; to Committee on Commerce. Identical bill H. R. 8152 (Bonner) introduced in House July 13.

POLLUTION OF SEA TREATY IMPLEMENTATION: H. R. 8152 (Bonner), introduced in House July 13, a bill to implement the provisions of the International Convention for the Prevention of the Pollution of the Sea by Oil, 1954; to Committee on Merchant Marine and Fisheries.

PUBLIC WORKS APPROPRIATIONS, 1962: Part I--Civil Functions, Department of the Army (Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 87th Congress, First Session), 1053 pp., printed. Under the part on the North Pacific Division, discusses a treaty between the United States and Canada which covers development of the hydroelectric potential of the Columbia River basin, as well as flood control and irrigation and navigation needs. This has resulted in a program of construction of major dams, which has raised the problem of fish passage over these dams to their spawning areas. Covers investigations of the Fish and Wildlife Service in helping to solve this problem. This part of the hearings also has references to fish and wildlife studies by the Fish and Wildlife Service.

Part 2--Civil Functions, Department of the Army (Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 87th Congress, First Session), 1361 pp., printed. Contains list of project allocations on the Fish and Wildlife Coordination Act studies (totaling 103), in the amount of \$550,000.

SHRIMP IMPORT DUTIES: H. R. 8034 (Kilgore), introduced in House July 10, a bill to amend the Tariff Act of 1930 to impose a duty on shrimp and to provide for duty-free entry of unprocessed shrimp annually in an amount equal to imports of shrimp in 1960; to Committee on Ways and Means. Similar to S. 1571 (Long).

SPORT FISH STUDY: H. R. 7826 (Berry), introduced in House June 22, a bill to authorize and direct the Secretary of the Interior to conduct studies of the genetics of sport fishes and to carry out selective breeding of such fishes to develop strains with inherent attributes valuable in programs of research, fish hatchery production, and management of recreational fishery resources; to Committee on Merchant Marine and Fisheries.

STATE DEPARTMENT APPROPRIATIONS FY 1962: On June 19 the Subcommittee of the Senate Committee on Appropriations continued hearings on H. R. 7371, fiscal 1962 appropriations for the Departments of State and Justice, and the Judiciary. Testimony was received from State Department witnesses. Hearings continued on June 21, 22, 27, and July 10 and 11. Hearings were recessed subject to call of Chair.

UNDOCUMENTED VESSEL NUMBERING REGULATIONS: On July 14, the Senate received executive communication, a letter from Assistant Secretary of Treasury, transmitting, pursuant to law, a copy of interpretative rulings and definitions of terms used in certain regulations regarding numbering of undocumented vessels, statistics on numbering, and boating accident reports and accident statistics (with accompanying paper); to Committee on Commerce.

VESSEL MEASUREMENT: H. R. 8150 (Bonner), introduced in House July 13, a bill to simplify the admeasurement of small vessels; to Committee on Merchant Marine and Fisheries. Identical to S. 1936 (Magnuson).

WATER POLLUTION CONTROL: On June 22, the Senate passed H. R. 6441, a bill to amend the Federal Water Pollution Control Act so as to provide a more effective program of water pollution control, after Committee on Public Works was discharged from its further consideration. It was amended by substituting for its text the amended language of S. 120, companion bill. Prior to these actions, S. 120 had been amended by adoption of all committee amendments (with two technical perfecting amendments); and an amendment by Case (S. Dak.), providing that when need for pollution control in a community is due to Federal activity an additional allocation may be made to meet an equitable portion of such need. Senate insisted on its amendments, asked for conference with House and appointed conferees. S. 120 was indefinitely postponed.

On June 27 the House disagreed to Senate amendments to H. R. 6441, agreed to a conference with the Senate; and appointed conferees.

On June 28 conferees in executive session agreed to file conference report (H. Rept. No. 675) on differences between Senate- and House-passed versions of H. R. 6441.

On July 6 the Committee on Conference reported on H. R. 6441 without amendment (H. Rept. No. 675).

H. Rept. No. 675, Federal Water Pollution Control Act Amendments of 1961 (July 6, 1961, report from the committee of conference to accompany H. R. 6441), 14

pp., printed. Contains amendments to bill as agreed on by conference committee; and a statement of the managers on the part of the House explaining of the effect of the action agreed upon by the conferees and recommendations in accompanying conference report. On July 14, the Senate adopted conference report on and cleared for President H. R. 6441.

On July 13, the House adopted conference report on H. R. 6441.

WATER RESOURCES CONSERVATION: S. 2246 (Anderson), introduced in Senate July 14, a bill to provide for the optimum development of the Nation's natural resources through the coordinated planning of water and related land resources, through the establishment of a Water Resources Council and river basin commissions, and by providing financial assistance to the States in order to increase State participation in such planning; to Committee on Interior and Insular Affairs. This bill is the President's water resources bill of 1962 in ac-

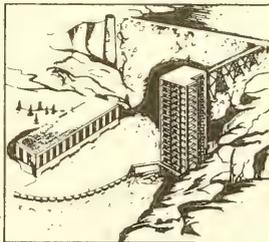
cordance with executive communication received in Senate also on July 14. Also H. R. 8177 (Aspinall), introduced in House July 17, identical to S. 2246.

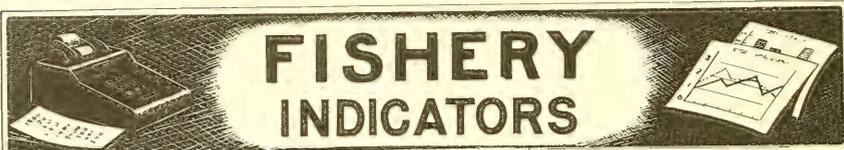
WORLD TRADE: S. Report No. 446, The United States and World Trade, Challenges and Opportunities (June 26, 1961, 87th Congress, 1st Session, Final Report of the Committee on Commerce, United States Senate, prepared by its special staff on the study of U. S. Foreign Commerce, pursuant to S. Res. 243, 86th Congress), 340 pp., printed. Report is made up of two parts--Part I. World Trade: The challenge to U. S. Policy; and Part II. Essentials of a modern trade policy. Contains two appendices, 45 tables, and 6 charts. This report maintains that the United States should have a dynamic national trade policy, reflecting our confidence in the power, the resiliency, the ingenuity and creative capacity of the American economy. A number of proposals and recommendations are advanced with respect to various aspects of trade policy and administration.



SALMON STAIRCASE AT DAMS

A spiral water "staircase" for salmon hurdling over dams during their migration upstream to spawn received another patent. The invention of James M. Wardle of Ottawa, Ontario, Canada, won patent No. 2,978,873. Rights were assigned to Northwest Power Industries Limited, Ottawa. A series of steps, or pools, provide a passageway for both the spawning salmon and their returning fingerlings, with every 12th pool designed as a stop-over, or resting place. (Science News Letter, April 29, 1961)





FISHERY INDICATORS

CHART I - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

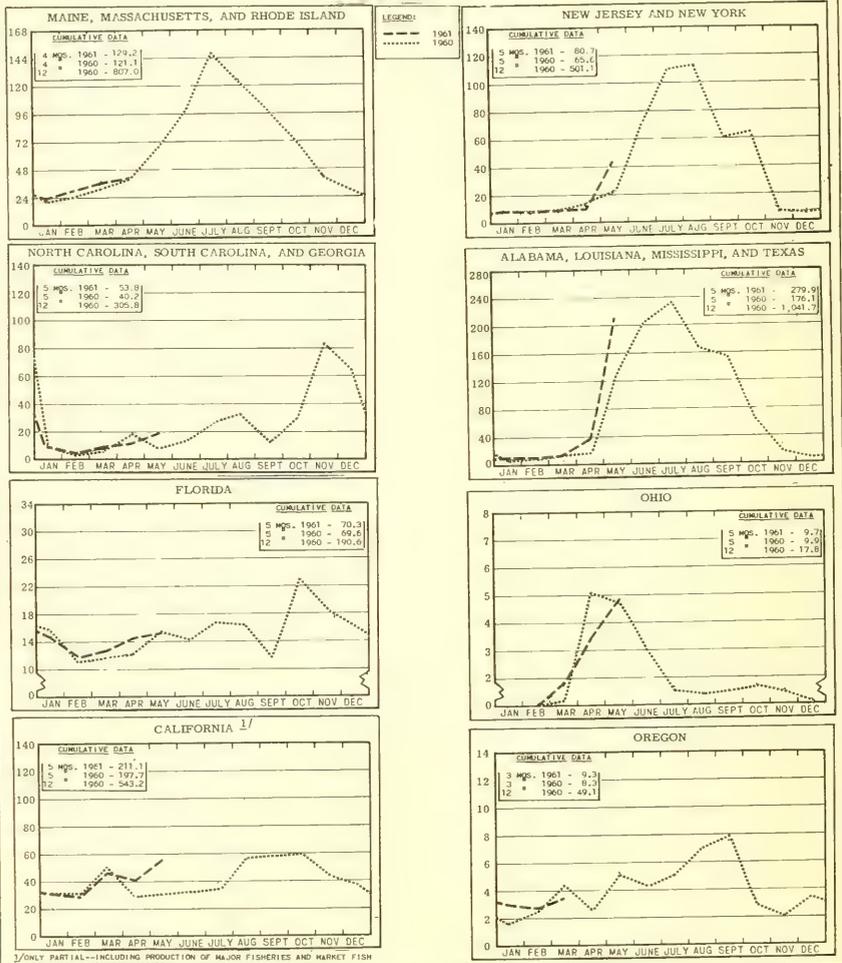
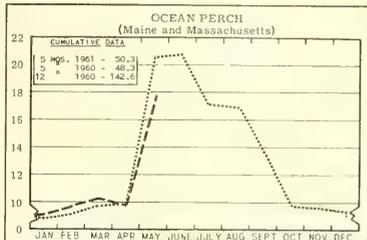
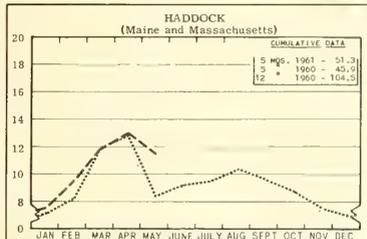
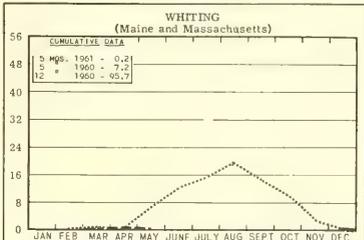
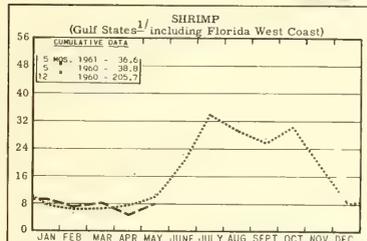


CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

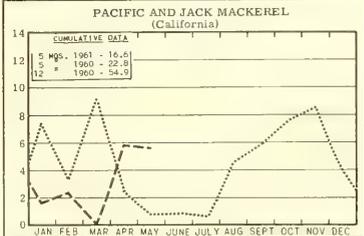
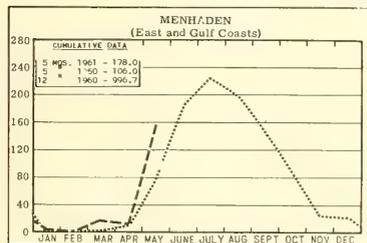


In Millions of Pounds



^{1/4} ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

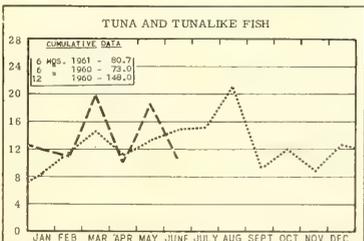
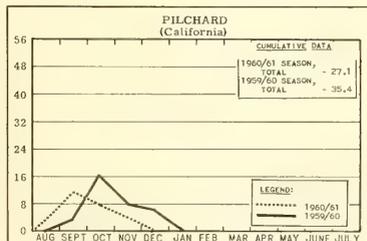
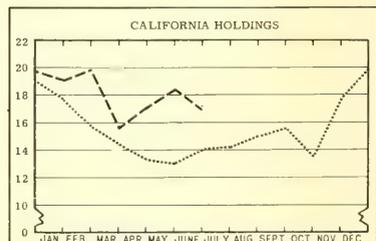
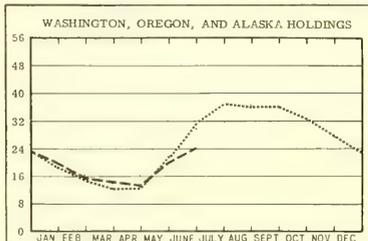
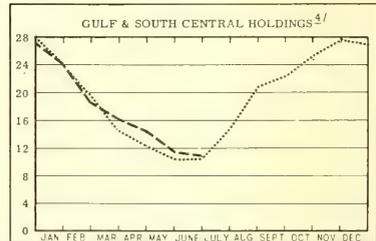
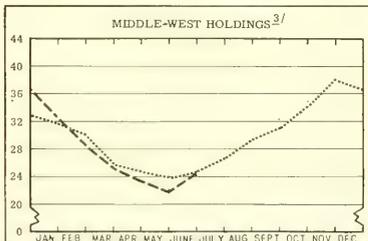
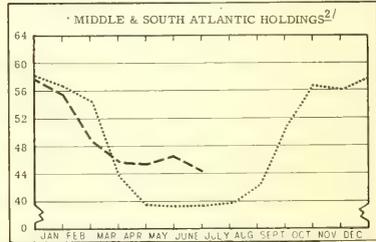
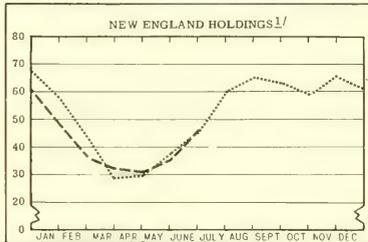
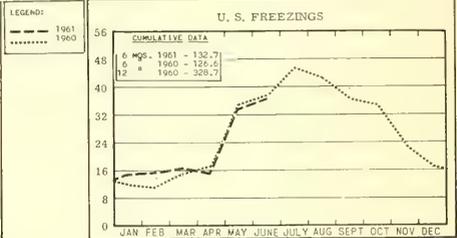
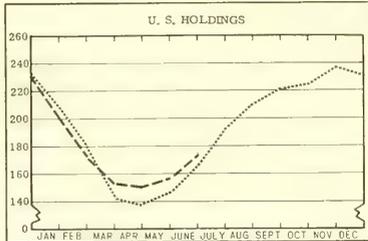


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

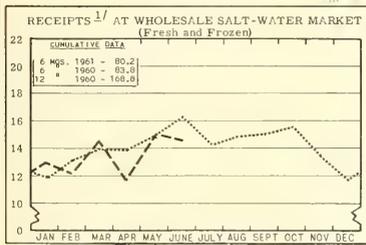
In Millions of Pounds



* Excludes salted, cured, and smoked products.

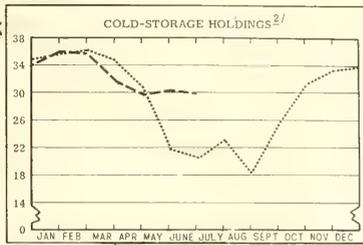
CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

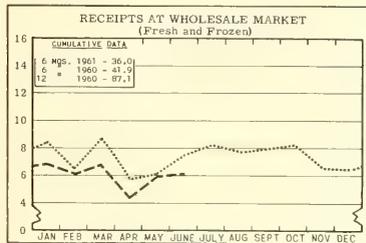


^{1/}INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

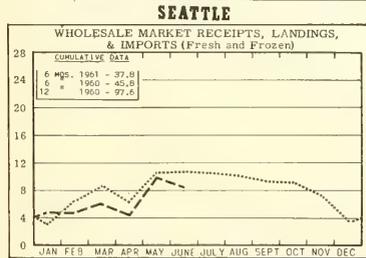
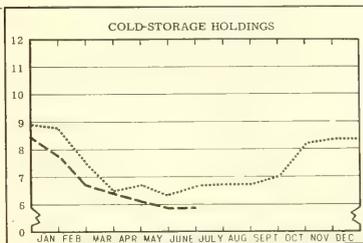
NEW YORK CITY



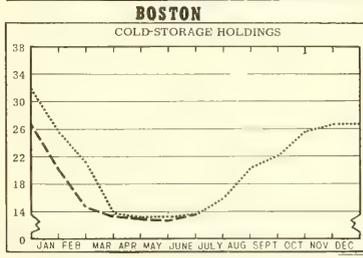
^{2/}AS REPORTED BY PLANTS IN METROPOLITAN AREA.



CHICAGO



SEATTLE



BOSTON

LEGEND:
 - - - - - 1961
 1960

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

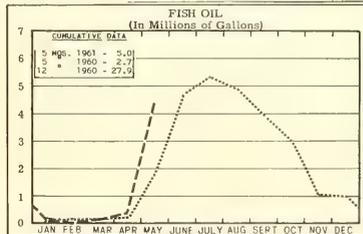
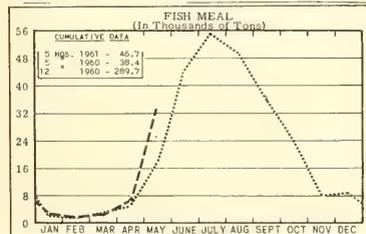
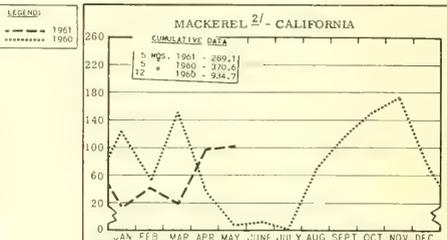
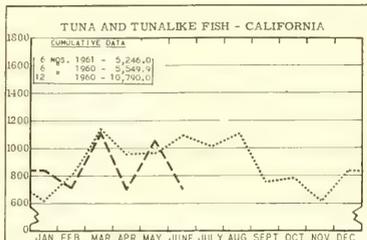
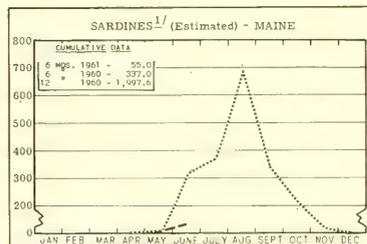
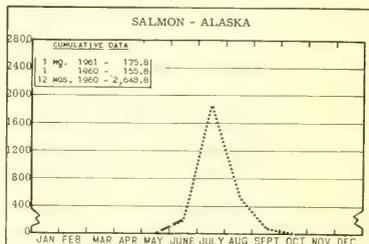
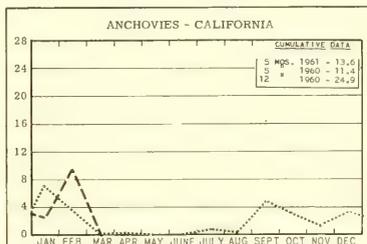


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



^{2/} INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



^{1/} INCLUDING SEA HERRING.

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	$\frac{1}{4}$ drawn	3 $\frac{1}{2}$ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	$\frac{1}{2}$ -lb.	8 oz.

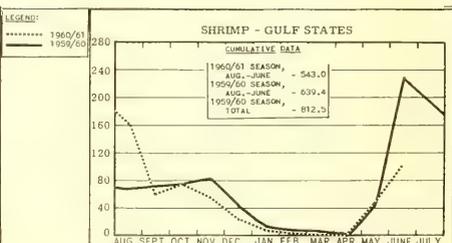
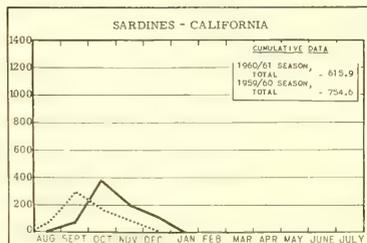
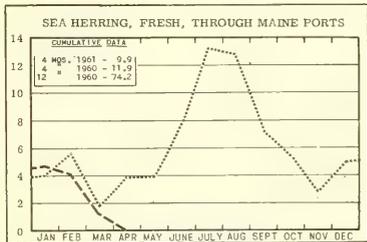
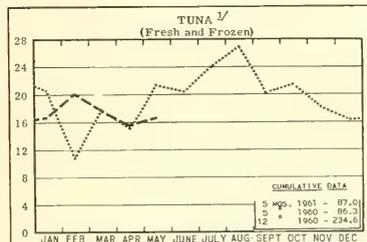
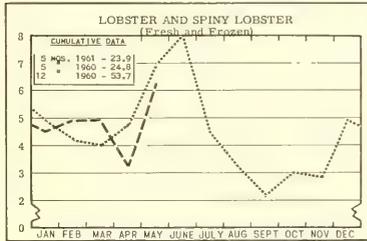
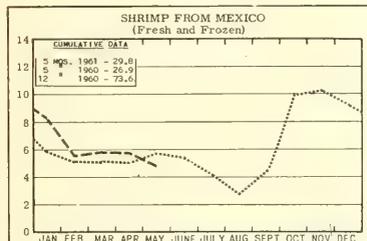
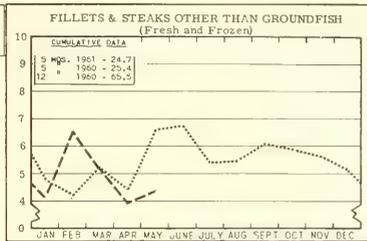
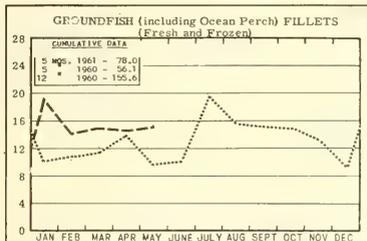
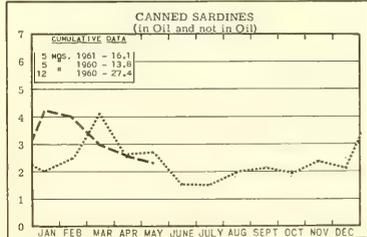
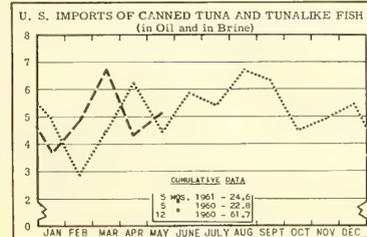


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds



1/ EXCLUDES LOINS AND DISCS.





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.
- FL - FISHERY LEAFLETS.
- MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
- SL - BRANCH OF STATISTICS LIST OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
- SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

- | Number | Title |
|----------|---|
| CFS-2557 | Florida Landings, 1960 Annual Summary, 13 pp. |
| CFS-2578 | Imports and Exports of Fishery Products, 1956-1960 Annual Summaries, 12 pp. |
| CFS-2582 | Michigan Landings, March 1961, 3 pp. |
| CFS-2583 | Florida Landings, March 1961, 9 pp. |
| CFS-2584 | Frozen Fish Report, April 1961, 8 pp. |
| CFS-2585 | Maine Landings, March 1961, 3 pp. |
| CFS-2586 | Fish Meal & Oil, 1960 Annual Summary, 4 pp. |
| CFS-2588 | Alabama Landings, 1960 Annual Summary, 5 pp. |
| CFS-2590 | Mississippi Landings, 1960 Annual Summary, 5 pp. |
| CFS-2592 | New York Landings, March 1961, 4 pp. |
| CFS-2593 | Minnesota Landings, March 1961, 2 pp. |
| CFS-2594 | Maryland Landings, 1960 Annual Summary, 9 pp. |
| CFS-2596 | California Landings, February 1961, 4 pp. |
| CFS-2597 | Alabama Landings, February 1961, 3 pp. |
| CFS-2600 | Massachusetts Landings, January 1961, 4 pp. |
| CFS-2601 | North Carolina Landings, April 1961, 4 pp. |
| CFS-2602 | Georgia Landings, April 1961, 2 pp. |
| CFS-2603 | Mississippi Landings, March 1961, 2 pp. |
| CFS-2608 | Florida Landings, April 1961, 8 pp. |
| CFS-2612 | Maryland Landings, March 1961, 3 pp. |
| FL-516 | Fur Seal Industry of the Pribilof Islands, 1786-1960, by Francis Riley, 19 pp., illus., May 1961. Discusses the discovery of the Pribilof Islands, the sole breeding grounds of the Alaska fur sea herd; the early exploitation and near-extinction of the seals; and evolution of international control—first by the North Pacific Fur Seal Convention of 1911 and later by the Convention of 1957, participated in by Canada, Japan, U. S. S. R., and the United States. Covers the history of production of byproducts from seal carcasses since 1910. Includes statistical tables showing harvest of fur seal skins, 1786-1950; production of fur seal meal and oil, 1919-1960; and shipment and sale of fur seal bones, 1917-1919. Also includes |

graphs showing harvest of seals, 1820-1960; and production of fur seal meal, 1935-1960.

Wholesale Dealers in Fishery Products (Revised):

- SL-4 - Rhode Island, 1961.
- SL-7 - New Jersey, 1961.
- SL-10 - Maryland, 1961.
- SL-27 - Indiana (Great Lakes Area), 1960.
- SL-28 - Michigan (Great Lakes Area), 1960.
- SL-29 - Ohio (Great Lakes Area), 1960.
- SL-31 - New York (Great Lakes Area), 1960.

Sep. No. 622 - Processing and Quality Studies of Shrimp Held in Refrigerated Sea Water and Ice: Part 5 - Interchange of Components in a Shrimp-Ice System.

Sep. No. 623 - A \$700 Million Food Buyer Offers Special Opportunities to Small Business Firms.

Operations of the Bureau of Commercial Fisheries under the Saltonstall-Kennedy Act, Fiscal Year 1959, 112 pp., illus., processed. The fifth annual report to the Congress of the activities of the U. S. Bureau of Commercial Fisheries during the fiscal year ending June 30, 1959, under the provisions of the Saltonstall-Kennedy Act of July 1, 1954. The Act makes available funds from import duties collected on foreign fishery products for the promotion of the free flow in commerce of domestic fishery products and provides for a wide range of research and services supporting the development and wise utilization of the nation's fishery resources and the stabilization of the domestic fishing industry. Among the important research programs of work during fiscal year 1959: (1) in New England, studies showed that oyster and clam enemies can be controlled by using heavy oils mixed with dry sand; (2) in the Gulf area, exploratory operations revealed commercial concentrations of royal-red shrimp southwest of the Dry Tortugas and east of the Mississippi Delta; (3) in the Pacific Northwest, relatively tasteless and odorless fish oil products were prepared by molecular distillation; and (4) experimental results show fish-oil derivatives may be effective in reducing blood cholesterol, a major contributing factor in heart ailments. In the industrial field, new or expanded emphasis in research was placed on: (1) improving the quality of fishery products, the development and promulgation of grade standards, and conducting voluntary continuous inspection in fish processing plants; (2) a study of the long-term outlook (to 1975) for production and consumption of fishery products. New or expanded service functions included: (1) sea-food merchandising clinics for retailers conducted

in three cities in Massachusetts; (2) expanded Market News and statistical coverage; (3) cooperation with industry on the "Fish 'n' Seafood Parade" and Lent promotion campaigns; (4) participation in trade agreement negotiations, the preparation of legislative positions concerned with tariffs and with trade matters, and work with industry on specific import-export trade problems; and (5) the production of films on fishery subjects, the distribution of fishery publications, and the presentation of fish-cookery demonstrations.

A Prospectus for Marine Game Fish Research, 14 pp., illus., processed, December 1959.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-52	Menhaden Fish Oil Prices at New York City, 1950-1961.
MNL-22	Union of South Africa's Fisheries, 1960.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED:

(Baltimore) Monthly Summary--Fishery Products, March 1961, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices on the Baltimore market; for the month indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, April 1961, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, May 1961, 10 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Contains albacore forecast, 1961; landings of albacore, 1945-59; tropical storm warnings; and sea-surface temperature charts, eastern Pacific Ocean; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, May 1961, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, April 1961, 8 pp. (Market News

Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; and sponge sales; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, May 1961, 4 pp. (Market News Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

New England Fisheries--Monthly Summary, April 1961, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the principal New England fishery ports, and presents food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; landings and ex-vessel prices for trips landed at Atlantic Ave., Boston; and landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for April 1961, 18 pp. (Market News Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, landings at Fulton Market Docks and Stonington, Conn., imports entered at New York City, primary wholesaler prices for frozen products, cold storage movements and holdings and marketing trends; for the month indicated.

Production of Fishery Products in Selected Areas of Virginia, Maryland, and North Carolina, 1960, by William N. Kelly, 48 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) A summary of commercial landings of fish and shellfish and the production of crab meat and shucked oysters as reported by producers and wholesalers from selected principal fishing localities of Virginia, Maryland, and North Carolina. The statistics contained in this annual summary represent the approximate commercial fisheries production only and do not represent complete commercial landings or production for a given area, individual state, or the Chesapeake Bay area as a whole. However, the statistics give an indication as to the trend in fisheries production for the specific areas designated and reflect the over-all production trend by species, localities, and states.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, May 1961, 9 pp. (Market News Service, U. S. Fish and Wildlife Serv-

ice, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Oreg.) wholesale dealers; shipments of fishery products; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

Glossary of Terms Used in Alaska Fur Seal Research and Management, 15 pp., processed, January 9, 1961. (U. S. Bureau of Commercial Fisheries, Marine Mammal Biological Laboratory, Sand Point Naval Air Station, Seattle 15, Wash.)

In the listing of three English translations of foreign language articles in Commercial Fisheries Review, vol. 23, no. 4, April 1961, pp. 105-106, the source where copies may be obtained is incorrectly shown. They are available, not from the U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, P. O. Box 3830, Honolulu, but from the U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, Biological Laboratory, 2725 Montlake Blvd., Seattle, 2, Wash.

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

Abundance and Life History of Shad, St. Johns River, Florida, by Charles Herman Walburg, Fishery Bulletin 177 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 60), 19 pp., illus., printed, 20 cents, 1960.

"Effect of Starvation and Feeding on the Chemical Composition of Brook Trout," by Arthur M. Phillips, Jr., and Donald L. Livingston, article, The Progressive Fish-Culturist, Vol. 22, October 1960, pp. 147-154, printed.

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.

AIR BUBBLE CURTAIN:

"Study on the Fish-Gathering Effects of Air Curtain," by Yutaka Imamura and Michio Ogura, article, Journal of Tokyo University of Fisheries, vol. 45, no. 2, March 1959, pp. 173-177, printed. Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Minato-ku, Tokyo, Japan.

"Study on the Response of Trachurus japonicus to Air-Bubbles," by Yutaka Imamura and Michio Ogura, Journal of Tokyo University of Fisheries, vol. 45, no. 2, March 1959, pp. 196-203, printed. Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Minato-ku, Tokyo, Japan.

ALBANIA:

"O Rybolovstve Albanii" (on the Albanian Fisheries), by K. E. Babaian, I. A. K. Gololobov, and A. S. Rievin,

article, Rybnoe Khoziaistvo, vol. 35, no. 11, 1959, pp. 74-82, illus., printed in Russian. VNIRO Glavniproekta pri Gosplanie, Moscow, U. S. S. R.

ALGAE:

"Contributions to the Marine Algal Flora of Chile," by Tore Levring, Reports of the Lund University Chile Expedition 1948-49, No. 39, pp. 4-83, illus., printed. Lund University, Lund, Sweden, 1960.

The Ecology of Algae, by C. A. Tryon and R. T. Hartman, The Pymatuning Symposia in Ecology, Special Publication No. 2, printed. Pymatuning Laboratory of Field Biology, University of Pittsburgh, Pittsburgh, Pa., 1959.

The Marine Algae of East-Greenland. Part I--Taxonomical; Part II--Geographic Distribution, by Soren Lund, Middelteser om Gronland, bd. 156, no. 1, illus., printed. Middelteser om Gronland, C. A. Reitzel, Copenhagen, Denmark, 1959.

AMINO ACIDS:

"The Amino-Acid Sequence of Sperm Whale Myoglobin: Chemical Studies," by A. B. Edmondson and C. H. W. Hirs; "A Partial Determination by X-Ray Methods, and Its Correlation with Chemical Data," by J. C. Kendrew and others; "Comparison Between the Amino-Acid Sequences of Sperm Whale Myoglobin and of Human Haemoglobin," by H. C. Watson and J. C. Kendrew, articles, Nature, vol. 190, no. 4777, May 20, 1961, pp. 663-672, illus., printed. Nature, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

"Nutrition of Salmonoid Fishes. VIII--Indispensable Amino Acids for Sockeye Salmon," by John E. Halver and Warren E. Shanks, article, Journal of Nutrition, vol. 72, November 1960, pp. 340-346, printed. American Institute of Nutrition, 36th St. at Spruce, Philadelphia 4, Pa.

ANTIBIOTICS:

"El Hielo-Antibiotica en la Conservacion de Algunos Productos Pesqueros" (Preservation of Some Fishery Products with Ice and Antibiotics), by C. Mateu and G. Varela, article, Anales de Bromatologia, vol. 12, no. 3, 1960, pp. 271-331, printed in Spanish. Sociedad Espanola de Bromatologia, Ciudad Universitaria (Edificio Facultad de Farmacia), Madrid, Spain.

ATLANTIC OCEAN:

Atlantic Ocean Fisheries, edited jointly by Georg Borgstrom and Arthur J. Heighway, 344 pp., illus., printed, £3 7s. 6d. (US\$10). Fishing News (Books) Ltd., Ludgate House, 110 Fleet Street, London E. C. 4, England, March 1961.

With the world's population increasing steadily and the growing realization that there is a lack of protein in the diet of many nations today, the search for protein foods is becoming more intensive. The seas and waters of the world seem to promise a potential for protein foods that has not been fully exploited. The North Atlantic Ocean has from the days of the Vikings and Norsemen always been a rich storehouse of fish. But today both the North and South Atlantic, a well-stocked larder, is being explored for larger supplies of fish by the nations bordering this great body of water in order to find food for their growing populations.

The importance of the fishery resources in the Atlantic Ocean, as well as in the other seas of the

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world, is highlighted (1) by the far-flung fleets of Japan, Russia, Norway, the United States, and others exploring unexplored areas of the Atlantic for new resources and (2) by the demands of some nations like Norway, Iceland, and South American Countries for extension of territorial fishing limits seaward.

Can the Atlantic be overfished? What is the status of the nations fishing this huge fish pond? This book marshals an impressive array of facts to answer these questions and gives essential background information of value to administrators, politicians, fishermen, businessmen, and scientists.

The book is well illustrated with photographs and maps and presents numerous tables with detailed data on the fishery resources of the Atlantic and the fishing industries of the nations operating in that great sea which extends from the extremities of South Africa and South America to the Arctic Circle. No matter what your interest or how slight it is, this book is not only good reading but is an excellent book to have for ready reference. It is adequately indexed.

Divided into four main sections, the first of these deals with the fundamental factors necessary to understand the Atlantic Ocean, including physical character, depths and currents, biology of the life that inhabit that ocean, the availability and commercial value of the fish, the necessary cooperation that is evolving between the nations concerned with the Atlantic as a vital source of food, the question of claims for extended territorial waters and fishing limits, and the practical development of new techniques and tactics for catching fish. Each chapter is written by an authority on the subject. For example, that dealing with the nature and currents of the Atlantic is by Dr. J. N. Carruthers of the National Institute of Oceanography. The biology and nature of fish life inhabiting the ocean are covered by Dr. Taivo Laevester, FAO Fisheries Division biologist, and he concludes with an estimate of the future potential yield which can be secured by maximum exploitation without destroying the stocks. A historical outline of the evolution of international accord on conservation and the fact that the present economic plight of the fishing fleets underlines this need is the subject of the chapter by Basil Engholm, Fisheries Secretary for England and Wales.

A factual account of the actual operations, fishing practices, present and future industrial developments and trends, and statistics of the fisheries of the 22 major nations fishing the Atlantic makes up the second section of the book. There is a chapter, written by an expert, on each of the major nations, starting with Norway and progressing down the western coast of Europe, Sweden, Poland, West Germany, Denmark (including Greenland and the Faroes), Netherlands, Great Britain, Belgium, France, Spain, Portugal, Italy, Angola and Morocco, and South Africa on the southern point of Africa. Crossing to the western Atlantic off the east coast of South America, a chapter reports on the fishery prospects on the Patagonian Continental Shelf. Working up the east coasts of the Americas, there are chapters on Argentina, Brazil, the Caribbean, Mexico, the United States, Canada, and Iceland in the North Atlantic.

There is some scattered information on the fisheries of Russia, but the third section ("Russia's Giant Effort") of this book presents a full and authoritative

picture of the Soviet's efforts and progress in both marine and inland fishing. The second of the two chapters in the section is devoted to the subject of the book and covers the Atlantic fisheries of the U. S. S. R., but it goes somewhat beyond that since included are historical data, catch pattern by species and areas, utilization, whaling, foreign trade, major fishery centers, combines, freezing and refrigeration, curing, canning factoryships, mechanization, research and education, research institutes, planning bodies, and nearly every phase of the fisheries of Soviet Russia. The first of the two chapters rounds out the picture of Russia's fisheries by discussing her development of some marine and inland fisheries, and fish utilization. The section on Russia outlines in considerable detail the Soviet Union's tremendous strides in the last ten years to become one of the top-ranking fishery nations of the world. Outlined in the section are the activities of the more than 9,000 fishery scientists and technologists recruited by Russia and trained to find new fishery resources, and new methods of catching and processing them.

Although almost all-inclusive, the book neglects Japan, the leading fishery nation of the world, which in the past few years has entered the Atlantic fisheries, principally fishing for tuna in the tropical Atlantic and trawling off the west coast of Africa. But possibly in a future reprint of this book or in the companion volume on the Pacific Ocean, which is now in preparation, Japan's role in the Atlantic fisheries may be covered.

The fourth and concluding section of the book lists the scientific and common names of some 500 species of fish, and a summary of the report of the British Committee of Inquiry into the British fishing industry.

--Joseph Pellegri

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try, with English translations included. Addresses of the offices maintained in this country are also given. The specific types of activity in which they are engaged are sketched; names of any periodicals, publications, or other media used for publicizing trade and investment opportunities are cited.

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mental trawl nets of modified Northern European design in comparison with the conventional Mediterranean-type trawl gear. Observations indicate that under the prevailing fishing conditions along the Yugoslavian coast, midwater trawling is not likely to become a commercially feasible substitute for the present "lampara" fishing technique (purse seining with light attraction). The author states, however, that "further experience and observations will have to be accumulated, particularly in regard to special fishing conditions in certain limited areas and at certain seasons, before the comparative virtues of both methods can finally be established." As a separate project, demonstrations and tests with electric underwater lamps (incandescent and mercury vapor) for attracting fish were initiated, to establish the comparative advantages of the electric above-water lamps presently used in Yugoslavia. Recommendations on the use of larger trawl gear and future trawl studies are included.

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"Freeze-Drying--a New Method to Preserve Fish," by K. Stewart, article, Trade News, vol. 13, no. 10, April 1961, pp. 8-11, illus., processed. Information and Educational Service, Department of Fisheries, Ottawa, Canada. Describes the process of freeze-drying, by which it is possible to dry solid foods such as fish so that they will keep without refrigeration and will reconstitute with the addition of water to look and taste like fresh foods. Freeze-drying is the removal of moisture from a product after it has been frozen. The process is carried out in several steps.

First, a food item--say cod steaks--is quick frozen. Next, it is placed on shelves in a vacuum chamber from which air is pumped until a high vacuum is induced. It is then dried at very low pressure by the controlled input of a small amount of thermal or microwave energy. Key to the process is that below a critical pressure level, water can exist only as a solid or a gas. When the pressure in the vacuum chamber is maintained below a critical level and heat is applied, the frozen moisture in the steaks flashes into vapor without melting. As a result, the structure of the steaks remains unchanged. The escaping vapor does not cause shrinkage, and dissolved salts are not carried to the surface. If vacuum-packed or packed in an inert gas such as nitrogen, either in metal containers or strong well-sealed flexible packages, the cod steaks will keep for months or even years at room temperature. The normal weight and texture are restored by soaking in water for a few minutes. According to one authority, "freeze-drying is the greatest breakthrough in food preservation since the invention of the tin can."

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GULF AND CARIBBEAN:

Proceedings of the Gulf and Caribbean Fisheries Institute, Thirteenth Annual Session, Miami Beach, Fla., November 1960, edited by James B. Higman, 186 pp., illus., printed, \$2. The Gulf and Caribbean Fisheries Institute, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla., April 1961. This report is divided into five parts, each one containing papers presented during each of the special sessions comprising the general session. The section on the shrimp session includes papers on: "The Role of International Commissions in World Fisheries," by Donald L. McKernan; "Synoptic Rationale of Existing Florida Shrimp Regulations," by Robert M. Ingle; "Promote Your Product or Lose Your Market," by J. Roy Duggan; and "A Report on Federal Programs of Financial Aid to Commercial Fisheries," by C. E. Peterson and Luther L. Long. The part on industrial fisheries session contains papers on: "Potential for Fish Solubles--Liquid Fish in the Fertilizer Industry," by Roy C. Stevens; "Effect of the 1960 Law of the Sea Conference on the High Seas Fisheries," by Wilbert M. Chapman; "Fractionation and Purification of Triglycerides, Fatty Acids, and Methyl Esters from Fish Oils," by Edward H. Gruger, Jr.; "The Multiple-Use of Shrimp Trawlers," by John S. Robas; and "A Challenge to the Fish Meal and Oil Industry in the Gulf of Mexico," by John W. Reintjes and Fred C. June. The section on technology and exploratory session contains papers on: "New Methods of Purse Seining for Tuna in the Eastern Pacific Ocean," by Gordon C. Broadhead and Arthur R. Marshall; "Air-Bubble and Electrical-Field Barriers as Aids to Fishing," by Keith A. Smith; "Fishery Products and Food Additives," by L. M. Beacham; "The Economic Potential of the Calico Scallop Fishery of the Gulf and South Atlantic with Special Reference to the East Coast of Florida," by Jack T. Brawner; and "A Prog-

ress Report on Experimental Fishing for Sardine-Like Fishes in the Gulf of Mexico," by Harvey R. Bullis, Jr. The shellfish session part includes papers on: "Status of Researches on Oyster Diseases in North America," by J. G. Mackin; "Delaware Bay Oyster Mortalities," by Harold H. Haskin; "Rehabilitation of Disease-Depleted Oyster Populations in Eastern Canada," by R. R. Logie, R. E. Dirnan, and E. B. Henderson; "Recent Advances in the Control of Shellfish Predators and Competitors," by Victor L. Loosanoff; "Economic Aspects of Markets for Middle Atlantic Oysters," by John D. Abrahamson; "The Future of the United States Oyster Industry from a Biologist's Viewpoint," by John B. Glude; and "Industry's Appraisal of the Future of the Oyster Industry," by David H. Wallace. The Caribbean and general session part contains papers on: "How Can Research Production be Measured?," by George A. Rounsefell; "Tagging of Anchovetas, *Cetenagraulis mysticetus*, in the Gulf of Panama," by Edward F. Klima and William H. Bayliff; "Movements of Sea-trout on the West Coast of Florida," by Alan Moffett and Albert C. Jones; "A World-Wide Approach to Fish Culture Improvement," by Cecil Miles; "The Contribution by the Outboard Motor to the Mechanization and Development of the Fishing Industry," by Ernst Ott; and "Effect of Pesticides on Commercial Fisheries," by Philip A. Butler.

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LINGCOD:

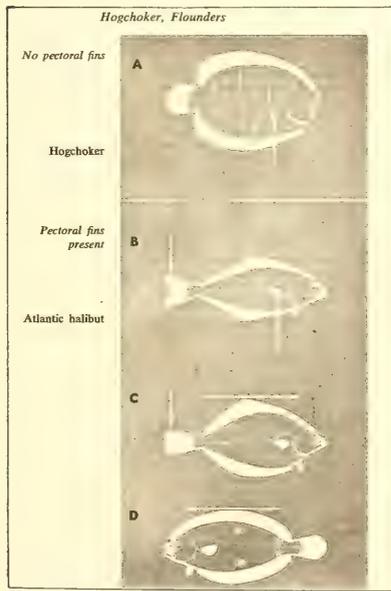
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MARINE BORERS:

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MARINE FISHES:

Guide to Marine Fishes, by Alfred Perlmutter, 431 pp., illus., printed, \$6.50. New York University Press, Washington Square, New York 3, N. Y., 1961. To our knowledge, this is the first complete guide to employ identifying silhouettes of all the marine fish



Type of identifying silhouettes used in book, "Guide to Marine Fishes."

and fish-like vertebrates that inhabit the coastal temperate-water zone from Cape Cod to Cape Hatteras, together with some of the more common stragglers from North of Cape Cod, south of Cape Hatteras, and from the deep waters offshore. It is written specifically for the fisherman and amateur biologist. In the first part of the book, 616 labeled

silhouettes enable the reader to identify the unknown fish through easily distinguishable characteristics. Identification of the various species is based primarily on easily seen external characters which are employed for rapid identification of fish in the field. The silhouettes of the fish show the identifying characters. This makes it possible for even the amateur to identify most species, not only in the adult sizes but also in the young, at least in those sizes most likely to be seen. The second part contains 260 species and gives a brief description of all of them, plus information on the distribution, color, life history, and economic importance of the fish identified in the first section. Also, both the most popular of the common names and the most generally accepted scientific name are given for each species. Bound with water-resistant cover, the book can be taken along on fishing trips to help identify the catch on the spot.

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"Sokobikiamiyo Sho Sokuteiki o Shiyu Shite no Issobiki Kisenokobikiami no Sokutei Jikken" (Results of Measure Experiments by Several Meters on Net Shape of One-Boat Trawl Net--Danish Seine Net), by C. Hamuro, article, *Technical Report of Fishing Boat*, no. 13, 1959, pp. 55-59, illus., printed in Japanese with English abstracts. Fishing Boat Laboratory, Fisheries Agency, Chiyoda-ku, Tokyo, Japan.

Supplement to Relative Selectivity of Freshwater Commercial Fishing Devices Used in Louisiana, by James Davis and Lloyd Posey, Jr., 144 pp., printed, Louisiana Wildlife and Fisheries Commission, Wildlife and Fisheries Bldg., 400 Royal St., New Orleans 16, La.

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"Beskatningen av Fiskebestandene i Vare Nordlige Farvann--Norsk og Internasjonal Arbeid for a Motvirke Overfiske" (Harvest of Fish Population in Our Northern Waters--Norwegian and International Work to Prevent Overfishing), by A. Høyen and G. Saetersdal, article, Fiskets Gang, vol. 47, no. 7, February 16, 1961, pp. 151-157, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

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POLAND:

The following English translations of foreign language articles are available from the Office of Technical Services, Department of Commerce, Washington, D. C., at 50 cents each. Order by OTS number.

Investigation on the Influence of Sodium Nitrited Ice on the Keeping Qualities of Baltic Cod, by J. Borowik and others, OTS 60-21534, 27 pp., illus., processed. (Translated from Polish Prace Morskiego Instytutu Rybackiego, no. 9, 1957, pp. 633-679.)

An Investigation of Polan, Ramie, Cotton and Hemp Fishing-Net Fabrics from the Standpoint of Fishing Technology, by Stefan Wojan, OTS 60-21373, 27 pp., illus., processed. (Translated from Polish Prace Morskiego Instytutu Rybackiego W. Gdyni, no. 9, 1957, pp. 597-632.)

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Symposium on Evaluation of Fish Populations in Warm-Water Streams, 118 pp., printed. Iowa Cooperative Fisheries Research Unit, Iowa State College, Ames, Iowa, 1957.

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Some Applications of Okra in the Food Industries, by William Saenz, Contribution No. 299, 4 pp., illus., printed. (Reprinted from Proceedings of the Florida State Horticultural Society, vol. 73, 1960, pp. 297-300.) Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla. This article covers among other topics, a preliminary experiment to preserve fresh shrimp in okra ice. Okra solutions used as a glaze on shrimp protected the product against desiccation and discoloration twice as long as the plain water glaze. The experiment indicated that the treatment offered some protection against development of decomposition odors. Work is now in progress to verify the findings of the preliminary experiment, to find optimum concentrations for the okra ice, and to explore the antioxidant properties of okra for the preservation of fatty fish and the protection of colored fish against oxidative discoloration.

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"Quality of Flatfish from Hakodate. Part 3--Factors Deciding the Quality. 6--Relations between the Quality and the Amino Acid Composition of the Muscle Extractives," by Keiichi Oishi, article, Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 10, February 1960, pp. 319-331, printed in Japanese with English summaries. Faculty of Fisheries, Hokkaido University, Kameda-Machi, Hakodate, Japan.

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Application of Radioactive Isotopes in the Food and Fishing Industries and in Agriculture (a portion of the Proceedings of the All-Union Scientific and Technical Conference on the Application of Radioactive Isotopes, Moscow, 1957), 94 pp., illus., printed. English translation, \$30.00 (single report \$12.50). Consultants Bureau, Inc., 227 W. 17th St., New York 11, N. Y., 1959. Of particular fishery interest are

the reports on: "Results and Prospects of Applying Radioactive Carbon (C^{14}) to the Study of the Circulation of Organic Matter in Waters," by Iu. I. Sorokin; "Research on the Biological Productivity of Waters by Means of Radioisotopes," by V. I. Zhadin, A. G. Rodina, and A. S. Troshin; "On Methods of Tagging Fish with Radioactive Calcium," by N. P. Rudakov; and "The Application of P^{32} and Ca^{45} to the Study of Some Aspects of Phosphorus and Calcium Metabolism in Young Carp and Sturgeons," by M. P. Bogoiavlenskaja and I. A. Shekhanova.

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"The Red Tide of 1958 at Ensenada, Baja California, Mexico," by Rudolf Stohler, article, Veliger, vol. 2, no. 1, 1959, pp. 32-35, printed. Veliger, Northern California Malacozoological Club, Berkeley, Calif.

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"Adrenocorticosteroids in Salmon Plasma (Oncorhynchus nerka)," by J. G. Phillips, W. N. Holmes, and Philip K. Bondy, article, Endocrinology, vol. 65, 1959, pp. 811-818, printed. Endocrinology, Charles C. Thomas, 301-27 E. Lawrence Ave., Springfield, Ill.

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Fangmethoden in der Sardinenfischerei (Catching Methods in the Sardine Fisheries), by A. von Brandt, 92 pp., illus., processed in German. (Reprinted from Protokolle zur Fischereitechnik, Heft 26, Bd. 6, pp. 65-115.) Institut für Netz- und Materialforschung der Bundesforschungsanstalt für Fischerei, Hamburg, Germany. A paper submitted to the FAO World Scientific Meeting on the biology of sardines and related species, Rome, September 14-21, 1959. Covers the catching of pelagic shoal fish; useful equipment and catching methods for the sardine fishery; development of nets, trawls, and hooks; and sardine catching methods used throughout the world.

SCALED-FIN GRUNTS:

Western Atlantic Fishes of the Genus HAEMULON (Pomadasysidae): Systematic Status and Juvenile Pigmentation, by Walter R. Courtenay, Jr., 84 pp., illus., printed. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 11, no. 1, March 1961, pp. 86-149.) The Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla. These fish, referred to as the scaled-fin grunts, include the nominal genera Bahystoma and Brachygenys which are here considered synonyms of Haemulon.

SEA CUCUMBERS:

"Studies on the Proteins of the Meat of Sea Cucumber (Stichopus japonicus Selenka)", by E. Tanikawa, article, Memoirs of the Faculty of Fisheries, Hokkaido University, vol. 3, no. 1, August 1955, printed, Faculty of Fisheries, Hokkaido University, Kameda-Machi, Hakodate, Japan.

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"Distribution and Abundance of Gray Weakfish in the York River System, Virginia", by W. H. Massmann, J. P. Whitcomb, and A. L. Pacheco, article, Transactions of the Twenty-third North American Wildlife Conference, 1958, pp. 361-369, printed, Wildlife Management Institute, Wire Bldg., Washington 5, D. C.

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"New Species of Gelidium and Pterocladia from the Pacific Coast of the United States and the Hawaiian Islands", by N. H. Loonis, article, All-Hancock Foundation Occasional Paper No. 24, pp. 1-10, illus., printed. The University of Southern California Press, Los Angeles, Calif., 1960.

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Cost Control Problems of Small Manufacturers, by William C. Flewelling, Jr., Management Research Summary No. 3, 4 pp., processed. Small Business Administration, Washington 25, D. C., November 1960. A summary of a report, titled "An Analysis of Cost Control Problems of Small Manufacturers in Alabama." This study is directed at the cost control problems of the small manufacturing firm. It presents selected accounting control techniques and analyses which were found useful in the day-to-day

operations of 15 small manufacturing firms in 4 industrial groups. In conducting the research, attention was centered on three major areas: analysis of the balance sheet and income expense statement; budgeting, with emphasis on control of costs; and special problems faced by small businessmen. Investigation sought to disclose the adequacy or inadequacy of (1) bookkeeping systems and payroll procedures, (2) inventory and receivable controls, and (3) controls over waste and scrap. In addition, the uses of statement analysis and budgeting were investigated, as were the various reports made to management.

Expanding Distribution and Warehousing in Alaska, by

Vernon R. Kiely, Management Research Summary No. 5, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1961. A summary of a report, titled "Economic and Business Situation in Alaska, with Special Reference to Wholesale and Retail Trade in Fairbanks and Anchorage." This research study found that retailing, wholesaling, and warehousing in Alaska are inseparably bound with its economic background. There is a definite need for an increase in wholesaling activities. Costs are an important factor in expansion and are influenced strongly by the labor force, the length of supply lines, climatic conditions, and transportation limits. The amount of loan capital available in Alaska has never met the demand.

Facts about Small Business Financing, by Olin S. Pugh,

Management Research Summary No. 10, 4 pp., processed. Small Business Administration, Washington 25, D. C., February 1961. A summary of a report, titled "Financing 689 Small Business Firms in South Carolina, 1958-1959: A Study of the Sources, Availability, and Terms of Financing for Small Business Firms in South Carolina." The principal purpose of the survey was to analyze the sources and terms of credit extended to small businesses. The small business must always rely heavily upon personal investment as a source of equity funds. Within the structure of small business, it was found that larger loans have lower rates. An educational program built around both requirements and capabilities of small business, designed for and reaching all borrowers and lenders, could go far in alleviating many of the conditions or problems of small business financing.

Problems of Small Retailers, by J. L. McKeever,

Management Research Summary No. 9, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1961. A summary of a report, titled "A Study of the Problems of Small Retailers in Wyoming." The extension of credit, with slow payment by customers, was the financial problem most frequently mentioned by the businessmen cooperating in this study. A build-up of accounts receivable to the detriment of cash balances inevitably leads to a shortage of capital for the financing of other basic business functions. Most problems concerning labor dealt with competence, initiative, attitudes, and productivity of employees.

Small Plant Turnover and Failure, by William N. Kin-

nard, Jr., and Zenon S. Malinowski, Management Research Summary No. 4, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1961. A summary of a report, titled "The Turnover and Mortality Experience of Manufacturing Firms in the Hartford, Connecticut, Economic Area, 1953-1958." This report is based primarily on an

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intensive study of manufacturing turnover and mortality in the Hartford, Connecticut, economic area. It was found that small manufacturing firms are not necessarily more liable to turnover and failure than large manufacturers. The small manufacturer can minimize his risk of failure or loss by paying close attention to the mortality pattern among industries in his area.

The Squeeze-Out in Small Business Ownership, by F. Hodge O'Neal and Jordan Derwin, Management Research Summary No. 7, 4 pp., processed, Small Business Administration, Washington 25, D. C., January 1961. A summary of a report, titled "Expulsion or Oppression of Business Associates: 'Squeeze-Outs' in Small Enterprises." A "squeeze-out" is the use of strategic position, management powers, or legal device by some owners in a business enterprise to eliminate other owners or to deprive them unfairly of income or advantages. The primary means through which small business managers can avoid squeeze plays is competent legal counsel who will foresee problems that might arise and provide methods to forestall them. Minority interests could be given greater protection through State legislative action.

SMELT:

"Variation in the Life History of the American Smelt in Inland Waters of Maine," by Robert S. Rupp, article, *Transactions of the American Fisheries Society*, vol. 88, no. 4, 1959, pp. 241-252, printed, American Fisheries Society, P. O. Box 429, McLean, Va.

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Determining the Depth of Penetration of Smoke Components in Smoking of Food, by V. I. Kurko, U.S.S.R. Patent No. 127,905, April 12, 1960, printed in Russian. *Biuro Ekspertizy i Registratsii Izobretenii*, Moscow, U. S. S. R.

SPILLWAYS:

"Iz Opyta Stroitel'stva i Eksploatatsii Uproshchennykh Vodostivov" (Building and Operational Experience with Simplified Spillways), by A. G. Savitskiy, article, *Meteorologiya i Gidrologiya*, no. 10, 1958, pp. 48-49, printed in Russian. *Meteorologiya i Gidrologiya*, Moscow, U. S. S. R.

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The Spoilage of Pacific Coast Rockfish. I--Spoilage in Ice Storage, by J. Liston, Julia G. Chapel, and J. A. Stern, Contribution No. 92, 4 pp., illus., printed, College of Fisheries, University of Washington, Seattle, Wash., 1961.

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"The Purification and Properties of a Ribonuclease from Squid," by Mary Edmonds and Jay S. Roth, article, *Archives of Biochemistry and Biophysics*, vol. 89, August 1960, pp. 207-212, printed. *Archives of Biochemistry and Biophysics*, c/o Academic Press Inc., New York 3, N. Y.

"Studies on the Tropomyosin of Squid," by K. Yoshimura, article, *Memoirs of the Faculty of Fisheries, Hokkaido University*, vol. 3, no. 2, December 1955, printed. Faculty of Fisheries, Hokkaido University, Kameda-Machi, Hakodate, Japan.

STRIPED BASS:

"Field Tests of Petersen, Streamer, and Spaghetti Tags on Striped Bass, *Roccus saxatilis* (Walbaum)," by

William S. Davis, article, *Transactions of the American Fisheries Society*, vol. 88, no. 4, 1959, pp. 319-329. American Fisheries Society, P. O. Box 429, McLean, Va.

"Problems Relative to the Atlantic Coast Striped Bass Fishery and Status of its Biological Research," by James E. Sykes, article, *Transactions of the Twenty-third North American Wildlife Conference*, 1958, pp. 370-377, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C.

"The Striped Bass in Relation to the Multiple Use of the Roanoke River, North Carolina," by William W. Hassler, article, *Transactions of the Twenty-third North American Wildlife Conference*, 1958, pp. 378-391, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C.

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A Technique for Mass-Marking Fish by Means of Compressed Air, by C. F. Jackson, Technical Circular No. 17, 8 pp., printed, New Hampshire Fish and Game Department, Concord, N. H., 1959.

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Tide Tables--East Coast North and South America including Greenland, 1962, 283 pp., printed, \$1. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., June 1961. High and low water predictions.

TRADE LIST:

The Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade list. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at \$2 each.

Canneries and Frozen Foods--Producers and Exporters--Denmark, 9 pp. (April 1961). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes cannery and exporters of canned fish and shellfish. Also processors of frozen fishery products. The principal markets for canned fishery products are the United States, United Kingdom, Sweden, Austria, and France.

TRAWLERS:

"O Dal'neishem Sovrshenstvovanii Bol'shikh Morozil'nykh Rybolovnykh Traulerov s Kormovym Traleniem" (On Further Improvement of Large Freezing Fishing Stern Trawlers), by S. L. Fridman, article, *Rybnoe Khoziaistvo*, vol. 35, no. 6, 1959, pp. 38-51, printed in Russian, VNIEO Glavniproekta pri Gosplanie, Moscow, U. S. S. R.

"The First Large Norwegian Stern Trawler Delivered," article, *Norwegian Fishing and Maritime News*, vol. 8, no. 1, 1961, pp. 9, 11, 13, illus., printed. Norwegian Fishing and Maritime News, P. O. Box 740, Slottsgt. 3, Bergen, Norway. Discusses the main characteristics and capacities of Norway's first stern trawler *Hekktind*, a 151-foot vessel designed for operation in Arctic and North Atlantic waters. The technical equipment and results of trips already taken by the Norwegian vessel are also discussed in detail.

TRAWLING:

"Kontrol Napolneniia Trala Rybol" (Indication of Catches in Trawling), by N. V. Vershinskii and

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others, article, *Rybnoe Khoziaistvo*, vol. 34, no. 7, 1958, pp. 34-40, illus., printed in Russian. VNIRO Glavniproekta pri Gosplanie, Moscow, U. S. S. R.

"Trawling for Herring in the Bay of Fundy," by G. J. Gillespie, article, *Trade News*, vol. 13, no. 10, April 1961, pp. 3-7, illus., processed, Information and Educational Service, Department of Fisheries, Ottawa, Canada. Describes experimental trawling for herring in the Bay of Fundy sponsored by the Canadian Department of Fisheries and the New Brunswick Fisheries Division. The project was designed to determine if midwater and bottom trawling for herring could provide employment for inshore trawlers during the winter season when groundfish are scarce. In addition to the basic electronic instrument--a conventional white-line recorder--used in the experimental project, a new electronic device was added that removes any guesswork with respect to the depth of the trawl. The new device was a net-sounder which consisted of a transducer mounted in a kite on the trawl's headline. Along with the conventional transducer on the vessel's hull, the net-sounder was linked by cable to the electronic recorder. Employment of this new piece of sounding equipment in the Bay of Fundy marked the first time it has been used on the Atlantic seaboard. The net-sounder is a European development and has been used in those fishing waters with singular success.

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"Pribyro dlia Izmereniia Natiazhenii v Otdel'nykh Detaliakh Trala" (Instruments for Measuring Tension in Various Parts of Trawl), by V. K. Savasov, article, *Rybnoe Khoziaistvo*, vol. 34, no. 8, 1958, pp. 47-50, illus., printed in Russian. VNIRO Glavniproekta, pri Gosplanie, Moscow, U. S. S. R.

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"An Analysis of Sixty-five Years of Fishing in a Trout Pond Unit," by H. R. McCrimmon and A. H. Berst, article, *The Journal of Wildlife Management*, vol. 25, no. 2, April 1961, pp. 168-178, illus., printed. The Wildlife Society, 5921 Anniston Rd., Bethesda 14, Md.

"Cystoma Found in the Liver of Rainbow Trout, *Salmo gairdnerii irideus* Gibbons," by Yoshiharu Honma and Kaoru Shirai, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 24, no. 12, 1959, pp. 966-970, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Minato-ku, Tokyo, Japan.

Managing Farm Ponds for Trout Production, by Alfred W. Eipper, Cornell Extension Bulletin no. 1036, 31 pp., printed. New York State College of Agriculture, Cornell University, Ithaca, N. Y., 1960.

"Trout Growth in Hatcheries," by David C. Haskell, *New York Fish and Game Journal*, vol. 6, no. 2, 1959, pp. 204-239, printed. New York Fish and Game Journal, N. Y. Conservation Dept., Albany, N. Y.

TUNA:

"El Bonito del Norte, o Albacora y Los Mercados Exteriores" (The Northern Bonito, or Albacore, and the Foreign Market), article, *Industria Conservera*, vol. 27, no. 261, March 1961, pp. 64-66, printed in Spanish. *Industria Conservera*, Calle Marques de Valladares, 41, Vigo, Spain.

"On the Cause of Annual Variation of Fishing Condition of Bigeye Tuna in the Area from Marshall Islands to Palmyra Island. I--On the Annual Variation of Fishing Condition; II--Comparison between 1956 and 1958 in Regard to Fishing Period and Fishing Ground and Relation between Fishing Condition and Fishing Effort; III--Relation between Monthly and Annual Variations of Fishing Condition and Those of Surface Water Temperature of the Fishing Ground; and IV--Relation between Annual Variation of Rate-of-Catch and that of Body-Length or of Age Frequency," by Jun Nakagome, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 26, April 1960, pp. 401-410, printed in Japanese with English summaries. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Tokyo, Japan.

"Chemical Composition of Raw, Precooked, and Canned Tuna. I--Core Sampling Methods," by Clarence J. Carlson, Claude E. Thurston, and Maurice E. Stansby, article, *Food Technology*, vol. 14, October 1960, pp. 477-479, printed. Food Technology, The Garrard Press, 510 North Hickory, Champaign, Ill.

Fabrication des Conserves de Thon du Maroc (Canning of Tuna in Morocco), by R. Meesemaeker and Y. Sohler, 27 pp., illus., printed in French. (Reprinted from *Revue de la Conserve*, December 1960 and January 1961.) Laboratoire du Froid et de la Conserve, 70, Allée des Jardins, Ain-Sebaa, Morocco.

"Hermaphroditic Skipjack," by Richard N. Uchida, article, *Pacific Science*, vol. 15, no. 2, 1961, pp. 294-296, printed. Pacific Science, University of Hawaii, Honolulu 14, Hawaii.

"Lipids of the Muscle of Tuna, *Thunnus orientalis*. III--Lecithins of the Dark-Colored and Ordinary Muscles," by Hisanao Igarashi, Koichi Zama, and Muneo Katada, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 23, 1957, pp. 273-277, printed. (Translated by George Kudo, U. S. Bureau of Commercial Fisheries, Technological Laboratory, Seattle, Wash.) Japanese Society of Scientific Fisheries c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Tokyo, Japan.

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Scrrips Tuna Oceanography Research (STOR) Program (Final Report, June 21, 1957-June 30, 1960), by Maurice Blackburn, 88 pp., illus., processed. University of California, Scripps Institution of Oceanography, La Jolla, Calif., August 5, 1960.

"The Tuna Season in N. S. Wales," by Pat Warren, article, *Fisheries Newsletter*, vol. 20, no. 4, April 1961, pp. 9, 27, printed. Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia. Discusses the tuna season in New South Wales beginning July 1960. Covers the location of the main body of fish in the Bermagui and northeast Eden areas and the heartening results

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obtained, quota fishing, the accomplishments of the Eden cannery, and the activities of the Tuna Boat Owners' Association.

UNION OF SOUTH AFRICA:

The South African Fishing Industry, by Peter Hjul, 12 pp., illus., printed. Standard Bank of South Africa Limited, Johannesburg, Union of South Africa, 1961. This booklet, well illustrated in color, describes the development of South Africa's fisheries. It discusses ocean currents abounding in nutrients, industrialization of the fisheries, establishment of large fishing companies, and record landings of the past three years. Also discussed are the growth of the pelagic shoal fishery, operation of canneries and reduction plants; Cape West coast fishery production, and marketing organizations. Covered briefly are the spiny lobster fishery, trawling industry, line fishing, and possible future landings.

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THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE FROM THE OFFICE OF TECHNICAL SERVICES, DEPARTMENT OF COMMERCE, WASHINGTON, D. C., AT 50 CENTS EACH. ORDER BY OTS NUMBER.

Contribution to the Study of Pacific Ocean Moridae (Pisces, Gadiformes), by T. S. Rass, OTS 60-51040, 6 pp., illus., processed. (Translated from Russian Akademiya Nauk SSSR, Trudy Instituta Okeanologii, vol. 11, 1954, pp. 56-61.)

Increasing the Effectiveness of Trawlboards by a Slotted Design which Produces the Necessary Moments of Force, by I. R. Matrosov, 10 pp., illus., processed. (Translated from Russian Rybnoe Khozyaistvo, vol. 34, no. 9, 1958, pp. 40-49.)

Means of Restoring and Increasing the Schools of Kamchatka Salmon, by F. V. Krogus and E. M. Krokhin, OTS 60-51039, 12 pp., processed. (Translated from Russian Akademiya Nauk SSSR, Ikhtologicheskaya Komissiya, Trudy Soveshchaniy, no. 4, 1954, pp. 10-21.)

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VENEZUELA:

Estudio de un Plan General de Puertos Pesqueros (Master Plan for Fishing Ports), by Gustavo Oramas, 248 pp., illus., processed in Spanish. Ministerio de Obras Publicas, Division de Puertos y Aeropuertos, Caracas, Venezuela, April 1961.

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"Deux Navires Congelateurs" (Two Freezerships), by A. Andre, article, Revue Pratique du Froid, vol. 13, no. 175, October 1960, pp. 26-27, illus., printed in French. Revue Pratique du Froid, 254 Rue de Vaugirard, Paris 15, France. Describes a tuna fishing vessel and a lobster fishing vessel. The tuna fishing vessel is equipped for fishing with live bait. Its hull is constructed of welded steel; its gross tonnage is 266 tons, and it has a capacity of 200 tons of frozen

tuna. The lobster fishing vessel has a gross tonnage of 933 tons. The holds are cooled by direct expansion of ammonia and can be maintained at 28°C. (-18° F.). On the fishing grounds, the lobsters are beheaded live and the tails are frozen immediately.

"Fischereifahrzeuge mit Auswechselbaren Fischraumen im Zusammenwirken mit Einem Mutterschiff" (Fishing Vessels, with Removable Fishrooms in Operation with a Mothership), by W. von Sangerlaub, article, Schiffbautechnik, vol. 10, no. 3, 1960, pp. 129-133, printed in German. VEB Verlag Technik, 13/14 Oranienburgerstrasse, Berlin C2, Germany.

"Plastic Sheathing of Wooden Hulls" article, Ship and Boat Builder, vol. 13, no. 2, 1960, 50 pp., printed. John Trundell Ltd., St. Richards House, Eversholt St., London NW1, England.

VIRGINIA:

Drainage, Evolution and Distribution Problems of the Fishes of the New (Upper Kanawha) River System in Virginia. Part III--Records of Fishes of the New River, by Robert D. Ross and Benjamin D. Perkins, Technical Bulletin 145, 35 pp., printed. Virginia Agricultural Experiment Station, Virginia Polytechnic Institute, Blacksburg, Va., 1959.

A Key to the Fishes of the Shenandoah River System in Virginia, by Robert D. Ross, Technical Bulletin 142, 14 pp., printed. Virginia Agricultural Experiment Station, Virginia Polytechnic Institute, Blacksburg, Va., 1959.

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"Effect of Gamma-Radiation on Vitamin A and Influence of Antioxidants on It," by Mitsuo Hata and Toshio Onishi, article, Tohoku Journal of Agricultural Research, vol. 11, no. 4, December 1960, pp. 371-375, printed. Faculty of Agriculture, Tohoku University, Sendai, Japan.

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WORLD TRADE:

The following World Trade Information Service Economic and Operations Reports, published by the

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Food Regulations of Federal Republic of Germany and West Berlin, Operations Report No. 61-12, 20 pp., printed, 10 cents, March 1961.

Establishing A Business in the Union of South Africa, Economic Report No. 61-13, 12 pp., printed, 10 cents, March 1961.

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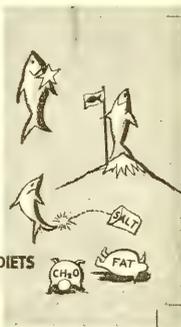
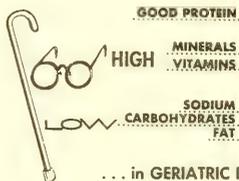
THE PLACE OF FISH . . .



. . . in CHILDREN'S DIETS



THE PLACE OF FISH . . .



CHINOOK SALMON EGGS FOR NATIONAL FISH HATCHERY PROGRAM

Fall chinook salmon returning to the Columbia River for spawning in the fall of 1960 yielded approximately 44 million eggs for the season's



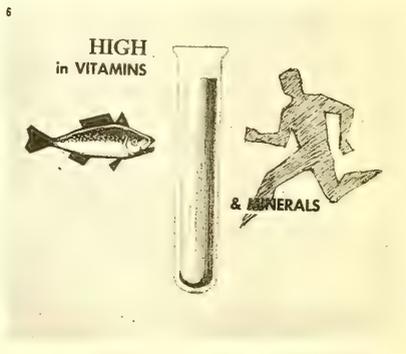
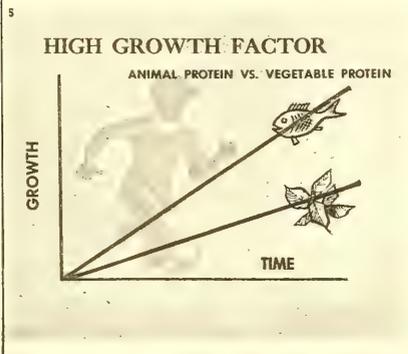
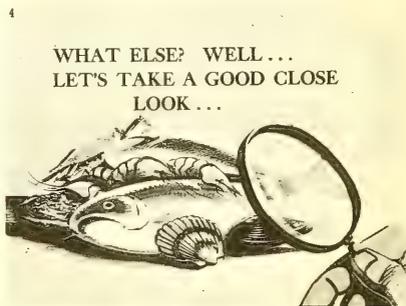
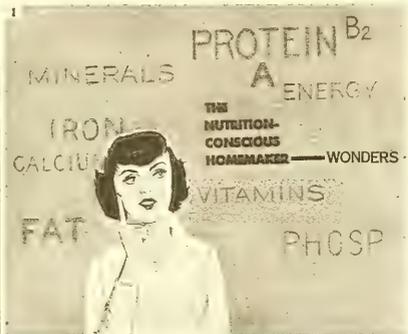
Hatchery employees at Spring Creek Fish Cultural Station (near Underwood, Wash.) removing and fertilizing salmon eggs.

National Fish Hatchery program. Twenty-six percent of the adult fall salmon that passed Bonneville Dam on the trip from the sea to the Columbia River for spawning returned to National Fish Hatcheries.

The taking of eggs--approximately 35 million at the Spring Creek hatchery and 8.5 million at the Little White Salmon hatchery--was not far from average.

Some of the eggs taken early in the season had started hatching by the end of 1960. All of the fall chinook salmon produced at National Fish Hatcheries are held in rearing ponds for at least 90 days and then released. No fry will be planted in 1960 since survival rate among the fish held for 90 days is much higher than among fry.

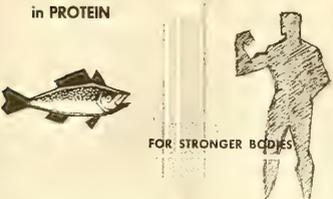
BALANCE FAT-INTAKE WITH FISH



FOR BETTER HEALTH

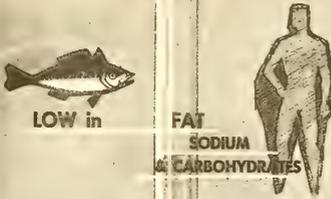
7

HIGH
in **PROTEIN**



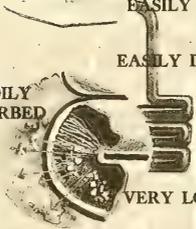
FOR STRONGER BODIES

8



LOW in **FAT**
SODIUM
& CARBOHYDRATES

9



EASILY CHEWED
EASILY DIGESTED
READILY ABSORBED
VERY LOW BULK

10

SPECIAL DIETETIC VALUES



PREVENTION VS. PRESCRIPTION

11

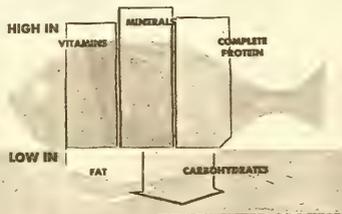
FISH
OILS to



EASE BY
ESTEROL LEVELS

12

YOUNG & OLD ALIKE...



HIGH IN **VITAMINS** **MINERALS** **COMPLETE PROTEIN**
LOW IN **FAT** **CARBOHYDRATES**

...BENEFIT FROM FISH

SEAFOOD DIP



1 cup flaked or canned fish
2 packages (3 ounces each) cream cheese
 $\frac{1}{2}$ cup chopped stuffed olives
 $\frac{1}{4}$ cup mayonnaise or salad dressing
3 tablespoons coffee cream

$\frac{1}{4}$ teaspoon grated onion
2 drops tabasco
Potato chips
Pretzel sticks
Parsley

Drain canned fish. Reserve 6 pieces of fish for garnish. Soften cream cheese at room temperature. Add olives, mayonnaise, cream, onion, tabasco, and fish; blend into a paste. Chill. Serve in a bowl surrounded by potato chips and pretzel sticks. Garnish dip with parsley and fish. Makes about 1 pint of dip.

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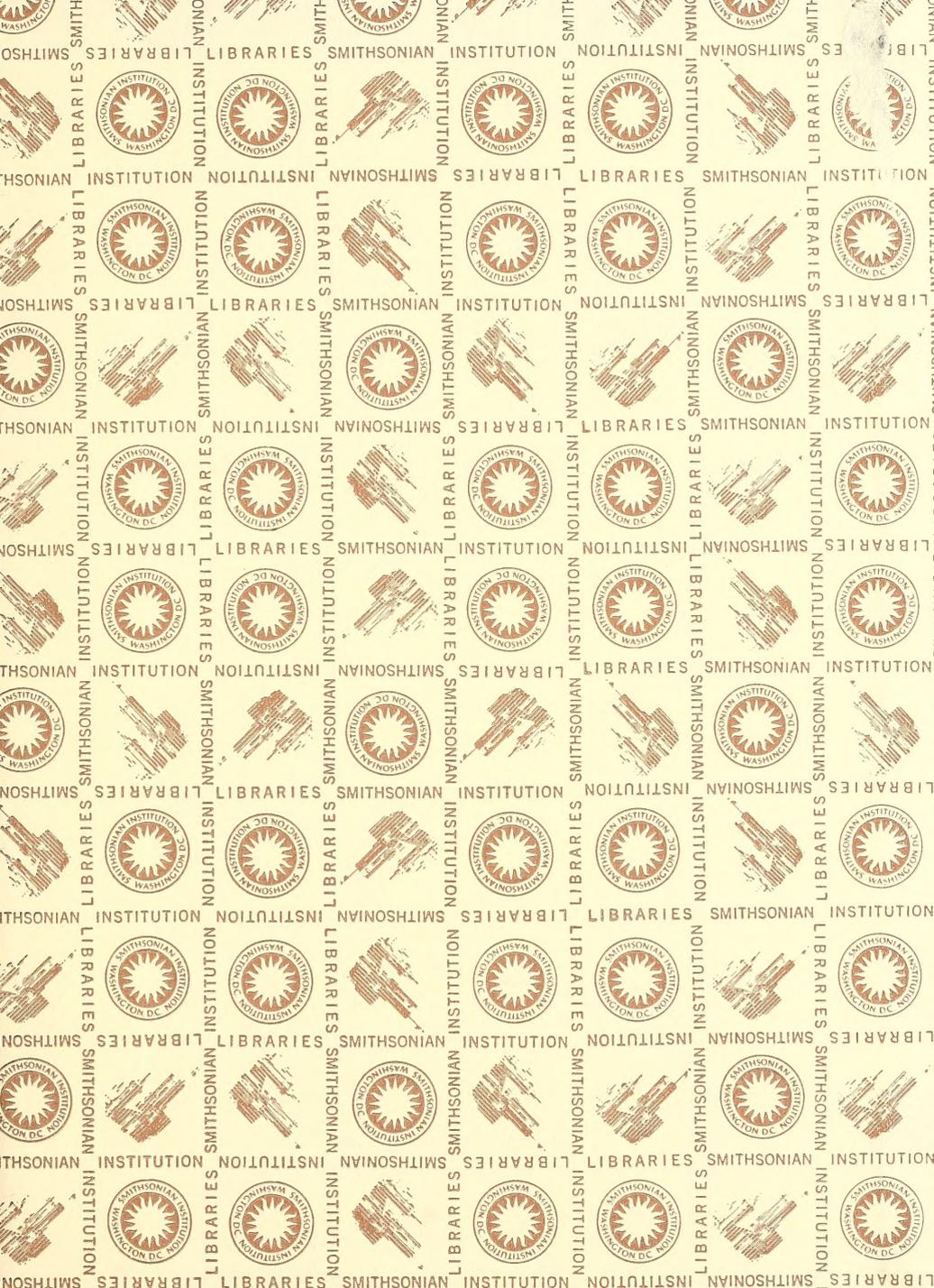
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