International

FOOD AND AGRICULTURE ORGANIZATION

BIOLOGIST TO SURVEY SHRIMP RESOURCES OFF LATIN AMERICA:

A marine biologist engaged in fisheries research at the U. S. Bureau of Commercial Fisheries Biological Laboratory at Woods Hole, Mass., arrived in Latin America in December 1960 to begin a Food and Agriculture Organization (FAO) assignment as a shrimp biologist. The United States biologist was sent to Latin America to survey the shrimp resources of the south coast of Brazil, Uruguay, and Argentina. During his year-long assignment to FAO, he will undertake the training of fisheries staffs in these three countries in principles and methods of fisheries biology.

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MODERN FISH PROCESSING YIELDS NEW PRODUCTS:

With modern processing, fish are beginning to be found in many new products, according to the Food and Agriculture Organization, Rome, Italy. For instance, there are new fish wieners, noodles and flour, fish sauces, tuna "ham," and shrimp "krupuks" which are eaten like potato chips. Processing has not only developed new fish products, but by applying modern methods of preservation, has enabled countries to boost their fish consumption and exports.

In the Indo-Pacific region, where the hot, humid tropical climate and lack of developed transportation have acted as deterrents in the marketing of fish, processing has been one of the keys in fishery development. India, within the past six years, has coupled the discovery of new shrimp grounds with improved methods of handling and processing to raise her shrimp landings to where she is now an important exporter of shrimp.

The landings of marine fish in the Indo-Pacific area (excluding Japan and Mainland China) have steadily climbed from 2.7 million metric tons in 1954 to about 3.4 million metric tons in 1959. Processing has kept pace with the output, devising new products such as the fish sausage or wieners.

The wieners, a tasty combination of chiefly tuna, marlin, and whale meat, are manufactured in Japan and exported to the United States and to such citadels of wiener consumption as Germany and Austria. This Japanese industry, developed in the past five years, began in 1954 with a 2,000-ton output. This rose to 59,000 tons in 1958 and the industry predicts a 100,000-ton production in the near future. One factory, alone, manufactures 500,000 pieces of fish sausage daily.

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NEW BRITISH TRAWLER NAMED AFTER FISHERIES DIRECTOR:

The M/V D. B. Finn, a British distant-water trawler, has been named after the Director of the Food and Agriculture Organization (FAO). Launched at Goole, England, the vessel was christened by the wife of the Director. Dr. Finn sent a cable from Penang, Malaya, where he is on an official FAO visit, expressing his best wishes for successful voyages for the new vessel.

The trawler was named in tribute to the FAO's Fisheries Division that Dr. Finn heads, and for the fine work that his Division has contributed to the fishery industry.

The vessel is equipped with all the modern aids to fishing in their most advanced stage, so that the skipper will be able to exercise push-button control over his vessel. She has automatic steering, gyro compass, direct-engine control, fish-finding instru-

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ments, two radar sets and a radar track indicator, an electric log, plus switches for stopping the winch, etc.

The new trawler has a bulbous bow, developed after extensive tank tests done in collaboration with the National Physics Laboratory at Teddington, England. It is expected that, with this type of bow, the ship will have a speed in excess of 15 knots.

The M/V D. B. Finn has an over-all length of 202½ feet and will accommodate a crew of 31. She is designed for starboard fishing only and has a fish storage capacity of 18,250 cubic feet.

Dr. Finn, a former Canadian Deputy Minister of Fisheries, joined FAO in his current post in 1946. Along with directing the work of his Division, he has represented FAO on many international bodies and at conferences dealing with fisheries.

GENERAL AGREEMENT ON TARIFFS AND TRADE

FIRST PHASE OF SEVENTEENTH SESSION OF CONTRACTING PARTIES ENDS:

Trade matters of fundamental importance to the nations that participate in the work of the General Agreement on Tariffs and Trade (GATT) were dealt with at the Seventeenth Session of the Contracting Parties which ended November 19, 1960. In line with its over-all trade expansion program, the United States continued to make full use of the opportunities afforded by the GATT to press for the removal of restrictions on United States exports. Among the items considered at the Geneva meeting were the removal of import restrictions, the GATT program for the expansion of trade, the formation of regional markets, the problem of the avoidance of market disruption, and accession by a number of newly-independent and other countries. The second phase of the Seventeenth Session was scheduled to begin in January 1961.

During the session the United States urged the early removal of restrictions on imports of United States products, both in the multilateral forum of the GATT and in informal, bilateral consultations.

The GATT Committee on Balance-of-Payments Restrictions shortly before and during the session conducted consultations with Ceylon, Denmark, Finland, Israel, Japan, New Zealand, Norway, and Pakistan on the quantitative import restrictions each maintains to protect its balance of payments. In the consultations, the United States urged the consulting countries to relax their import restrictions as quickly as their balance-of-payments positions permit and, in particular, to eliminate any remaining discrimination against American goods, including that arising from commitments under bilateral arrangements. The Committee's annual report on the discriminatory application of import restrictions noted that, despite conspicuous progress in recent months in eliminating so-called discrimination, many countries continue to discriminate against imports from dollar countries as well as against imports from other sources. In approving the report, the Contracting Parties urged the rapid elimination of discrimination.

The Contracting Parties also examined import restrictions maintained by Germany and Belgium. During the session, Italy announced that a large number of industrial items, and some agricultural products, would be liberalized. The United States also requested multilateral examination of restrictions maintained by France.

Bilateral consultations held between the United States and representatives of France, Greece, Japan, Norway, and Sweden covered specific trade problems in a wide range of industrial and agricultural products. The United States was assured that consideration would be given to easing of the restrictions.

Before the end of the session, Uruguay announced that it had eliminated the quantitative import restrictions which had previously been maintained for balance-of-payments reasons.

During the discussion of the general problem of import restrictions, the Contracting Parties reaffirmed their view that special efforts should be directed toward the removal of all restrictions not justified under the General Agreement. They also agreed to new procedures for the quick and effective consideration of, and consultation on, any future restrictions which countries might consider necessary to safeguard their foreign exchange reserves.

The work of GATT Committees II and III, established at an earlier session to study agricultural protectionism and obstacles to the trade of the less-developed countries, was

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reviewed by the Contracting Parties. Committee II, after consultations with most of the major agricultural exporters, is now assessing the effects of national agricultural policies on world trade in agricultural products. The disadvantages of high levels of protection have already been clearly brought out by the Committee's work. Fishery products were also included in the study.

Committee III recognizes the importance of trade to the economic development of less-developed countries. The objectives of this GATT program, unique among the efforts of international bodies to deal with the trade problems of the less-developed countries, are to enlarge the present markets of these countries and accelerate diversification of their exports. To date, the Committee has identified obstacles to expansion of trade of the less-developed countries and has called on governments to examine urgently the possibilities of eliminating or reducing such obstacles. Many nations noted with concern the little progress made by some industrial countries in this respect. The Committee has also considered steps that the less-developed countries themselves can take to expand their trade.

As at previous sessions, a spokesman for the European Economic Community (EEC) reported on developments in the Community during the last six months. The United States after reiterating its support for the successful integration of the member states within a liberal trade pattern, stressed the importance of a liberal commom agricultural policy in harmony with the GATT objective of expanding international trade. The United States also expressed the hope that commodity problems, particularly those faced by certain less-developed countries, would be taken into account by the Community.

While no decision was taken as to the conformity with the GATT of the provisions of the Stockholm convention, which established the European Free Trade Association (EFTA), the belief that the Convention as a whole is in harmony with the spirit of the General agreement was restated by the United States and a number of other countries. The Contracting Parties agreed that there remained certain legal and practical issues which could not be fruitfully discussed further at this stage. The seven-member group (Austria, Denmark, Norway, Portugal, Sweden, Switzerland, United Kingdom) indicated its readiness to furnish further information as requested by the Contracting Parties.

Careful examination was given to the Treaty of Montevideo which will establish the Latin American Free Trade Area, a grouping of Brazil, Chile, Peru, Uruguay, Argentina, Mexico, and Paraguay. The review of the Treaty in the light of the objectives and provisions of the General Agreement resulted in the adoption by the Contracting Parties of conclusions which should permit the Latin American countries to proceed with the ratification and application of the Montevideo Treaty. The representatives of the South American countries declared the intention of their governments to observe their international commitments, including those under the GATT, and to provide the GATT Contracting Parties with all useful information as the Latin American Free Trade Area develops. The United States expressed the belief that the Latin American Free Trade Area, acting in conformity with GATT provisions and principles, could lead to the expansion of trade and advance the welfare of countries both within and without the proposed free-trade area.

Primacy of the GATT in the trade field was reemphasized by the United States in the discussion of the negotiations in progress in Paris to reconstitute the Organization for European Economic Cooperation (OEEC) into the Organization for Economic Cooperation and Development (OECD). The new body, in which the United States and Canada also plan to participate, is seen as a means of strengthening international economic cooperation in the broad field of national economic policy and of increasing and improving the flow of development assistance to the less-developed countries. Importance was attached to the maintenance of close liaison between the two bodies.

Discussion of the continued failure of some countries to apply the General Agreement to Japan highlighted consideration of the problem of the avoidance of market disruption. The adverse economic, political, and social repercussions that sharp increases in imports in a narrow range of commodities could have in some importing countries has caused general concern. The program laid out by the GATT calls for finding practical ways to facilitate the expansion of trade

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while avoiding these possible adverse effects. At the Spring Session of the GATT, a working party was established to consider the general problem. This group presented the outline of a program which will enable the Secretariats of the GATT and the International Labor Office to study the underlying social and commercial factors. To supervise the study program and assist in the solution of immediate problems, the Contracting Parties at the Seventeenth Session established a standing Committee on Market Disruption.

New voluntary consultative procedures for bilateral and multilateral examination of these problems were agreed upon as a practical first step towards solution of specific problems. The standing Committee will continue to search for a generally acceptable multilateral solution of such problems.

A noteworthy accomplishment of the session was the opening for acceptance of a declaration whereby it is hoped that the major trading nations will renounce the use of export subsidies on manufactured products that tend to disturb normal competition.

Harry Shooshan represented the Department of the Interior on the U. S. Delegation to the Seventeenth Session.

INDO-PACIFIC FISHERIES COUNCIL

SPONSORS TRAINING CENTER ON FISH-PROCESSING TECHNOLOGY:

To continue the upward trend in fisheries development in the Indo-Pacific area, which yields the world's third largest catch of fish, the Food and Agriculture Organization (FAO) sponsored Indo-Pacific Fisheries Council (IPFC) has recommended that a training center on fish-processing technology, with particular reference to the curing of fish in humid, tropical climates, be held in that area. At the invitation of the Republic of the Philippines, a six-weeks training center is scheduled at Quezon City, P. I., beginning March 6, 1961.

The 17 IPFC member countries, which cover an area roughly bordered in the north by Japan, the south by Australia, in the east by Pakistan, and the west by Hawaii, have been invited to send participants to attend the center.

The Training Center is designed to give participants an opportunity to get practical experience in the various means of utilizing fish in humid tropical climates, and to compare the different processing methods. This will include demonstrations of salting, drying, and smoke-curing fish, and preparing fermented and processed fish products. Freezing and cold storage of fish and shrimp will also be demonstrated along with discussions of the methods and equipment needed to manufacture fish meal, flour, oil, and liver oil. This will enable the participants to define as precisely as possible the defects in the fish-curing industry, and to learn methods of investigation of fish processing and quality control.

Discussion of suitable food legislation and regulations concerning fish handling and processing in the countries of the region is planned, and will be based on papers submitted by center participants.

Results from the center's training program plus information collected from the region will be used by FAO for a handbook and manual on fish processing.

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

NEW ORGANIZATION TO REPLACE "ORGANIZATION FOR EUROPEAN ECONOMIC COOPERATION":

The Ministers of 20 Governments, met in Paris on December 14, 1960, and signed the Convention creating the Organisation for Economic Cooperation and Development (OECD) which is to take the place of the Organisation for European Economic Cooperation (OEEC) as soon as the Convention has been ratified or approved by at least 15 Signatory Countries. The Governments of the following countries were represented: Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. At the same Conference the Ministers also approved a report recommending the structure and the activities which the new Organization will have at its inception.

Canada and the United States joined with the 18 European countries members of the OEEC in agreeing to sign on December 14, 1960, a convention setting up the OECD.

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With the recovery and progress of the European economy, sustained by the generous aid of the United States as well as of Canada, and furthered by the cooperation established within the OEEC, the European countries are now in a position to face, in full and close cooperation with Canada and the United States, the important new tasks and the broader objectives of today.

These objectives are set forth in the convention in these terms:

To achieve the highest sustainable economic growth and employment and a rising standard of living in the member countries while maintaining financial stability and, thus, to contribute to the development of the world economy; to contribute to sound economic expansion in member, as well as non-member countries in the process of economic development; and to contribute to the expansion of world trade on a multilateral non-discriminatory basis in accordance with international obligation.

The convention provides for the establishment of a council, the supreme body of the organization, which will have the power to take decisions and make recommendations by mutual agreement of all the Members. In addition, the ministers agreed on a committee structure to assist in implementing the aims and carrying out the activities of the organization.

The OECD will extend and strengthen the OEEC practice of consultation on the economic situation and policies of member countries. It will pay special attention to the international effects of national policies, with a view to establishing a climate of mutual understanding conducive to the harmonious adjustment of policies. These consultations will be a major activity in pursuing the objective of economic growth, essential to enable the member countries to fulfill their responsibilities in the world economy.

The OECD will have important functions in the matter of assistance to developing countries. The 20 governments have agreed in the convention to contribute to the economic development of both member and nonmember countries in the process of economic development by appropriate means and, in particular, by the flow of capital to those countries, having regard to the importance to their economies of receiving technical assistance and of securing expanding export markets. Most of the organs of OECD will have a part to play in the realization of this undertaking. The 11-member Development Assistance Group, set up earlier this year, will, upon the inception of the OECD, be constituted as the Development Assistance Committee. This Committee will continue to consult on the methods for making national resources available for assisting countries and areas in the process of economic development, and for expanding and improving the flow of long-term funds and other development assistance to them.

In the field of trade the OECD will carry out the following functions:

Confrontation on general trade policies and practices at regular intervals or when requested by a member; examination of specific trade problems primarily of interest to members; and consideration of any outstanding short and long-term problems falling within the terms of reference of the Committee on Trade Problems established in January 1960.

In addition to these activities, the OECD will expand and strengthen those activities of the OEEC which have proved their practical value for more than a decade and which are to be taken over by the OECD in pursuance of its objectives. The OECD will thus be able to fulfill the desire of the countries which have created it by becoming the forum in which 20 countries will consult, cooperate closely, and where appropriate take coordinated action to meet the economic tasks which face them today.

Angola

FISHING INDUSTRY BEING REORGANIZED:

Preparations are being made to reorganize the Angolan fishing industry. Scientific studies are being made of the fish found in Angolan waters, technical and economic studies are being undertaken on the industrial plants, and marketing studies are being prepared. A central concept of the reorganization plan is the proposed concentration of the industry into a limited number of large cooperatives made up of modern, economic processing plants. Fish fillets and canned and dried fish are to become the principal

Angola (Contd.):

products of the industry, with fish meal and oil as important byproducts. Up to now the fishing industry has been concentrating on fish meal and oil.

This extensive reorganization presupposes modernizing many existing plants, and the construction of new facilities, especially for producing canned and frozen fish.

Argentina

FISH MEAL AND OIL INDUSTRY:

As of November 1960, there were 10 fish-meal plants in Argentina reducing fresh-water fish and 6 reducing marine fish (only 4 of the 6 are in operation in Mar del Plata). The source of raw material for the 4 plants is waste from canning and filleting. When operating, the other 2 plants use whole fish--principally trawl-caught hake (Merluccius) when they are able to obtain boats and crews.

Plans have been projected for two other marine fish-meal plants--one for Mar del Plata to operate on filleting wastes, and one for Rawson. It probably will be a year before these plants are ready to operate.

The plants that reduce salt-water fish use homemade, secondhand United States equipment, and highly modern equipment capable of concentrating stickwater and adding it to the meal in the dryer. The more modern plants are of Danish origin. In general, the plants are about equally divided between direct-flame and steam-drying.

The marine plants use only scrap from canning and filleting operations and whole fish that is not used for human consumption. The Mar del Plata plants principally utilize hake (Merluccius), anchovy or sardines (Engraulis), and mackerel (Pneumatophorus). The mackerel and hake scrap is usually unsalted, but the anchovy scrap is very heavily salted.

The hake scrap is reported to give 50 to 60 percent protein, 22 to 30 percent ash, and moisture and fat from 6 to 7.5 percent. The anchovy scrap yields 40 to 50 percent protein with as much as 10 percent salt. Oil recovery on scrap is extremely low.

Of the ten plants reducing fresh-water fish, most are quite primitive; only one has a rotary direct-flame dryer, and only 2 use centrifuges for separating the oil.

The sabalo (Prochilodus platensis) is not related to the sabalo or tarpon of Mexico, but is a fresh-water fish caught in large beach seines which are set from oared skiffs and hauled ashore by teams of horses. In one plant the whole fish are elevated into metal bins by an endless bucket device and cooked in live steam. The more usual system is to dump the fish into metal vats where they are cooked 3 to 4 hours by direct heat. Some of these vats may hold as many as 10 to 12 tons of fish. The oil and water mixture is drained off from the bottom of the vats into settling tanks. The cooked fish are hand-pressed in screw presses and then spread out on a cement platform to dry. Drying takes from 1 to 4 days. The dried fish are then ground into meal.

The fresh-water plants are regulated by a season (October through March), and each plant is given a quota. The largest plant has a seasonal quota of 2,500 tons of raw fish a season.

The sabalo is extremely fat fish; it yields 12 to 12.5 percent oil on a fresh-fish weight basis for those plants having centrifuges.

Analysis of sabalo oil shows a moisture content of 0.2 to 0.6 percent, acidity from 0.82 to 1.0 percent, and a nonsaponifiable rating of 1.5 to 2.0 percent. Another source gave acidity between 1.6 and 12.0 percent and a nonsaponifiable rating of 1.0 to 3.5 percent and an iodine number of 95 to 130.

Sabalo meal from artificial drying was reported as 57 to 65 percent protein, 8.5 to 10.0 percent fat, 6.2 to 6.8 percent moisture, and 3.5 to 4.5 percent sand.

Sun-dried meal shows between 7 to 9 percent moisture, 50 to 60 percent protein, 8 to 10 percent fat, $\frac{1}{2}$ percent salt, and 6 to 8 percent sand.

In 1959 a total of about 4,000 metric tons of fish meal and 700 metric tons of fish oil were produced. The marine plants produced 2,755 tons of meal and 7 tons of oil; the fresh-water fish plants produced 1,217 tons of fish meal and 694 tons of oil.

The salt-water meal and oil industry is of recent origin whereas fresh-water fish reduction has been in progress 60 years. Peak fresh-water reduction was reached in 1948 when 10,600 metric tons of sabalo were used to produce 1,100 tons of meal and 1,900 tons oil. Oil is the mainstay of the fresh-water reduction plants. Salt-water reduction plants came into being because of high prices for meal, until recently, and as a means of disposing of cannery, and more recently, filleting scrap.

At present, the Mar del Plata reduction plants are paying nothing for the scrap they receive from processing plants (there are reported to be some 80 or more canneries in Mar del Plata), as the cost of disposal of scrap is more than the cost of delivery to the reduction plants. This situation is quite recent though and has resulted from the depressed world market for meal. Previously, reduction plants were paying 15 centavos a kilo (US$1.85 a metric ton) for scrap.

In fresh-water reduction plants, the company furnishes the nets, skiffs, horses, and carts and may have their own fishermen whom they pay monthly salaries and lodgings or a contractor provides the crew and their sustenance at a fixed price per ton. A top fisherman earns 3,000 pesos (US$35) a month plus 10 pesos (12 U.S. cents) per ton of fish in addition to room and board. Less experienced fishermen get the 10 pesos per ton but less salary.

As of March 1960, sabalo meal sold at 7 pesos a kilo (US$84.70 a metric ton) f.o.b. Rio de la Plata plants. Sabalo oil varied from 10.50 to 17 pesos a kilo (5.7-9.1 U. S. cents a pound) f.o.b. plant.

In Buenos Aires, mixed-feed plants payed 140 pesos per unit of protein (US$110 per tons of meal of 65 percent protein).

The fresh-water plants are limited to the amount of raw material they can receive each season, due to complaints from sport fishermen. As a consequence, the sabalo catch dropped from a peak of over 10,000 metric tons in 1948 to a low of 1,200 tons in 1951, but rose again to 6,300 tons in 1959. The 1960 catch will probably be lower than that of 1959.

The Government has given no particular aid to the fish-meal industry, but for fisheries in general they have permit-

Argentina (Contd.):

ted new boats to be brought in without the 150 percent surcharge.

Fish meal and fish oil carry an export duty of 1.5 percent without retention of funds. Meat meal, which carries a higher duty, was being exported as fish meal, and export figures bear this out. Production for 1959 was less than 4,000 tons of fish meal whereas exports were reported to be more than 5,600 tons. Local consumption was between 1,500 and 4,000 tons for 1959.

Most of the fish oil is sold locally to tanneries with some going into local paint and other industrial uses.

No plant is presently using stickwater, although two will be equipped to add concentrated stickwater to the meal to make "whole meal."

A pilot plant, associated with a cannery and filleting plant in Mar del Plata, will produce enzymatically, a predigested fish and heat concentrate for human consumption. The plant, when in operation, will produce a final product which would be in the form of a concentrated paste, containing 60 percent products from fish scrap and the remaining a mixture of products from either beef, pork, soy bean, etc., depending upon the desires of the consumer.

The future of the Argentine fish meal industry appears to lie within the boundaries of Argentina. Her fishery resources of surface feeding and schooling fishes lie to the south where weather is difficult. There are large quantities of hake, but this means trawl-caught as against purse seine-caught fish; the former method is more costly. Anchovies now taken for canning (and the scrap used for reduction) are presently caught by lampara nets and the catch is limited by available fishermen. Plants at Bahia Bustamante and Puerto Deseado cannot get fishermen to fish for them, as the Argentine fisherman fears greater catches and lower prices. Catches are generally regulated to demand.

Poultry raising has begun as a science and undoubtedly chicken will be more prevalent and less costly within the next few years--as a consequence local consumption of fish meal will increase. Practically no fish meal, other than for fertilizer, was used in Argentina about 4 or 5 years ago. Now, most of the local production of meal is going into mixtures for chicken feed. (United States Embassy, Mexico City, November 14, 1960.)

Australia

NEW SCALLOP BED FOUND OFF QUEENSLAND:

A new scallop bed was discovered at the beginning of September 1960 by Queensland shrimp trawlers over the Wide Bay bar off Tin Can Bay. In the rush that followed, 15 vessels, using heavy shrimp trawls, got big catches. The top vessel got about 12,000 pounds in 40 hours. There was not enough labor at Tin Can Bay to handle the scallops, and they were not allowed to be sent in shell elsewhere for opening because this was not considered advisable in warm weather. About three weeks later, only about 7 or 8 vessels were still working the scallop bed.

In 1956, a scallop ground was discovered off Bundaberg, and production increased from 50,000 pounds in 1955/56 to 1,200,000 pounds in 1956/57. But the next year it dropped to 44,200 pounds and in 1958/59 rose only to 51,244 pounds.

Scallop fishing in Queensland is basically a sideline to shrimp, and the fishermen, after the first flurry in 1956/57, probably went back to shrimp fishing. Handling and marketing difficulties also probably help to explain the drop in the landings of scallops. (Australian Fisheries Newsletter, November 1960.)

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NEW SIZE LIMIT FOR SOUTH AUSTRALIA SPINY LOBSTERS:

The South Australian minimum length for spiny lobster, Jasus lalandii, has been raised from 9 inches to 10 inches. This increase applies in all areas of the State except the Victor Harbour area, where the minimum length of 8 inches for male spiny lobsters is retained.

In addition, the closed season for females throughout the State has been extended to include June. The closed season will now be from June 1 to October 31.

In the Kangaroo Island fishery, the closed season for males, from July to October, has been extended to include June. In other words, in that area no fishing for either males or females can be done from June 1 to October 31. Spiny lobster production in South Australia during the past two years has decreased by approximately 20 percent each year, and the 1959/60 production of approximately 3.5 million pounds was the lowest since 1952/53. (Australian Fisheries Newsletter, November 1960.)

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TUNA FISHERY TRENDS, FALL 1960:

Bad weather hindered tuna fishing off the Australian New South Wales coast since the beginning of September. The Australian cannery at Eden, which had received 220 short tons by September 1, 1960, had received only another 134 tons almost six weeks later. The fish were taken north of Eden, but to-

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wards mid-October they were concentrating in the Montague Island area.

To discuss the development of the tuna fishery on the New South Wales south coast, a conference was held on September 27, 1960.

It was generally agreed that the immediate need of the industry was larger refrigerated vessels to enable the fishing season to be extended and to stabilize the supply of fish to the canneries. Recent extensions to the Eden cannery have increased its intake capacity by 40 percent. It can now handle 6,500 tons of fish ("salmon" and tuna) a year.

Holding depots, possibly with brine tanks, at some of the tuna outports were also suggested. (Australian Fisheries Newsletter, November 1960.)

Belgium

SHRIMP INDUSTRY:

Belgian shrimp landings consist of the small Crangon vulgaris, and are not sufficient to meet local demand, therefore, Belgian imports of shrimp, both peeled and unpeeled, exceed exports.

Consumption habits favor fresh shrimp, so there are no plants devoted exclusively to the processing of shrimp. A few fish canneries can shrimp as a side line, at Ostend and Denderleeuw. Peeled shrimp are imported from the Netherlands for this purpose as the price is lower due to a lower wage scale.

Exports of shrimp are neither aided by subsidies nor hindered by taxes but fluctuate depending on landings. France is the major buyer for the decreasing exports of shrimp. Exports to the United States are insignificant.

Fishermen's wages vary between US$1,500 to $4,000 annually, depending on function. Wage rates in canneries run from an average of 44 U. S. cents per hour for women to 56 U. S. cents per hour for men, social security costs included.

No increases in production or exports are anticipated in the near future.

During 1959, 115 small vessels were engaged in shrimp fishing and another 74 mainly in catching groundfish, but also taking appreciable quantities of shrimp. This involved 482 fishermen, including 78 vessel owners. The shrimp vessels have an average displacement of from 5 to 28 tons with motor power averaging from 15 to 79 hp. The groundfish trawlers displaced 19-57 tons with 80-119 hp. engines. The shrimp catch accounted for 2.3 percent of total landings of fishery products in Belgium, and 6.1 percent of the value. Ostend and Nieuport are the principal Belgian shrimp fishing ports.

Belgian shrimp fishing grounds are along the coast within 12 miles. They extend from an imaginary line from Gris Nez-South Foreland, in the south, to the parallel of Ijmuiden, in the north.

Shrimp are caught throughout the year, with maximum landings recorded from April to July. These months account for half the total annual landings. December, January, and February each yield below 4 percent of the annual catch.

Belgian shrimp are cooked aboard the vessel.

Table 1 - Belgium's Shrimp (Heads On) Landings, 1956-1960

Year	Quantity	Value
	1,000 Lbs.	US$1,000
1960 1/	1,011	451
1959	2,365	600
1958	1,687	429
1957	2,214	743
1956	7,039	1,460

1/Estimate for first 8 months only.

There are no plans for additions to the present shrimp fleet. It is expected that the number of vessels, many of which have been operating with losses, will decrease steadily. Replacement will be by larger deep-sea vessels.

Table 2 - Belgium's Average Export Price for Shrimp, as Specified, 1957-1960

Year	Unpeeled	Peeled
	(US$ Per Lb.)	
1960 1/	74	117
1959	26	80
1958	28	88
1957	49	107

1/Average for first 7 months.

The shrimp boats and trawlers belong to Belgian owners, many to their operators.

No export tax is levied on shrimp; however, an export license is required. Subsidies are not granted for the exportation of shrimp.

Since there are no plants specializing in the processing of shrimp, general cannery rates apply to personnel handling shrimp.

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The average salary per hour for peeling shrimp, including social security charges, is US$0.44 for female workers. An expert can peel approximately 2.2 pounds per hour. The wage rate for men working in the fish canneries averages 28 B. fr. (US$0.56) per hour, including social security charges. These wage rates are below the national average.

In general, payment consists of cash, a pay in kind, and certain social security coverage. The crews of deep-sea trawlers get a fixed monthly salary in addition to a percentage of the production; the fishermen on shrimp boats and coastal trawlers receive a fixed share of the catch. After each voyage the crew receives, in pay, a fixed percentage of the gross receipts.

Table 3 - Belgian Shrimp Exports, 1956-1960

Year	Unpeeled		Peeled	
	Quantity	Value	Quantity	Value
	1,000 Lbs.	US$1,000	1,000 Lbs.	US$1,000
1960 1/	35	19	11	10
1959	171	44	31	24
1958	172	47	18	16
1957	425	211	17	19
1956	2,121	596	52	33

1/ January-August only.

Note: About 91 percent of unpeeled exports go to France, the remainder to the Netherlands; about 70 percent of peeled shrimp went to the Congo; 27 percent to France; and the balance to the Netherlands. (Exports to the Congo are expected to decrease.) The decline in total exports from 1956 through 1960 was due to decreased landings.

In addition to pay in cash, fishermen receive a portion of the catch for their own consumption. Other advantages include paid annual leave and compensation for holidays.

The Belgian shrimp grounds are fished thoroughly. Nevertheless, during recent years the total landings of shrimp have shown a marked downward trend, except for a revival during 1959 when weather conditions were extremely favorable.

In 1960 there was surplus capacity in the shrimp fishing fleet. Only favorable weather can increase the shrimp catch--500 tons were anticipated in 1960, a sharp decline from the 3,193 tons of 1956. Normally Belgian consumption averages 2,000 tons a year.

Belgian exports of shrimp to the United States are practically nil and will remain so. (United States Consulate, Antwerp, November 16, 1960.)

Brazil

SHRIMP INDUSTRY:

Landings of shrimp in Brazil during 1960 were estimated to be about 24,427 metric tons valued at about US$3.4 million. This amount represents an increase of 24.9 percent over the 19,558 tons landed in 1959, and 31.6 percent above the 18,558 tons landed in 1958.

Shrimp exports by Brazil are negligible and processing facilities as of late 1960 were still rudimentary. Exports of fresh or frozen shrimp in 1959 amounted to about

Table 1 - Brazil's Shrimp Landings, by Regions, 1958-1960

Region	1960 1/			1959 2/			1958		
	Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	1,000 Cruzeiros	US$ 1,000	Metric Tons	1,000 Cruzeiros	US$ 1,000	Metric Tons	1,000 Cruzeiros	US$ 1,000
North	1,384	160,000	825	799	14,508	71	810	10,785	78
Northeast	10,000	170,000	876	6,403	143,856	706	6,613	131,057	945
East	3,980	180,000	928	3,362	261,902	1,285	2,619	138,551	1,000
South	9,063	150,000	773	8,994	273,842	1,344	8,516	154,090	1,111
Total	24,427	660,000	3,402	19,558	694,108	3,406	18,558	434,483	3,137

1/ Estimated.
2/ Preliminary.
Note: Currency converted at following rates: 1960, Cr. 194.0 equal US$1; 1959, Cr. 203.8 equal US$1; and 1958, Cr. 138.5 equal US$1.

16,700 pounds, dried or cured shrimp about 25,000 pounds, and canned shrimp about 31,000 pounds. From January to June 1960, Brazil exported only canned shrimp--1,620 pounds valued at about 63.5 U. S. cents a pound. Only two species (sea bob or Xiphopeneus kroyeri and small white shrimp or Penaeus schmetti) were exported in 1959.

Table 2 - Brazil's Shrimp Exports, 1959

Product and Destination	Quantity	Value	
	Pounds	Cruzeiros	US$
Shrimp, fresh, chilled, or frozen:			
United States	1,349	103,236	737
Others	15,373	1,333,404	9,286
Total	16,722	1,436,640	10,023
Shrimp, dried, salted, or in brine:			
Other countries	25,152	2,110,163	13,137
Shrimp in air-tight containers:			
United States	18,157	2,475,178	17,070
Others	12,749	1,150,738	8,714
Total	30,906	3,625,916	25,784

Most of the shrimp frozen in Brazil are sold peeled, some of which are peeled prior to cooking. Ten shrimp-fishing vessels operated out of Brazilian ports in 1960--7 out of Rio de Janiero and 3 of United States registry out of Maranhao. Vessels or small boats engaged in other fisheries also catch and land shrimp.

Wages are paid for peeling shrimp on a piecework basis of 1.8 to 2.2 U. S. cents a

Brazil (Contd.):

pound. Wages for those engaged in the freezing of shrimp range between US$37 to $41 per month.

The daily catch of fish and shellfish in Brazil is sold to fish-receiving centers. One-tenth of the proceeds, after expenses are deducted, goes to the Institute of Retirement and Pensions for Maritime workers, and the remainder is divided among the vessel owners and crew.

In view of Brazil's known shrimp-fishing potential, there is little doubt that landings will increase with improved fishing vessels and gear and storage and processing facilities. However, it is believed that the major part of the increase in landings will be consumed in the domestic market. (U. S. Embassy, Rio de Janeiro, November 29, 1960.)

British Guiana

SHRIMP INDUSTRY:

The shrimp fishermen who operate out of British Guiana's Georgetown harbor had a very prosperous 1960. Their total shrimp catch will exceed 2.5 million pounds (heads-on), more than double 1959 landings. More shrimp trawlers are now based in British Guiana than ever before in the Colony's history, and the prospects are for more trawlers, higher shrimp production, and even bigger profits in 1961.

The growth and prosperity of the British Guiana shrimp industry during 1960 was about as expected. What has failed to materialize, or more accurately, what is taking place more slowly than anticipated, is the entrance of Guianese firms into the shrimp industry.

As of now, the shrimp industry remains an almost exclusive preserve of a United States-owned and operated firm. This monopoly, however, is about to be broken by a subsidiary of the largest private business concern in British Guiana. This firm, after months of study, is about to begin shrimp fishing on a trial basis in conjunction with several United States shrimp vessel owners. The performance of these vessels and a possibility of United States shrimp import quotas will influence the firm's final decision to enter the shrimp fishery early in 1961. Specifically, it will decide whether or not to build a freezing plant and to build waterfront accommodations for a large number of new trawlers.

Actually, such facilities are badly needed if the industry is to expand in 1961. The United States-owned firm, which increased its fleet from 20 to 32 vessels during 1960, has about run out of wharf space. Its freezing plant is now working at near capacity, 25,000 pounds per day. While the company did purchase some waterfront land about six miles up the Demerara River during 1960, it apparently has no immediate plans for enlarging its freezing plant--the only one now in British Guiana--or expanding its trawler operations.

The Georgetown fishing company reports that the best fishing grounds are now located about 70 miles off the coast of Surinam. These grounds are worked the year-round, and there seems to be no seasonal variation in production. Current catches are running about 80 percent pink shrimp (Peneaus duoarum) and 20 percent brown shrimp (Peneaus aztecus). These varieties are caught together and are not separated in processing.

Trawlers leaving Georgetown spend about four weeks fishing off the Surinam coast and, in recent months, have been returning home with an average shrimp catch of 7,000 pounds. Each of these trawlers carries a crew of four. In addition to a United States captain, there is usually an American winch-operator and two Guianese crew men. The Americans are paid a percentage of the catch, while the Guianese fishermen earn about US$20.65 a week.

When the trawlers return, the shrimp are immediately unloaded at the freezing plant. The plant is equipped with a shrimp-grading machine, and after being graded, the shrimp are cleaned and packed into 5-pound paper cartons and in turn packed into master cartons of 50 pounds. All this processing is now done by hand, and the company has no immediate plans for mechanization. Wage rates paid in the processing plant, according to the Georgetown fishing company, average about 27 U. S. cents an hour.

About 98 percent of the packaged frozen shrimp is eventually exported. Most of the shrimp goes to the United States, either by air cargo or steamship reefer service. **On each shipment the British Guiana Government usually collects an export tax amounting to 1½ percent of the total value of the shrimp.**

Shrimp (heads on) landings in British Guiana (data from the shrimp processing and freezing firm and other sources) during 1960 were estimated to be 2.6 million pounds valued at US$1 million, as compared with about 1.2 million pounds valued at US$475,000 in 1959. Prior to 1959 shrimp landings amounted to less than 10,000 pounds annually.

Exports were as follows: 1960: United States, 1,210,148 pounds valued at US$462,081; Trinidad, 39,400 pounds valued at US$22,162; and the United Kingdom, 2,000 pounds valued at US$1,294. 1959: United States, 1,131,720 pounds valued at US$433,018; and Trinidad, 8,846 pounds valued at US$5,008. (United States Consul in Georgetown, December 5, 1960.)

Burma

SHRIMP INDUSTRY:

Shrimp fishing in Burma is carried on along the coastal regions, and in the lower Irrawaddy Delta. Kyaukpyu Island, Ye Township, and Mergui and Pyapon Districts are the large-scale fishing and processing centers. Coastal shrimp fishing is carried on mainly during the dry season (November-May) due to the rough seas during the rains. The heavy run-off of rain water from the coastal areas over the shallow sea shelf drives the shrimp out to sea during the rainy season. Delta fishing is carried on in the rainy season only.

Shrimp are caught with various kinds of gear made of twine, split-bamboo, wooden logs, and poles. The principal types of gear are the hand net, bag net, fish trap, and floating raft with a net fixed on each side. Fishing gear is licensed and taxed by the Government.

Fishing grounds are leased by the Government, and are auctioned annually. Leases entitle one man or his assignee to operate. The lessee of a large area with an annual rental of Kyats 1,500 to 2,000 (US$314-$419) will frequently sub-

Burma (Contd.):

divide it and sublease to individuals or groups of fishermen. Not infrequently, the sublessees are compelled to borrow money from fish dealers and brokers to whom they are required to supply the entire catch at rates far below the normal market prices.

A fisherman is paid an average of Kyats 50 (US$10.50) per month during the fishing season with free food. A processing laborer's wages are similar to an ordinary laborer--32 to 75 U.S. cents per day.

Processed shrimp are mainly of three kinds: sun-dried, after boiling; smoked; or ground into paste and preserved with salt (called ngapi). A byproduct of ngapi is Nganpya-Ye (shrimp sauce) which is the juice from ngapi collected separately. Shrimp "brains" are preserved in sessamum or groundnut oil, and sold as shrimp oil.

Retail prices of sun-dried shrimp range from Kyats 12-18 per viss, 3.6 pounds (US$0.70 to $1.05 per lb.), according to quality; smoked shrimp Kyats 8 to 9 per viss (US$0.47 to $0.53 a lb.) for inferior quality and Kyats 14 to 18 per viss (US$0.81 to $1.05 per lb.) for superior quality; and shrimp paste Kyats 3 to 5 per viss (US$0.18 to $0.29 per lb.). Price of shrimp sauce is about Kyats 3.50 per viss (US$0.26 per lb.), and shrimp oil Kyats 10 per viss (US$0.58 per lb).

In Burma, shrimp and shrimp products are very popular and a staple part of the diet.

Fishing is done in the districts of Akyab, Kyaukpyu, and Sandoway in the coastal region of the Arakan division; Mergui, Tavoy, and Ye Township of the coastal region of the Tennasserim division; and the coastal as well as delta tracts of Bassein, Myaungmya, and Pyapon districts in the Irrawaddy division. In the delta areas, traps are set in the lower reaches and above the mouths of the tidal creeks, where the water is brackish in the dry season, but relatively fresh during the rains. Sea fishing is carried on close to the estuary islands.

In the upper tidal zone, fishing goes on from June to September, and in the lower zone from July to November. The peak season is during July and August. Fishing is generally done for 12 to 14 days a month when the tidal current is strong. Along the coastal region the operation is intensively carried on in dry season, though there may be irregular fishing during the rains.

Primitive methods are still used for processing shrimp on a large scale. They are boiled and dried in the sun. When sun is lacking, the shrimp are smoked over a fire. Fresh shrimp is pounded into paste (ngapi) and then preserved with salt. Labor being cheap, the need for mechanization has not yet been felt.

Shrimp paste processing has been mechanized recently to a small extent. Motor mincers for grinding raw shrimp are used. The motors are run by gasoline or electrical power. Other operations are performed manually.

The Burmese Government's Union of Burma Applied Research Institute is carrying out studies of improving food preservation, canning, and processing, with the assistance of a Food and Agricultural Organization (FAO) food processing and hygiene expert. The establishment of standards and specifications for the manufacture of shrimp paste is to be the first step taken in food standardization in Burma. A commercial type of standard fish-drying chamber has been designed, and is being tested, which may be usable for shrimp. According to the FAO expert, small-scale shrimp canning plants with a daily output of 300 to 500 cans would prove to be profitable.

No statistics are available for shrimp landings; however, the following estimates for heads-on shrimp have been made after consultation with the agencies concerned: 1960, 6,700 metric tons; and 1959 5,200 tons; 1958, 6,600 tons; 1957, 6,500 tons; and 1956, 6,400 tons.

The shrimp catch consists mainly of Pa-zun-zait ($\frac{1}{2}$-inch), Pa-zun-kyawt (1 inch to 2 inches), Pa-zun- gya (3 inches to 4 inches), and Pa-zun-dok (5 inches to 9 inches) shrimp. Shrimp paste and dried shrimp are usually made with the first two sizes.

No trawlers are used for shrimp fishing. Local craft (dugouts, and plank-boats made of timber) are operated for both sea fishing and river fishing. Country craft are owned by the fishermen themselves. Motors of the transport craft are imported generally from the United Kingdom, India, Japan, or Germany. As of November 1960 no vessel construction program existed, and shrimp was not exported.

Export of fish and fish products including shrimp is permissible under the Control of Imports and Exports (Temporary) Act 1947 as amended and still in force. Permission is needed from the Directorate of Imports and Exports. To qualify for export, an exporter must register with the Importers and Exporters Registration Board. Only Burmese nationals are registered as exporters. Exporters are required to submit application with Kyats 3 (about 63 U. S. cents) court-fee stamp affixed to the Directorate. There is no export duty on shrimp or shrimp products.

Basis of payment to fishermen varies with the type of organization. A cooperative fishery obtains a lease for a fishery area from the Government at a reduced rental (about half that usually charged to a private individual or organization) and pays fishermen better wages: K80 to K100 (US$16.80 to $21.00) a month for unskilled labor, and K120 (US$25.20) a month for skilled labor. In addition, cooperative fishermen receive a share of annual profits. A private lessee can afford to pay only much lower wages: K45 to 60 (US$9.50 to $12.60) a month. When a person obtains a lease in his own village circle, he generally induces his relatives and friends to work for him for payment of food and clothing and a nominal sum of money.

Shrimp are not raised artificially at present in Burma except in a 55-acre artificial lake on Kyaukpyu Island, where attempts are being made to cultivate shrimp. Mechanizing fishing operations could increase production. Lack of knowledge, capital, and enterprise seem to be major deterrents to such actions.

Some years ago, the Government advanced loans to the fishermen to improve their fishing gear and fishery grounds, so that production might be increased. The loan amounted to K300,000 (US$63,000) advanced at 6-1/4 percent interest per annum on a three-year term. The fishermen lost most of the capital on personal expenditures, and in settling old debts. The outstanding loans now stand at K350,000 with interest. The Government has stopped lending, and the fishermen are carrying on in primitive ways.

Fishermen traditionally borrow from private money lenders, who may be fish brokers or processing men, at rates of interest of 10 to 20 percent per month. The reason for preferring private money lenders to the Government, in spite of the high interest rate, is that the former will defer repayment indefinitely, while deducting the interest from the seasonal catch, whereas the Government's loan must be repaid within a fixed period.

Substantial possibilities exist for improving the shrimp fishing industry, but organization, finance, and knowledge of modern techniques are lacking. It will be some years before Burma can adequately supply its domestic needs for shrimp, much less have an exportable surplus. (U.S. Embassy, Rangoon, November 17, 1960.)

Note: Currency converted at rate of one Kyat equals US$0.2096.

Canada

BRITISH COLUMBIA HERRING FLEET ENDS LONG TIE-UP:

The British Columbia herring fleet resumed fishing on November 20, 1960, after being idle for almost a year as a result of differences between the fishing companies and the fishermen's union over the ex-vessel price. British Columbia's herring fishery shut down in December 1959 as a result of depression prices in world markets for fish meal and oil.

The companies' offer, which was accepted by a union vote of two to one, agreed to pay the crew of each herring vessel C$8.80 a ton, or $1.10 each for an 8-man crew. In 1959 the boat share was $13.00 or $1.04 each for 8 fishermen and 5 tendermen. Under the new plan the jobs of the tendermen have been eliminated and individual fishermen are required to carry their catch to the shore plants. The settlement restored the jobs of 800 herring fishermen. However, the elimination of the 300 tendermen who previously worked the company-owned transport vessels used to transport raw herring to the processing plants has resulted in a cut in the cost of the fish to the companies from $13.00 to $8.60 a ton. The new agreement requires the fishing vessels to transport catches to the processing plants, which will either result in less time on the fishing grounds for the individual vessels or require that they travel to the processing plants at night when they would otherwise be tied up.

The union has insisted that the fishing fleet be restricted to 78 vessels to ensure a reasonable return to the fishermen during the 5-months season. The fishing vessel owners' association has opposed the 78-boat limit but has been unable to put additional boats in the fishery since they could not get charters from the six processing companies. The processing companies contend, in turn, that if they were to give additional charters in excess of the 78-boat limit, the union would then reopen negotiations. (U. S. Consul, Vancouver, December 2, 1960.)

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BRITISH COLUMBIA'S SHRIMP INDUSTRY:

The Canadian shrimp fishery, which is concentrated in British Columbia, is one of Canada's minor fisheries. Average landings for the 4-year period 1956-59 were slightly under 1.5 million pounds of heads-on shrimp. The ex-vessel value was slightly over C$230,000 annually, averaged over the four years. Most of the catch (80-85 percent) is marketed in the form of peeled shrimp, either fresh or frozen, and the 4-year average marketed value was about $380,000 annually.

Approximately 90 percent of the annual catch is taken from specific grounds located in the Gulf of Georgia. About 15 small-type boats of the 35- to 40-foot class fish all year round and about another 50 salmon gillnet boats turn to shrimp trawling during the off-season for salmon fishing.

There are about four major cooperative groups which land most of the catch. The shrimp are usually landed heads-on and about 75 women do the cooking and peeling ashore. Nearly all of these workers are Japanese Canadians, related to the fishermen. Ex-vessel prices range between $0.90-1.10 per pound for the meat, or 12 to 15 Canadian cents a pound for the heads-on shrimp. Recovery is estimated at one pound of peeled shrimp for $4\frac{1}{2}$ pounds of whole shrimp.

Some of the fishermen working individually do the cooking on board their boat and peeling is done again by the family, after landing the catch. Shrimp are canned in British Columbia.

As far as mechanization is concerned, all picking is done by hand as no one group's operation is large enough to warrant a mechanical picker. Also, the hand operation is believed to yield a superior peeled shrimp product.

There are no known export controls, subsidies, or taxes on export of shrimp to the United States, according to shellfish handlers in Vancouver. It is understood, however, that affidavits are necessary stating the product is of Canadian origin.

Owing to the cooperative working nature of the fishermen producing shrimp, there are no established wage rates. Fishermen fishing for shrimp year-round might gross about $5,000, and earnings of seasonal fishermen vary from a few dollars to $2,000.

While exploratory work was done in 1955 to find new shrimp fishing grounds, landings have increased only about one-third since then, still remaining a relatively small operation. No sizable expansion in production can be

Canada (Contd.):

predicted, if at all. (U. S. Embassy, Ottawa, November 7, 1960.)

Colombia

SHRIMP FISHING INDUSTRY:

The shrimp fishery of Colombia has in the past played a minor part in the economy of Colombia, and prospects are slim for it to play a much greater role in the future. According to an official of the Fishing and Hunting Department of the Ministry of Agriculture, Colombians have never displayed any serious interest in a large-scale shrimp fishery, and even today, they are content to permit foreign-flag operators to engage in these activities along their shores. Almost all of the shrimp vessels fishing Colombia's offshore waters are owned, operated, and officered by United States citizens or other foreigners.

Shrimp fishing for export from Colombia is confined to the Pacific coastal areas from Tumaco on the Ecuadorian border northward to Bahia Solano, although very little activity is reported to the north of Buenaventure. Shrimp are available in commercial quantities year-round, but the months of December and January yield smaller catches than the other months of the year.

The Atlantic coastal areas produce no shrimp for export; however the species Penaeus schmitti and P. brasiliensis are taken in limited quantities for the domestic market. Current production statistics are not available, but according to a 1956 survey, the estimated annual catch for the Atlantic region ranges between 600,000 and 1,000,000 pounds (heads-on weight) with little prospects for increasing.

Table 1 - Colombia's Shrimp Landings and Exports, 1957-60

Year	Landings[2]			Exports[2]		
	Qty.	Value[3]		Qty.	Value[3]	
	1,000 Lbs.	Million Pesos	US$ 1,000	1,000 Lbs.	Million Pesos	US$ 1,000
1960[1] .	3,911	14.2	2,119	2,557	10.7	1,599
1959 . .	3,020	11.8	1,847	2,050	8.5	1,336
1958 . .	1,522	4.4	612	899	2.8	388
1957 . .	513	1.1	191	135	1.1	47

1/ Estimated.
2/ Heads-off.
3/ Pesos converted to US$ at following rates: 1957, 5.97 pesos; 1958, 7.22 pesos; 1959, 6.40 pesos; and 1960, 6.70 pesos equal US$1.

Compared with these figures, the Pacific fishing grounds are estimated to have a potential of between 3-6 million pounds of the large shrimp varieties, and the same potential for the smaller sizes. In view of the foregoing, the Pacific areas may be considered as the sole sources of supply for shrimp that enter into the export market. Colombia's sole customer for its export shrimp today is the United States.

On the Atlantic Coast, shrimp processing is normally combined with other fisheries. There are four fish-canning plants and one fish-freezing plant at Barranquilla, one fish-canning plant at Santa Marta, and one fish-canning plant at La Cienega. A small quantity of shrimp is frozen at the plant in Barranquilla for local consumption, but the majority of the shrimp catch from the area of the Atlantic Coast is canned for sale throughout Colombia.

A trial shipment of breaded shrimp was exported to the United States from Colombia during 1959, but further shipments are being delayed until a study of the market has been made.

There are from 70 to 80 large shrimp vessels operating year-around along the Colombian Pacific Coast and about 40 small boats and dugouts operating in the Atlantic coastal region.

Colombia does not have an official vessel construction program to assist the shrimp industry, and it is doubtful that any such program will be initiated in the near future. By decree during 1959, the Colombian Government limited the licensing and operation of shrimp vessels to a maximum of 100 in the Pacific area, and the same number in the Atlantic. These licenses are valid for only one year, with the licensee prohibited from engaging in shrimp fishing outside of Colombian waters during that period.

In the Pacific fishing grounds, it is believed that about 75 percent of all vessels licensed are of Panamanian registry, with about one-half of those owned by United States citizens. The balance of 25 percent are Colombian-registered, but only one-half of those are Colombian-owned. Other nationalities, including an Italian, a Yugoslav, and a Portuguese, account for the ownership of the other half.

According to private and Government sources, export prices range from 75 to 83 U.S. cents a pound, heads-off, delivered c.i.f. New York for packaged frozen shrimp. The higher prices are for shrimp of under 15 count per pound. These prices are held stable throughout the year by controlling the supplies that enter the export market.

The Government controls exports of shrimp to the extent that a license must be obtained by the exporter from the Instituto de Fomento Industrial. This license must then be presented to the Banco de la Republica, which registers the foreign exchange transaction. When the shipment is ready at the port of embarkation, the Administracion de Aduana (Customs) checks all documents for completeness and accuracy, then a custom's agent oversees the loading aboard a vessel.

Small companies without processing plants of their own are charged 15 U.S. cents a pound for the freezing and packaging of shrimp by the larger companies. Therefore, it is believed that a figure of about 10 to 12 cents a pound would approximate the deveining, peeling, and freezing cost.

The vessels are paid at the rate of 40-45 U.S. cents a pound, heads-off weight.

It is believed by observers that shrimp plants in Colombia are interested in expanding the catch and exports of a small shrimp called "titi" for the United States market. These small-sized shrimp are taken from the waters near Tumaco, and apparently the catch is increasing due to the substantial market that has been developing on the United States east coast.

The normal white varieties of shrimp are still being captured in commercial quantities, but it is believed their importance will diminish in proportion to the increase in popularity of the small shrimp or "titi."

Germany has expressed an interest in importing Colombian shrimp, according to several sources, and it is quite possible that exports of large white shrimp will shift to that country, while the United States importers expand the market for the small variety. (United States Embassy in Bogota, December 2, 1960.)

Cuba

FISHING INDUSTRY TRENDS, DECEMBER 1960:

An article in the Cuban newspaper El Mundo, December 2, 1960, states that workers in the shipyards of Puerto Esperanza, Pinar del Rio Province, and Surgidero de Batabano, Habana Province, had "agreed" to work 48 hours a week instead of the usual 44, without additional compensation for the purpose of speeding up the completion of the "Sigma" fishing vessels. "This gesture of a revolutionary nature will be followed by workers in all the remaining shipyards," the article noted.

A people's fish market opened at Ciudad Bandera, Cardenas, Matanzas Province, and shortly its Fish Cooperative will complete the preparations in different sections of the city for opening fish and seafood markets. According to the article this made a total of 60 fish cooperatives functioning throughout the Island.

The installation of a refrigerating unit with a 35,000-pound capacity in the Guatemala Sugar Mill (formerly Preston), the manufacture of fish and seafood packing boxes on the banks of the Almendares River, and the near completion of two refrigerator-trucks for the transport of fish from coastal towns to the city of Habana are also referred to in the article.

East Africa

FISHING POTENTIAL DISCUSSED AT INTERNATIONAL SYMPOSIUM:

The largely unexploited fishery resources of East African waters were the subject of an International symposium held in Cape Town from September 12 to September 17, 1960.

Convened under the auspices of the Commission for Technical Cooperation in Africa, South of the Sahara (C.C.T.A.), the Symposium was attended by delegates representing most of the African continental and nearby island territories fishing in the Indian Ocean. There were delegates from Madagascar, Portugal, Union of South Africa, and observers from Italy and FAO.

It was pointed out that it was particularly important for the countries of Africa to gain extensive knowledge of the exploited and exploitable marine food resources occurring in the seas bordering their coasts.

According to the latest published statistics of FAO, the world catch of marine fauna in 1957 totaled 26½ million metric tons, of which 1.6 million tons, or 6 percent, were landed in Africa, south of the Sahara.

The catch in the Indian Ocean region was only about one-twelfth of the landings along the African west coast. But although west coast waters had been very much more productive, there could be very little doubt that the Indian Ocean--described by oceanographers as one of the least known oceans of the world--could yield a substantially larger fish catch. Research, however, was necessary to point the way.

The symposium emphasized the need for international coordination of Indian Ocean research work already done at a national level. The symposium was indicated as one means of achieving this. Another would be the "great scientific onslaught that is scheduled in the Indian Ocean during the next few years, when the ambitious project initiated by the Special Committee for Oceanic Research (S.C.O.R.) of the International Council of Scientific Unions gets under way. At an estimated cost of US$13½ million, this project will be jointly executed by ten countries, namely, Australia, Denmark, France, Germany, Great Britain, India, Japan, South Africa, the United States, and Russia. Portugal and other countries, now forming national committees, may also announce plans to participate. The program is not expected to be in full swing until 1962-63."

The symposium was divided into 6 or 7 sessions in which various aspects of the East African region of the Indian Ocean were discussed. The subject of the first session was the physical and biological environment of the area, which, for the purpose of the symposium extended from Cape Point to Somalia. The following session on research work done by the countries represented revealed that some research stations had done interesting work in experimental fishing, particularly for shrimp. Other efforts had been made to develop tuna fishing, and representatives from South Africa mentioned recent attempts to use a mid-water trawl in Union east coast waters.

The third and fourth sessions dealt with fish, lobster, shrimp, and plankton; and the

East Africa (Contd.):

fifth session discussed the productivity of the Indian Ocean, the methods of determining this, and the extent of commercial fisheries in East African waters.

The sixth session was devoted to an inventory of regional resources for marine biological and sea fishery research. The question of international cooperation was also discussed and delegates considered the role that should be played by C.C.T.A. It was generally agreed at the Symposium that the recent appointment by C.C.T.A. of an Inter-African Coordinator would stimulate and assist interterritorial cooperation. At the final session resolutions and recommendations were discussed. Among the recommendations was one emphasizing the need to increase the size and the number of research establishments in the East African area of the Indian Ocean. It was also felt that special steps should be taken to train more scientists for work in the area. Other recommendations of the Symposium included:

A greater exchange of scientists among countries interested in the fishing waters off East Africa.

The shrimp resource could be better exploited if more was known about movements and general biology. Special attention should be paid to a study of this resource.

A coordinated, systematic study of tuna in the area.

A bibliography of all research reports and other scientific information on the African zone of the Indian Ocean should be drawn up in collaboration with the C.C.T.A.

A permanent secretariat should be established to help coordinate research work in the area. (The South African Shipping News and Fishing Industry Review, October 1960.)

Egypt

FOREIGN TRADE IN FISHERY PRODUCTS, 1958-60:

Imports: Egyptian imports of fishery products increased from 5,423 metric tons valued at US$1.8 million in 1958 to 6,595 tons valued at US$2.2 million in 1959. Imports

Table 1 - Egyptian Imports of Fishery Products by Type, Quantity, and Value, 1958-1960

Item	1959			1958			Jan.-June 1960			Jan.-June 1959		
	Quantity	Value		Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	E£	US$	Metric Tons	E£	US$	Metric Tons	E£	US$	Metric Tons	E£	US$
Fresh Fish	46	3,907	11,088	115	9,496	26,950	1/	15	43	7	717	2,035
Cod, salted, dried, or smoked	-	-	-	903	96,935	275,102	-	-	-	-	-	-
Salted herrings, dried or smoked	598	56,718	160,966	1,088	86,785	246,296	1,075	85,162	241,690	520	50,005	141,914
Sardines, salted, dried, or smoked	401	25,531	72,457	336	21,712	61,619	170	11,804	33,500	356	22,355	63,443
Crustaceans, fresh, salted or cooked	1/	60	170	-	-	-	-	-	-	-	-	-
Fish, salted, dried, or smoked, n.s.	839	48,442	137,478	559	36,425	103,374	169	8,637	24,512	504	30,610	86,871
Black caviar in containers up to 1 lb. 2 oz.	1/	319	905	1/	158	448	-	-	-	1/	319	905
Black caviar in containers over 1 lb. 2 oz.	1/	153	434	1/	67	190	1/	60	170	1/	80	227
Red caviars	-	-	-	5	1,500	4,257	-	-	-	-	-	-
Edible fish eggs	1/	8	23	2	614	1,743	-	-	-	1/	8	23
Botargo in containers up to 1 lb. 2 oz.	1/	130	369	1/	556	1,578	-	-	-	-	-	-
Botargo in containers over 1 lb. 2 oz.	1/	10	28	1/	24	68	-	-	-	-	-	-
Preserved salmon, canned	9	3,019	8,568	1	200	568	1	405	1,149	7	2,416	6,857
Preserved sardines, canned	378	72,247	205,037	381	90,605	257,137	331	61,257	173,847	187	38,244	108,536
Preserved tuna, canned	528	121,291	344,224	183	53,915	153,011	181	39,587	112,348	214	44,863	127,321
Preserved fish, n.s., and anchovies and herrings, canned	3,739	429,579	1,219,145	1,849	241,493	685,356	2,227	270,329	767,194	2,318	250,378	710,573
Preserved crustaceans, canned	57	7,514	21,325	1	184	522	8	1,708	4,847	1/	143	406
Preserved mollusks, canned	1/	113	321	-	-	-	-	-	-	1/	113	321
Total Imports	6,595	769,041	2,182,538	5,423	635,080	1,802,357	4,162	478,964	1,359,300	4,113	440,251	1,249,432

1/Less than 1,102 Lbs.
N.S. - Not Specified.
Note: Values converted at rate of E£1 equals US$2.838.

Egypt (Contd.):

Table 2 - Egyptian Imports of Fishery Products from the United States, 1959

Item	Value	
	EŁ	US$
Shellfish, fresh, salted, or cooked	60	170
Caviar, black	304	863
Salmon, canned	132	75
Sardines, canned	59	167
Tuna, canned	69	196
Anchovies, herrings & unspecified fish, canned	64	182
Crustaceans, canned	14	40
Mollusks, canned	86	244
Total	788	1,937

for the first six months of 1960 were slightly higher than in the first half of 1959. Imports of salted, dried, or smoked herring, and canned sardines increased considerably, while imports of salted, dried, or smoked sardines and other fish declined (table 1). Since 1957 there has been a steady drop in Egyptian imports of fishery products, but exports have increased. Egypt's imports of fishery products from the United States are of minor importance (table 2).

Exports: Total exports of fishery products from Egypt increased from 957 tons valued at US$702,053 in 1958 to 1,317 tons valued at US$1,308,043 in 1959. The increase was for virtually all products. However, this did not continue into 1960. Exports for the

Table 3 - Egyptian Exports of Fishery Products by Type, Quantity and Value, 1958-1960, as Specified

Item	1959			1958			Jan.-June 1960			Jan.-June 1959		
	Quantity	Value		Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	EŁ	US$	Metric Tons	EŁ	US$	Metric Tons	EŁ	US$	Metirc Tons	EŁ	US$
Regular Exports:												
Fresh fish	205	36,802	104,444	185	30,044	85,265	79	15,218	43,189	110	19,089	54,175
Sardines, salted, dried, or smoked	2	176	499	7	439	1,246	1/	7	20	1/	28	79
Fish, salted, dried, or smoked	72	6,707	19,034	70	5,968	16,937	39	4,070	11,550	56	5,065	14,374
Crustaceans, fresh, salted, or cooked	233	42,690	121,155	176	24,509	69,556	-	-	-	100	15,070	42,769
Mollusks, fresh, salted, or cooked	1/	4	11	1/	1	3	1/	4	11	-	-	-
Turtles, fresh, salted, or cooked	1/	235	667	1/	254	721	1/	132	375	1/	30	85
Preserved crustaceans not in airtight containers.	805	374,286	1,062,233	519	186,161	528,325	-	-	-	573	270,834	768,627
Botargo in containers over 1 lb. 2 oz.	1/	3	-	-	-	-	-	-	-	-	-	-
Preserved shrimp not in airtight containers2/	-	-	-	-	-	-	511	203,938	578,776	-	-	-
Total Exports3/	1,317	460,903	1,308,043	957	247,376	702,053	629	223,369	633,921	839	310,116	880,109
Re-exports:												
Herrings, salted, dried, or smoked	1/	9	26	1/	26	74	-	-	-	-	-	-
Preserved salmon in airtight containers	1	200	568	-	-	-	-	-	-	1	200	568
Black caviar in vessels up to 1 lb. 2 oz.	-	-	-	1/	6	17	-	-	-	-	-	-
Preserved sardines in airtight containers	1	220	624	-	-	-	-	-	-	1	220	624
Edible fish eggs	1/	6	17	1/	3	9	-	-	-	1/	6	17
Preserved fish, n.s., and anchovies and herrings in airtight containers.	14	2,150	6,102	1/	4	11	-	-	-	14	2,150	6,102

1/Less than 1,102 lbs.
2/Prior to January 1960 preserved shrimp were included in the "preserved crustaceans" category.
3/Not including re-exports.
Note: Values converted at rate of one Egyptian pound equals US$2.838.

Table 4 - Egyptian Exports of Fishery Products to the United States, 1958-60, as Specified

Item	1959			1958			Jan.-June 1960			Jan.-June 1959		
	Quantity	Value		Quantity	Value		Quantity	Value		Quantity	Value	
	Metric Tons	EŁ	US$	Metric Tons	EŁ	US$	Metric Tons	EŁ	US$	Metric Tons	EŁ	US$
Crustaceans, fresh, salted, or cooked	20	5,393	15,305	1/	1	3	-	-	-	-	-	-
Black caviar, in containers up to 1 lb. 2 oz.	1/	304	863	-	-	-	-	-	-	1/	304	863
Preserved crustaceans, not in airtight containers2/	555	272,950	774,632	158	63,667	180,687	-	-	-	447	220,734	626,443
Preserved shrimp, not in airtight containers	-	-	-	-	-	-	294	111,821	317,348	-	-	-

1/Less than 1,102 lbs.
2/Until 1959 preserved shrimps were included under the "preserved crustaceans" category.
Note: Values converted at rate of one Egyptian pound equals US$2.838.

Egypt (Contd.):

first six months of 1960 were substantially less than in the first half of 1959 (table 3).

Exports of crustaceans (mostly frozen shrimp) to the United States increased from 158 tons valued at US$180,690 in 1958 to 575 tons valued at US$789,937 in 1959 (table 4)--U. S. Foreign Service Dispatch, Cairo, October 22, 1960.

France

FISHERY PRODUCTS IMPORTS SUBJECT TO QUANTITATIVE RESTRICTIONS:

The value of France's imports of fishery products subject to quantitative restrictions amounted to US$9.2 million in 1958 as compared with US$9.3 million in 1959. Fish oils and fats are the only products imported from the United States subject to quantitative restrictions. (United States Embassy, Paris, November 9, 1960.)

Shrimp are fished along the English channel, and the Atlantic and Mediterranean coasts. The principal fishing ports are Dunkerque, Boulogne, Honfleur, Caen in the Seine region; and the Atlantic ports of St. Nazaire, Le Crisic, La Truballe, Marenne, and Ile d'Oléron. Shrimp fishing takes place throughout the year but the catch is larger from May to October. Because of overfishing, the size of shrimp is small.

In view of small landings and large number of ports at which shrimp are landed, processing plants are not profitable. There are no shrimp-processing plants in France presently.

Table 1 - France's Shrimp Landings (Heads On), 1956-1959 1/

Type	1959	1958	1957	1956
	(Metric Tons)			
Shrimp ("crevettes grises")	1,042	1,035	1,200	1,324
Prawns ("crevettes roses" or "bouquet")	282	249	200	200
Total 2/	1,324	1,284	1,400	1,524

1/ Major ports only, and does not include Mediterranean port landings.
2/ The grand total of France's shrimp landings (including an estimate of data not shown) would be approximately double the amount shown.

Table 1 - France's Imports of Fishery Products Subject to Quantitative Restrictions, 1958-59

Item	VALUE 1959 Millions Old Francs	1959 US$ 1,000	1958 Millions Old Francs	1958 US$ 1,000
Fresh fish (live or dead), chilled or frozen:				
Trout	96	195	86	205
Sea perch, sole, turbot, & brills	1,152	2,350	1,045	2,488
Others	1,122	2,290	1,222	2,909
Fillets	680	1,387	676	1,610
Total	3,050	6,222	3,029	7,212
Fish salted in brine, dried or smoked:				
Other fish in fillets	45	92	81	193
Other fish, otherwise	2	4	7	17
Total	47	96	88	210
Fats and oils of fish and marine animals, whether or not refined:				
Fats and oils of other varieties of fish	673	1,373	-	-
Animal or vegetable oils and fats, hydrogenated, whether or not refined, not further prepared:				
Fats and oils of sea animals	21	43	-	-
Prepared or preserved fish including caviar and caviar substitutes	768	1,566	733	1,745
Grand Total	4,559	9,300	3,850	9,167

Note: No significant amounts of any of the above products are imported from the United States, except for "fats and oils of other varieties of fish"--16 million francs (US$328,000) worth was imported from the United States in 1959.

* * * * *

SHRIMP INDUSTRY:

France's shrimp resources are limited and shrimp fishing is carried out on a small scale. Most fishermen do not fish for shrimp exclusively, but catch shrimp with their regular catch. Not more than half the catch of those boats specializing in shrimp fishing consists of shrimp.

French consumption and imports of shrimp and prawns is approximately 5,000-6,000 metric tons per year.

It is estimated that 400 small trawlers engaged in shrimp fishing though most fish for other species at the same time. These vessels are usually operated by their owners with the help of 2 or 3 assistants who are often members of the owner's family. The French fishing fleet was modernized

France (Contd.):

after World War II and its capacity is above the present level of production. Vessels are replaced as they become obsolete. There are no construction programs or plans for additions to the present fleet. The ownership of the fleet is wholly French.

Table 2 - Average French Export Prices for Shrimp, 1/ 1957-1960

Year	Grey Shrimp	Prawns	Other Shrimp	Grey Shrimp	Prawns	Other Shrimp
	(New French Francs Per Kilo)			. . . (US¢ Per Pound) . . .		
1960:						
Jan.	10.25	11.25	9.88	94	1.03	91
Feb.	9.80	-	-	90	-	-
Mar.	9.85	-	10.20	91	-	94
Apr.	16.25	11.90	15.77	1.50	1.09	1.45
May	-	9.80	8.66	-	90	80
June	13.07	10.05	-	1.20	93	-
July	10.00	-	10.15	92	-	93
1959	10.74	10.97	8.11	99	1.01	74
1958	8.16	9.13	7.97	75	84	73
1957	6.67	9.52	6.14	61	88	57

1/Fresh, frozen, and boiled.
Note: Values converted at rate of 4.93 new French francs equal US$1.

French customs statistics divide shrimp into three categories: grey shrimp ("crevettes grises"), prawns ("crevettes roses" or "bouquet") and the other types of shrimp ("autres crevettes"). All three categories include fresh and frozen shrimp and boiled shrimp. The average annual export prices for 1957, 1958, and 1959 and the average monthly prices from January through July 1960 are shown in table 2.

Most shrimp exports go to Great Britain or Switzerland. There are no export controls, subsidies, or taxes in France affecting shrimp exports.

Table 3 - French Exports of Shrimp1/, 1956-1960

Year - Destination	Quantity	Value	
	Metric Tons	US$ 1,000	1,000 New Francs
1960 2/:			
Franc Zone	1.0	3,044	15
Other Countries	3.9	8,950	44
Total	4.9	11,994	59
1959:			
Franc Zone	8.3	12,371	61
Other Countries	8.0	15,818	78
Total	16.3	28,189	139
1958:			
Franc Zone	8.1	11,357	56
Other Countries	7.0	11,965	59
Total	15.1	23,322	115
1957:			
Franc Zone	4.2	6,133	30
Other Countries	8.4	12,306	61
Total	12.6	18,439	91
1956:			
Franc Zone	9.1	8,315	41
Other Countries	12.3	15,616	77
Total	21.4	23,931	118

1/Fresh, frozen, and boiled.
2/Jan.-July only.
Note: Values converted at rate of 4.93 new francs equal US$1.

For the fish-processing industry in general, wages vary. Wages generally range from 2 to 3 new francs (40 to 60 U. S. cents) per hour, not including social security taxes, which are paid by the employer. These taxes total about 40 percent of the direct wages.

The owners of small vessels that catch shrimp dispose of their landings through auction sales at the ports. Since shrimp are relatively scarce, they usually bring high prices. In 1959, the average price paid ex-vessel in the major ports for grey shrimp was 3.71 new francs per kilo (34 U. S. cents per pound) and for prawns was 9.68 new francs per kilo (89 U. S. cents per pound). The crews are paid a percentage of the sale of the catch.

It is not expected that France's annual shrimp landings will increase; France will probably remain a net importer.

(A small fleet of French refrigerated trawlers catch lobsters along the coast of West africa and could possibly catch prawns, reportedly abundant in that area.) (U.S. Embassy, Paris, November 25, 1960.)

German Federal Republic

FISH MEAL PRICES, NOVEMBER 1960:

Prices reported at Hamburg Commodity Exchange as of November 25, 1960, for fish meal delivered ex-Hamburg warehouse, or c. & f. West German sea port:

Type of Fish Meal	Protein Content (%)	Delivery	DM/ 100 kgs.	US$/ short ton
German fish meal	50-55	prompt/Dec. 1960	44.00	95.00
" " "	55-60	" " "	45.75	98.80
" " "	60-65	" " "	47.75	103.00
" " " standardized brands	60-65	Nov. 1960	54.25	117.20
Angola fish meal	65-70	Dec. 1960	47.50	102.60
Peruvian fish meal	65-70	immediate	46.50	100.40
" " "	65-70	Dec. 1960	44.50	96.00
" " "	65-70	Jan. 1961	41.50	89.60
" " "	65-70	Feb.-July 1961	40.25	87.00
Icelandic cod meal	65-70	prompt/Dec. 1960	53.25	115.00
Norwegian herring meal	72-75	Nov.-Dec. 1960	56.00-56.50	121.00-123.00

Prices reported as of November 18, 1960, were as follows:

Type of Fish Meal	Protein Content (%)	Delivery	DM/ 100 kgs.	US$/ short ton
German fish meal	50-55	prompt/Dec. 1960	44.00	95.00
" " "	55-60	" "	46.00	99.40
" " " standardized brands	60-65	Nov. 1960	54.25	117.20
Angola fish meal	65-70	Dec. 1960	46.50	100.40
Peruvian fish meal	65-70	Nov. 1960	47.00	101.60
" " "	65-70	Dec. 1960	44.50	96.00
" " "	65-70	Jan. 1961	44.00	88.60
" " "	65-70	Jan.-July 1961	40.25	87.00
Icelandic cod meal	65-70	Dec. 1960	53.00	114.40
Norwegian herring meal	72-75	Nov.-Dec. 1960	57.00	123.20

Note: Values converted at rate of one deutsche mark equals US$0.2386.

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German Federal Republic (Contd.):

MARINE OIL PRODUCTION AND FOREIGN TRADE, 1958/59 and 1959/60:

Production: Marine oil production in Western Germany amounted to 21,700 metric tons in 1958/59 (July 1958-June 1959); this compares with 24,000 tons for 1959/60 (see table 1).

Table 1 - Western Germany's Production of Marine Oils, 1958/59-1959/60

Product	Amount Produced	
	1959/60	1958/59
	.....(Metric Tons).....	
Marine Oils:		
Inedible	9,000	8,300
Edible	15,000	13,400
Total	24,000	21,700

Foreign Trade: Imports of whale oil and fat into Western Germany decreased from 92,400 tons in 1958/59 to 80,600 tons in 1959/60. Fish-oil imports also decreased from 67,200 tons to 62,500 tons for the same period, including a small drop in menhaden oil imports from the United States from 21,000 tons in 1958/59 to 19,700 tons in 1959/60. The decline in imports of marine oils was due to smaller purchases by the margarine industry, which sought other oils.

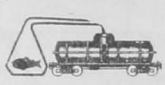
Table 2 - Western Germany's 1/Foreign Trade in Marine Oils, 1958/60-1959/60

Product and Country	Imports		Exports	
	1959/60	1958/59	1959/60	1958/59
	.....(Metric Tons).....			
Whale Oil:				
Norway	17,500	32,900	-	-
Japan	34,300	41,500	-	-
Other	28,800	18,000	-	-
Total	80,600	92,400	-	-
Fish Oil:				
United States ...	19,700	21,000	-	-
Peru	13,000	3,900	-	-
Norway	6,700	6,700	16,300	3,500
Others	23,100	35,600	12,700	13,000
Total	62,500	67,200	29,000	16,500

1/Including West Berlin; Saarland included since July 1959.

Imports of menhaden oil from the United States dropped to 7,600 tons in January-June 1960 as compared with 9,900 tons in the same period of 1959 and 11,900 tons during the second six months of 1959. But Peru was able to step-up its exports to West Germany (3,000 tons during the first half of 1959, 5,000 tons during the second half of 1959, and 8,000 tons during the first half of 1960).

Exports (mainly to Norway) of fish oils increased from 16,500 tons in 1958/59 to 29,000 tons in 1959/60 (see table 2). (U. S. Foreign Agricultural Service Report, Bonn, October 4, 1960.)



Greece

SHRIMP INDUSTRY:

The freezing and processing of shrimp in Greece is practically nonexistent. This is due to the fact that there is a definite preference for fresh shrimp in the Greek market and the annual landings (about 400 metric tons) are too small to support a processing industry. Of the four fish-canning plants in operation (output about 1,200 metric tons in 1959), only one has been partly engaged in the processing of shrimp. Processing is confined to peeling and canning only. The production of canned shrimp amounts to about two metric tons annually. Shrimp is canned in $5\frac{1}{2}$-oz. cans, natural style, and is wholesaled at 15 drachmas (about 50 U. S. cents) a can and retailed at 17.30 drachmas (about 58 U. S. cents) a can.

The entire production of canned shrimp is consumed locally. Local consumer requirements for canned shrimp are met chiefly through imports (13 tons in 1959) which originate principally from the United States (11 tons in 1959). To supplement the light landings of fresh shrimp, small quantities of frozen shrimp are imported. There are no controls, subsidies, or taxes in Greece on processed or fresh shrimp exports.

Principal shrimp fishing grounds are located in the waters of the Gulfs of Thermaikos and Amvrakikos, around Volos, and at the Delta of the Evros River. The seasons for shrimp fishing are from September-December and from March-May. The major species caught are: Penaeus kerathurus caramote (16-27 heads-on shrimp per pound), which account for about 50 percent of the total annual landings; Parapenaeus longirostri (36-54 heads-on shrimp per pound), about 35 percent of annual landings; and Palaemon elegance (363-544 heads-on shrimp per pound), about 15 percent of the annual catch.

Of the species mentioned, Parapenaeus longirostri is principally caught in deep-sea waters, together with other fish, by trawlers which operate not only in the shrimp fishing grounds mentioned but in other areas as well. Parapenaeus kerathurus caramote and Palaemon elegance are fished in shallow waters, the latter being used more as a bait than as a food item.

Greek fishery statistics are unreliable and, according to the Director of Fisheries of the Greek Ministry of Industry, underes-

Greece (Contd.):

timate actual landings considerably as they are based on statements filed by fishermen who either understate their actual catch or do not file a report at all. Furthermore, fishery statistics are broken down by the most important species of fish, each one of which comprises fish of various type. Only rough estimates on the annual landings of shrimp are available from the Directorate of Fisheries. According to this source, the annual catch of shrimp, as compiled on the basis of the statements filed by fishermen, averaged 220-240 tons (heads-on) for the period 1956 through 1959. Fishermen's statements covering the first half of 1960 show increased landings amounting to about 180 tons of heads-on shrimp. The same source estimated actual landings in the vicinity of 400 metric tons of heads-on shrimp annually for the period 1956-1959 and 280-300 metric tons for the first half of 1960.

Greek fish landings usually consist of a great variety of species with relatively small catches of individual species. For this reason, there is no shrimp fishing fleet as such. The entire Greek fishing fleet brings in shrimp together with various other fish. However, more systematic shrimp fishing operations are carried out by those vessels which are stationed in the ports of Thessaloniki, Volos, Alexandroupolis, and Preveza, which are located near the principal shrimp fishing grounds.

Small motor boats, rowboats, and sailboats engage more systematically in the fishing of shrimp than motor trawlers, which conduct general fishing. The tonnage of the motor trawlers ranges from 30-70 tons (50-300 hp.) and the small motorboats are from $\frac{1}{2}$ to 3 tons (average 8 hp.).

Wage rates paid to unskilled female workers engaged in the manual peeling of shrimp have been fixed at 42 drachmas (US$1.40) daily. Skilled workers who engage in the canning of shrimp get an average monthly salary of 2,000 drachmas ($66.66). Fish canning experts are remunerated at the rate of 4,000 drachmas monthly ($133.33). Wage earners get bonuses for Christmas and Easter amounting to 25 and 15 daily wages, respectively. Salaried employees also receive a full month's pay as a bonus for Christmas and half a month's pay for Easter. Basic wages and salaries mentioned above, as well as Christmas and Easter bonuses, are subject to a 25-percent charge for the employees' and workers' Social Insurance benefits. This charge is contributed both by the employer (17 percent) and the employee or worker (8 percent).

Fishermen's wages are based on fixed pay as well as on a share basis. In the case of rowboats and sailboats, the owner gets 75 percent of the catch whereas the balance is given to his assistant, the latter usually being a member of the owner's family. In the case of small motorboats, remuneration is also effected on a share basis with the owner usually retaining 50-65 percent of the catch, the balance being distributed among the members of the crew. Wages on motor trawlers are determined on the basis of collective bargaining agreements which provide for fixed pay ensuring an average level of earnings of about 1,300 drachmas ($43.33) monthly for deckhands. The captain of the trawler receives about 4,000 drachmas ($133.33) monthly. In cases where motor trawlers operate in areas where fishing grounds are poor, remuneration is fixed on a share basis with the owner of the vessel retaining 50 percent of the catch and the balance being distributed among the captain, engineer, and crew, with the first two getting higher shares.

Where the fishermen's wages are on a fixed basis, the shipowner usually contributes the entire amount of the social insurance fee (16 percent) which goes to the Seamen's Pension Fund. Where wages are on a share basis and where fishing is carried by small craft or in areas where fishing is not an organized profession, social insurance benefits do not exist.

Prospects for expanding the Greek shrimp-processing industry are not very encouraging. Almost the total shrimp catch is consumed fresh and surpluses available for processing are too small to support even moderate scale operations. Increased landings of shrimp are improbable due to the low yield of known shrimp fishing grounds.

The Directorate of Fisheries of the Greek Ministry of Industry plans to engage in fishery research with a view to locating new fishing grounds for shrimp in deep waters. The Greek Government has also started implementation of a program providing for the establishment of fish-receiving stations at

Greece (Contd.):

the ports of Piraeus, Thessaloniki, Patras, Cavalla, Volos, and Chalkis. (U. S. Embassy, Athens, November 25, 1960.)

Guatemala

SHRIMP INDUSTRY, 1959-60:

As of November 1960, fishing grounds on both coasts of Guatemala were little known and poorly developed.

On the Pacific coast a shrimp fishery has been developed in Mexican and Salvadoran waters. It is presumed the shrimp stocks are continuous along both coasts of Guatemala. From the success experienced by the few boats fishing in Guatemalan waters, this supposition is apparently correct. In shallow water, white shrimp are the most common, whereas in deep water, brown shrimp are more common. The catch is increasing, however, as the fishermen become better acquainted with the shrimp grounds. There are five commercially-important species of shrimp in Guatemalan waters; since seasons of abundance vary, there can be a continuous supply.

In the Caribbean, the shrimp are mostly white and the catch is mostly seasonal. Few shrimp are caught from March-June, and in July small shrimp are present. From August to April large shrimp abound in that area.

Only one processing plant operates in Guatemala with a capacity of five tons daily. This plant, located in Champerico on the west coast near the Mexican border, freezes the shrimp taken on both coasts. All processing is done by hand labor except for the use of a fork lift that lifts shrimp from the wharf to the plant. The Guatemalan shrimp caught off San Jose go to Salina Cruz, Mexico, for processing and are then exported to the United States.

Guatemala's estimated landings of shrimp (heads-off weight) for 1959-60 were reported as follows: July-December 1959, 87,120 pounds (Pacific 28,125 pounds and Atlantic 58,995 pounds); January-August 1960, 335,961 pounds (Pacific 264,602 pounds and Atlantic 71,359 pounds); and September 1960, 84,061 pounds (Pacific). Another source estimated shrimp landings in 1959 as 281,000 pounds.

January-August 1960 landings by species were as follows: Pacific Coast; white shrimp, 59,321 pounds; red shrimp, 28,377 pounds; and unclassified shrimp, 176,904 pounds. Atlantic Coast: white shrimp, 33,546 pounds; and unclassified 37,813 pounds.

As of November 1959, 10 shrimp vessels were fishing out of Guatemalan ports--7 of Mexican registry and 3 of Guatemalan registry. Six additional vessels were reported as being out of commission (sunk, returned to the United States, or tied-up). Reports from Japan indicate plans to have two fishing vessels on the Pacific coast of Guatemala by December 1960.

As of November 1959, all previous exports of Guatemalan shrimp had been to the United States. January-October 1960 shrimp exports were estimated at 306,836 pounds (heads-off), but largely went to Mexico for processing and then to the United States. The U. S. Bureau of the Census reports that in 1959 shrimp exports from Guatemala to the United States amounted to 182,232 pounds valued at US$133,372.

The major deterrent to the expansion of the Guatemalan shrimp fishery in the Pacific is lack of a suitable port. Otherwise, Guatemala could probably produce 4 million pounds annually. (U. S. Embassy, Guatemala, November 23, 1960.)

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India

SHRIMP INDUSTRY:

The shrimp fisheries currently being exploited by Indian fishermen are primarily close to the coast and in the estuaries, backwaters, and salt-water lakes along the western coast of India, especially around Karala and Bombay, and to a much lesser extent off the east coast. The shrimp fishing grounds on the west coast extend to 50 miles from the coast in the north (off the Gulf of Kutch), to about 25 miles from the coast at Bombay, and to about 15 miles off the coast in the south at Cochin. East coast shrimp fisheries are being surveyed and potential catches appear to be great, especially off Tuticorin, Cuddalore, Pulicat, the mouths of the Godawari and Mahanadi Rivers, and at the head of the Bay of Bengal, according to the Assistant Fisheries Development Adviser of the Government of India.

There are 11 fish processing plants in India. All but the plant at Calicut process shrimp, and all are freezing plants. One plant at Cochin and the one at Mangalore also can shrimp. No information is available on the extent of mechanization in the processing plants.

The estimated landings of heads-on shrimp in India are as follows: 1959, 65,437 metric tons; 1958, 85,191 tons; 1957, 137,000 tons; and 1956, 160,000 tons. No breakdown of the landings by major types or species is available, except that the 1959 catch consisted of 27,632 metric tons of penaeid shrimp and 37,805 metric tons of non-penaeid shrimp or prawns (heads-on). Fisheries products landings statistics are rough estimates in India, and no estimate of landings for 1960 is available.

It is not clear why landings of shrimp have fallen so sharply in the last three years. It is believed that reclamation of backwater areas for paddy cultivation may cut into the output of the small shrimp caught in such areas. Such a trend was not likely to continue because of the conservation measures being taken, but on the other hand, the future increase in the shrimp catch would be primarily the result of extending exploited fisheries outward from the shore rather than of more intensive exploitation of backwaters and close-in fisheries.

It is impossible to separate figures for shrimp vessels from those for fishing vessels as a whole, partly because the same boats are used for shrimp fishing as are used for other types of fishing. It has been estimated that in 1959 there were about 86,700 fishing vessels in India, including about 1,700 mechanized craft. The State Governments of Gujarat, Maharashtra, Andhra Pradesh, and Kerala have small programs to assist in the construction of non-mechanized vessels. Vessel programs of the Central Government are concentrated on construction of powered vessels; about 650 boats were mechanized by 1956, and about 850 more vessels have been mechanized since that time. It is planned to mechanize another 4,000 boats during the Third Five-Year Plan (by 1966), but that figure has not yet been finally agreed to by the Government planning organizations. All vessels are primarily Indian-owned, but there are two fishing companies exploiting shrimp fisheries for export which involve foreign minority participation. One of these is 49 percent owned by Japanese interests, and the other recently-formed company has 49 percent United States participation.

The establishment of the company with United States capital is dependent on approval by the Ministry of Commerce and Industry which is expected momentarily. The joint Japanese-Indian company has four bull trawlers, while the company with United States capital is to have six vessels in Visakhapatnam and six in Tuticorin.

Exports to the United States are primarily frozen shrimp, while shrimp sold to Burma (the other most important customer for Indian shrimp) are mostly dried.

The Indian Government imposes a tax of Rs. 0.75 ($0.16) a hundredweight (112 pounds) on exported shrimp, theoretically

India (Contd.):

Table 1 - India's Exports of Shrimp, 1959-60

Country of Destination	Jan.-Aug. 1960		1959	
	Quantity	Value	Quantity	Value
	1,000 Lbs.	US$	1,000 Lbs.	US$
Burma	4,020	989,500	3,688	902,276
Ceylon	378	79,234	3,976	782,741
Hong Kong	243	65,420	923	237,820
Mauritius	44	17,054	167	59,195
Singapore	218	63,950	426	121,705
United States	1,610	685,674	2,235	981,805
Others 1/	150	59,228	184	83,418

1/Includes data for 27 areas.
Note: Values converted at rate of one rupee equals US$0.21.

to finance research projects connected with the shrimp fisheries. At present the Government is considering a proposal to eliminate the tax. Shrimp exports are not subsidized, but the Government assists in the establishment of facilities for catching and preparing shrimp for export in several ways, such as through facilitating issuance of licenses for imports of packaging materials and extending loans to new companies. Further measures, including a subsidy on tinplate and remission of the duty on imported packaging materials, are under consideration.

Little useful information is available on wage rates for processing plants. However, it has been reported that wage rates in Madras State for peeling, deveining, and brining average between Rs. 1.5 and Rs. 3 ($0.31-$0.63) a day, paid daily in cash. No comparable data are available for wage rates in freezing plants.

Fishermen typically either sell their catch to middlemen daily or, apparently in fewer cases, make arrangements before the season begins for delivering their entire season's catch to a middleman at a predetermined price. In Madras State, the average daily income of a fisherman varies widely (depending on the catch), or about Rs. 1.5 and Rs. 10 ($0.31-$2.10). The Indian Government expects to conduct a comprehensive survey of the income of fishermen which, however, will not be completed before 1963.

It appears that India is at present catching only a small fraction of the potential output of its shrimp fisheries. Deeper waters than are now generally exploited and the fisheries off the east coast, which are practically untouched, offer the primary opportunities for expansion. It is likely that significant expansion of shrimp output, particularly for export purposes, will require extensive participation by foreign companies, both because of the apparent reluctance of Indians to conduct larger scale offshore operations and because of the requirement of imported machinery for vessels and processing plants. Despite uncertainty of the reasons for the decline in production of shrimp during the past few years, it seems probable that the trend will be reversed because of the Government's increasing interest in exploitation of fisheries to improve the Indian diet and ease India's serious foreign exchange situation through exports, and because of the generally developing interest of foreign, particularly Japanese and American, investors in exploiting Indian shrimp fisheries for export.

It is not expected that there will be any great change in the types and species of shrimp currently exported to the United States or elsewhere. (U. S. Embassy, New Delhi, December 2, 1960.)

Young women in a plant in India packing raw headless shrimp for freezing.

Japan

FISHERIES AGENCY RESEARCH VESSEL TO EXPLORE ATLANTIC TUNA AREAS:

The Japanese Fisheries Agency in November 1960 decided to send its research vessel Shoyo Maru (604 tons) to explore the tuna areas in the Atlantic. The objectives of the trip are: Explore tuna fishing areas in the West Atlantic and those off the southwestern coast of Africa; conduct studies on "green meat" tuna; survey fisheries and fishing bases in the area.

The vessel left Tokyo in the fall of 1960 and was expected to return early in 1961, after visiting Colombo (Ceylon), Cape Town, Freetown, Dakar, Las Palmas (Canary Islands), Venice, Port Said, Suez, and Singapore.

Plans of operation include long-line fishing with 800 hooks once a day, set before dawn and hauling to begin at 10 a.m. Off the southeast coast of Africa, 14 operations and in the western Atlantic, 12 operations are planned. Observations are to include analysis of conditions at the time of setting and hauling the line.

At noon every day, meteorological observations are scheduled, including sea and air temperatures; collecting sea water, plankton; measuring depth, transparency, weather, wind, and air pressure.

Measurement of important species is planned: yellowfin, big-eyed, bluefin, and albacore tuna, including observations on feed, blood, and internal organs.

Studies on "green meat" tuna are planned to determine the cause of the condition.

Disposition of catch, operational conditions of foreign fishing vessels, and market conditions at ports of call are to be observed and surveyed. (Fisheries Economic News, November 10, 1960.)

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Japan (Contd.):

PACK OF NEW CANNED TUNA PRODUCT TO BE INCREASED:

Sales in 1960 of the new Japanese canned tuna product ("Tender Tuna") which was put on the market late in June 1960, will be close to 200,000 cases, according to the Japanese canning firm. The company intends to increase the pack to 400,000 cases in 1961. The packing in 1961 will be done at several plants besides the original cannery of Yaizu. Domestic sales have been 70 percent in No. 3 cans and 30 percent in No. 2 cans (can number designations in Japan are different than in the United States). Each of the four differently-flavored sauce packs have sold in about equal amounts. (Japanese newspaper, November 21, 1960.)

Note: Also see Commercial Fisheries Review, October 1960 p. 65.

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EXPORTS OF CANNED SARDINES IN TOMATO SAUCE, 1959:

In 1959, the Japanese exported 618,330 cases of canned sardines in tomato sauce. Of this amount, 405,882 cases were exported to the Philippines; 104,030 cases to Africa; 61,428 cases to Belgium; 10,952 cases to Singapore; 7,374 cases to the Netherlands; and 28,664 cases to other countries.

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PACK OF PET FOOD MADE FROM FISH DECLINES:

The Japanese 1959 pack of canned pet foods made from fish for export to the United States amounted to about 770,000 cases, of which 650,000 cases were exported. In 1960, only about one-half of that quantity was packed due to unusually poor skipjack tuna and mackerel-pike fishing. Since pet-food packing is a byproduct operation, the scarcity of fish has adversely affected this industry. Also, quality claim problems arose in 1960 which have caused the Japanese packers to lose interest. (The Suisan Tsushin, October 29, 1960.)

Korea

SHRIMP INDUSTRY:

There are no specialized shrimp fishing vessels in Korea; the locally-owned vessels engaged in other fisheries also catch shrimp. Some of the vessels are in operation throughout the year. Current discussions in the Korean Office of Marine Affairs call for additions to the fishing fleet in 1961, largely as replacements for obsolete vessels. If such vessels are built, there will be some net gain in the shrimp catch potential because the Government would likely modify its regulation to allow the use of more effective gear for shrimp fishing. However, a limiting factor in the volume of the catch is the shrimp area itself which is unlikey to produce a volume at all comparable with the recognized large shrimp fishing grounds in the Western Hemisphere.

Table 1 - Korea's Shrimp Landings, 1958-59 and January-August 1960

Year	Large	Medium	Small	Total
	(1,000 Lbs.)			
Jan.-Aug. 1960	789	1,184	12,685	14,658
1959	1,839	4,237	37,139	43,215
1958	1,404	1,285	35,926	38,615
Plan for 1960	1,934	661	39,242	41,887

Through August 1960, the total shrimp catch was only 6,649 metric tons, at an annual rate of slightly over half of the 19,000 tons planned for the year. The drop in landings was mainly in small shrimp, which accounts for about 90 percent of the total landings. These very small shrimp are usually dried, pickled, or made into a paste for the domestic market, or for export, in the case of the dried shrimp.

Table 2 - Korea's Exports of Shrimp by Type and Destination, Quantity, and Value, 1956-59 and Jan.-Aug. 1960

Year	Frozen Shrimp 1/		Dried Shrimp	
	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000
Jan.-Aug. 1960	70	32.4	54	2/26.4
1959	97	38	97	3/28
1958	130	73	20	4/12
1957	44	20	701	90
1956	-	-	29	17

1/All exported to United States.
2/Includes shipments to the United States valued at US$15,500.
3/Includes shipments to the United States valued at US$13,000.
4/Includes shipments to the United States valued at US$11,000.

The relatively small catch in 1960 can be attributed to the depressed price for shrimp in the international market in 1959 as well as to damage to the fishing fleet in September 1959 by Typhoon Sarah. The catch in 1959 was larger than that of the preceding year, but the production did not come up to expectations for the year. The gain in the catch of medium-size shrimp in 1959 compared with 1958 is noteworthy.

Processors of frozen shrimp (as well as other fishery products) are under the supervision of the Office of Marine Affairs of the Ministry of Commerce and Industry, which is responsible for minimum sanitary standards. All processors and packers for export are required to be members of one of the Korean food export associations which has to approve the quality of the products before they can be exported.

Korea (Contd.):

As is the case in most businesses in Korea, the shrimp industry has had financial difficulties. The Ministry of Commerce and Industry considered introducing an export subsidy to aid the industry, but such a subsidy has not been provided. The 1960 price firmed up somewhat compared with that of 1959, especially for the frozen products. However, by June 1960 the export of frozen shrimp ceased, for a time at any rate, due to difficulties in the local operation, including poor trade representations and insufficient revolving capital to cover the time lag involved for shipment, payment, and other financial details. The Korean Frozen Foods Association is exploring the possibility of sales to Japan which has a market advantage, due to the distance, for transportation costs and, the Association hopes, for cutting the time lag on movement of funds.

The United States is Korea's best market for frozen shrimp which accounted for $73,000 in foreign exchange in 1958, the record year. In addition to the exports, about 10 tons of frozen shrimp are sold annually to United Nations Forces in Korea. The principal markets for the dried shrimp are the United States and Hong Kong.

Morocco

SHRIMP INDUSTRY:

The two principal outlets for the Moroccan shrimp fishing industry are the local market for fresh shrimp, and the market in France for frozen shrimp. The main fishing grounds are located in the waters off Casablanca and Tangier. Shrimp are generally available all year, although more abundant during January and February. The processing industry is centered in Casablanca where 14 out of Morocco's 19 plants are located. In Casablanca, some 2,000 women are employed in shrimp-freezing plants. Peeling, deheading, and deveining are hand operations. Machines are too expensive. Processing consists of peeling, deheading, deveining, cooking, and freezing. The shrimp are packed in one- or two-kilo (2.2- or 4.4-pound) cartons. The shrimp used for canning are very small and canned in ¼ "Dingley" cans. Estimated landings during the first six months of 1960 were about 660 tons. In 1959, shrimp landings (970 tons) at Casablanca accounted for about 77.6 percent of the total for the year.

Pink shrimp (crevettes roses) or Parapenaeus languostris, predominate in Moroccan waters. All sizes are caught and graded large, medium, and small. Other species are not classified according to size and are called prawns (crevettes bouquets) and are smaller than the pink shrimp. The pink shrimp run 130 shrimp to the kilo (about 60 shrimp per pound).

The present Moroccan shrimp fleet is composed of 80 trawlers. In Tangier, the boats generally have a 70-metric-ton displacement, are 20 meters long (about 66 feet), have 170-hp. engines, and carry a crew of ten. The Casablanca trawlers have also a displacement of 70 tons but are 19 meters (about 62 feet) long with a 180-hp. engine and a 12-man crew. No substantial increase in this fleet is anticipated. The majority of the vessels are owned by Spanish, Portuguese, or French. Only five or six boats are owned by Moroccan nationals.

Exported frozen shrimp are peeled and deveined. Almost all shrimp are exported to France, a duty-free status is accorded them during the first 3 or 4 months of each year and only a nominal landing tax of 10 percent is charged.

Table 1 - Moroccan Exports of Canned Shrimp, 1956-1960

Year	Destination	Quantity	Value	
		Pounds	1 Million Moroccan Francs	US$ 1,000
1960 1/	France	119,802	48.1	95.0
	All Others	1,387	0.6	1.2
	Total	121,189	48.7	96.2
1959	France	88,669	25.9	58.2
	All Others	6,585	2.7	6.2
	Total	95,254	28.6	64.4
1958	France	309,878	106.0	261.6
	All Others	30,435	11.7	28.9
	Total	340,313	117.7	290.5
1957	France	100,435	24.8	81.3
	All Others	7,271	1.9	6.4
	Total	107,706	26.7	87.7
1956	France	106,222	29.1	83.3
	All Others	13,847	3.8	10.8
	Total	120,069	32.9	94.1

1/ January-September only.

Note: (1) Currency values converted as follows:
1956 - 350 Moroccan francs equal US$1;
1956 - 305;
1958 - 405;
1959 - 444;
1960 - 506;
(2) None exported to the United States.

Export controls consist mainly of quality control exercised by a government agency. That office also acts as a trade promotion agency and has offices in principal European cities as well as New York City. An export tax of 0.5 percent is charged to help support the agency. In addition, an export tax of 1 percent is charged by the customs authorities on all items exported. A landing tax of 5 percent is levied on all shrimp unloaded in Moroccan ports. No subsidies were being given to the fish industry as of December 1960.

Morocco (Contd.):

Table 2 - Moroccan Exports of Frozen Shrimp, 1956-1960

Year	Destination	Quantity	Value	
		1,000 Lbs.	1 Million Moroccan Francs	US$ 1,000
1960 1/	France	1,143	361.8	714.9
	All Others	1	0.5	1.0
	Total	1,144	362.3	715.9
1959	France	1,112	296.6	667.8
	All Others	6	1.8	4.1
	Total	1,118	298.4	671.9
1958	France	917	279.2	689.3
	All Others	6	1.6	3.9
	Total	923	280.8	693.2
1957	France	325	77.5	253.9
	All Others	7	0.7	2.4
	Total	332	78.2	256.3
1956	France	166	31.8	90.9
	All Others	72	4.5	12.9
	Total	238	36.3	103.8

1/January-September only.
Note: None exported to the United States.

The minimum wage in the fish-processing industry is established at 81 Moroccan francs an hour, the equivalent of 16 U. S. cents. A 48-hour maximum work week is in force.

Fishermen are paid on the following basis: One half of the value of the catch is given to the owner of the boat. The other half is divided between the master and the crew, after operating expenses have been deducted.

Table 3 - Average Annual Earnings in the Moroccan Fishing Industry 1/

Fishing Occupation	Salary, US$
1. For vessels out more than 24 hours: 2/	
Master fisherman	1,809
Skipper and first mate	905
Engineer	1,206
Second engineer	753
Seaman	653
Cabin boy or beginner	356
2. For vessels out less than 24 hours:	
Master fisherman	1,042
Skipper and first mate	522
Engineer	692
Second engineer	435
Seaman	375
Cabin boy or beginner	342

1/November, 1960.
2/The boats in Casablanca and Tangier generally are in the second category. Those with Agadir for home port generally stay out two or three days.

The catch of shrimp has about kept up with demand. The catch has increased steadily but not greatly over the previous four years. However, if world demand increases, production is capable of being expanded. Morocco is searching for products to export to balance its trade.

As of December 1, 1960, the United States had not figured in the trade in shrimp. The most likely type that could be exported to the United States would be small canned shrimp. (American Consulate General, Casablanca, December 1, 1960.)

Nicaragua

SHRIMP INDUSTRY:

Virtually all Nicaraguan shrimp fishing is now done by a French firm located in Puerto de El Bluff on Bluefields Island.

The Nicaraguan shrimp fishing grounds are located off the entire length of the country's east coast, although the industry is too new as yet to determine the exact location of the best shrimp beds. Shrimp are available throughout the year, but the best fishing season is between mid-June and mid-March. White shrimp are caught in the daytime and "red" shrimp at night. The port of El Bluff is the center of the industry. The only processing plant has the following facilities:

A 550 kw. powerhouse for supplying all of the firm's installations.

A daily capacity for 66,000 pounds of ice in blocks and 14,000 pounds in flakes. Two ice-storage rooms with a capacity for 400,000 pounds.

Two freezing tunnels, each with a capacity of 20,000 pounds every 20 hours, and there is cooler space for 300,000 pounds of processed shrimp.

Two low-temperature storage rooms, with a capacity of 300,000 pounds.

Two prerefrigeration rooms for storing the products when unloaded until they are graded and packed.

One work room (198 x 49.5 feet) equipped with a double shrimp grader. There is another work room (49.5 x 72.5 feet) equipped with a boiler and a rustproof cooking vat used for processing products exported to Europe.

A work room (198 x 49.5 feet) is used for the cannery. A high-pressure boiler has already been installed and the other equipment is being set up.

A warehouse, connected to the wharf by the railroad, supplies all fishing items (nets, cables, anchors, chains, ropes, etc.) and parts for motors and radios as well as sheet iron, etc. Value of stock ranges from US$100,000-150,000.

Table 1 - Nicaraguan Export Prices for Heads-Off White Shrimp, Jan.-Sept. 1960

Month	Heads-off Shrimp to the Pound						
	Under 15	16/20	21/25	26/30	31/35	36/40	41/50
	(U. S. Cents a Pound)						
January	84	79	69	60	54	53	51
February	84	81	69	60	54	53	51
March	85	85	74	65	62	57	54
April	87	85	76	73	68	66	61
May	90	90	82	75	69	65	62
June	92	90	84	76	72	67	60
July	90	87	80	76	71	62	59
August	-	88	83	73	64	60	60
September	-	88	82	73	64	60	60

Nicaragua (Contd.):

Table 2 - Nicaragua's Shrimp 1/ Exports (headless) by Country of Destination, 1956-59 and January-June 1960

Year	Country of Destination	Quantity	Value
		Lbs.	US$
Jan.-June 1960 . .	Costa Rica	528	200
	El Salvador	7,123	3,800
	United States	236,126	91,464
	Total . . .	243,777	95,464
1959	Costa Rica . .	7,746	3,300
	El Salvador .	1,223	720
	Panama	15,003	5,330
	United States	420,983	183,220
	Total . . .	444,955	192,570
1958	Panama	6,008	3,600
	United States	602,811	315,721
	Total . . .	608,819	319,321
1957	Costa Rica . .	1,213	575
	Panama	1,569	750
	Total . . .	2,782	1,325
1956	2/	2/	2/

1/ Includes white, brown, and pink shrimp.
2/ No exports.

For the years 1956 to 1959, the El Bluff plant gives no statistics on landings of shrimp as their plant was being constructed, but estimates landings for 1960 at 490,000 pounds, heads-off. No breakdown of landings by sizes is available, but the plant's estimated percentages based on studies made in 1958 and on actual fishing since August 1959 are as follows: under 15 count, 2 percent; 16-20 count, 18 percent; 21-25 count, 42 percent; 26-30 count, 31 percent; 31-35 count, 4 percent; and 36-40 count, 3 percent.

There are 22 vessels with Diesel motors of 140-200 hp. The length of the vessels ranges from 62-72 feet. The El Bluff firm plans to obtain about 25 vessels from the United States in a short time. Of the 22 vessels mentioned, 11 are Nicaraguan-owned, one is Costa Rican-owned, and 10 are owned by United States citizens.

Exports to the United States by the firm operating at the port of El Bluff during July-September 1960 averaged 52,625 pounds.

There are no current export controls, subsidies, or taxes on shrimp in Nicaragua. The El Bluff firm has a 20-year license allowing them to fish on the Atlantic Coast of Nicaragua.

The wage rate for packing is 4 U. S. cents a pound, 19 cents a pound for peeling and deveining the large shrimp, and 29 cents a pound for peeling and deveining the small shrimp.

With arrival of 25 vessels from the United States, it is expected that the annual catch will increase substantially. Also, with the use of depth sounders on each boat, it will be possible to catch larger quantities of the brown and pink varieties of shrimp. (United States Embassy in Nicaragua, December 1, 1960.)

Pakistan

FISHERY TRENDS, NOVEMBER 1960:

Like those of India, waters off the coast of Pakistan are rich in fish and shellfish. Through aid from the U. S. International Cooperation Administration, modern facilities for handling fish have been installed at Karachi harbor. These include docks, market place, refrigeration facilities, and an assembly room. Mackerel, pomfret, sole, shark, and shrimp occur in abundance. During the peak season 30,000 pounds of shrimp are processed daily, and 10,000 pounds are processed daily during the off-season. Some of the shrimp are exported to the United States. Large quantities of salted shark are exported to Ceylon and Singapore.

Aside from Karachi, the fishing industry is not well developed along the coast of West Pakistan. People in the northern portion of West Pakistan eat little fish due to the distance from the coast and lack of refrigeration facilities during transportation.

Stall in Karachi's central fish market where fresh fish from the Arabian Sea is offered for sale.

The Biochemical Research Department of Pakistan's Central Laboratory at Karachi is working extensively on the extraction, analysis, and processing of shark-liver oil for vitamin A. The oil averages about 15,000 units per gram of vitamin A--nearly 25 times as much as standard cod-liver oil. Of the six species of shark obtained at Karachi, the hammerhead (Sphyrna blochii) is the richest source. Research is also in progress on the processing of fish flour from shark meat for human food. (American Embassy, New Delhi, November 23, 1960.)

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Pakistan (Contd.):

FIRST SHRIMP EXPORTS TO UNITED STATES FROM EAST PAKISTAN:

On July 28, 1960, frozen shrimp exports from East Pakistan to the United States were initiated with a sample consignment of five tons. The Director of Fisheries for East Pakistan predicted that 120 tons would be exported by the end of 1960, the United States Consul at Dacca reported on November 18, 1960.

Peru

EXPORTS OF MARINE PRODUCTS, JANUARY-SEPTEMBER 1960:

Exports of principal marine products by Peru during the first nine months of 1960 amounted to 453,133 metric tons (valued at about US$41 million). Fish meal exports

Peruvian Exports of Principal Marine Products, January-September 1960

Marine Products	July-Sept. 1960			Jan.-Sept. 1960		
	Qty.	Value 1/		Qty.	Value	
	Metric Tons	Million Soles	US$ 1,000	Metric Tons	Million Soles	US$ 1,000
Fish meal	98,097	189.4	6,850	383,600	850.2	30,749
Fish (frozen canned, etc.)	8,087	49.0	1,772	24,862	155.6	5,627
Fish oil	10,553	29.7	1,074	23,728	67.9	2,456
Sperm oil	4,208	14.9	539	9,489	32.4	1,172
Fertilizer (guano)	8,827	22.0	796	9,941	24.5	886
Whale meal	1,205	2.1	76	1,513	2.6	94
Total	130,977	307.1	11,107	453,133	1,133.2	40,984

1/F.o.b. values, converted at rate of 27.65 soles equal US$1.

(383,600 tons valued at US$30.7 million) were up 108.8 percent in quantity and 47.4 percent in value as compared with the 183,685 tons valued at US$20.9 million exported during a similar period of 1959. Average prices for fish meal (January-September 1960) at about US$80.16 a metric ton were down sharply from the average of about US$113.54 a ton received during the same period of 1959.

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FISH MEAL INDUSTRY, 1955-60:

This report is based on information supplied by the President of the Belgian Association of Fish Meal Manufacturers and the Belgian Embassy at Lima, Peru. The report was submitted to the Belgian Government by the Belgian Association along with a request that measures be taken to protect the Belgian fish-meal industry.

Over the past few years the Peruvian fish-meal industry experienced a spectacular growth. Production amounted to 14,637 metric tons in 1954, and increased as follows: 19,217 tons in 1955; 28,922 tons in 1956; 62,945 tons in 1957; 107,471 tons in 1958; and 274,800 tons in 1959.

It was anticipated that 1960 production would be 500,000 to 600,000 tons. Landings decreased from May to September, therefore it was possible that production fluctuated around 500,000 tons; 400,000 tons had been sold by May 1960. In 1960, Peru reduced prices substantially as compared with 1958. Since Peru has no storage facilities and the credit rate of banks fluctuates between 15 and 20 percent per year, the Peruvian producers sold fish meal at whatever price they could obtain, even if lower than cost.

During a meeting, reported by the newspaper La Prensa, (June 24, 1960), Peruvians admitted that the price had decreased below cost. It was suggested that Peru stop granting licenses for the construction of new plants and limit exports. No agreement, however, was reached. La Prensa added that the f.o.b. price had decreased from US$140 a metric ton to below US$60.

Another report indicated that Peruvian production costs had been estimated at US$87 to US$90 a ton; and that efficiently-operated plants could still enjoy a profit at prices between US$82 and US$84 a ton.

Due to the low prices that prevailed in July 1960, the Peruvian tax on exportation of fish meal was cancelled. This tax, based on a cost price of $64.33 a ton, amounted to 10 percent on the difference between the officially-recognized production cost ($64.33 per ton) and the price obtained in the United States (Pacific coast) after deduction of transportation and insurance expenses. There was also a tax of 10 percent ad valorem if the export sale price exceeded the officially-recognized cost price by 25 percent.

It was estimated that a plant capable of producing 2,000 tons of fish meal per month had a cost price of US$64.33 per ton prior to July 1960. But the cost price of most plants was probably higher due to smaller capacity. In January of 1960, 63 plants were in operation; by July there were 74, with licenses requested for 12 additional plants.

There were 400 new vessels under construction as of November 1960.

Cost prices were estimated for plants of a capacity of 2,000 tons per month, operating under circumstances such as: (1) plants having their own boats, located along a quay, and working with an anchovy pump; (2) plants having their own boats, located in the interior, using an anchovy pump to load trucks for transporting the raw material; (3) plants not having boats, located along a quay, and using an anchovy pump; and (4) plants not having boats, located in the interior, and using an anchovy pump to load trucks for transporting the raw material. In (1), a cost price delivered in Europe (c.& f.) of US$82.19 a ton was arrived at. For (2), cost price delivered in Europe would be US$86.26 a ton. For (3), US$84.49. For (4), $88.56.

As of November 1960, Peru was offering fish meal for immediate delivery at US$1.25 per protein unit, or US$81.25 a ton. Contracts for delivery until the end of 1961 have been made on the basis of US$1.14 to US$1.15 per protein unit, or US$74.10 and US$74.75 per ton. As of November 1960, one could buy for delivery in 1961 at US$1.19 per protein unit, or US$77.35 per ton. (United States Consulate, Antwerp, November 22, 1960.)

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FISH MEAL INDUSTRY TRENDS, THIRD QUARTER 1960:

During the July-September 1960 quarter, when anchovy fishing was at a seasonal low point for the year, many

Peru (Contd.):

Peruvian fish meal producers improved their installations. One objective was the elimination of offensive odors which earlier in the year caused strong complaints from municipalities adjacent to fish meal plants. More important for the economic viewpoint, however, were improvements in the manufacturing process to reduce production costs, including renovation of existing operations and new installations. For example, in the short distance of about one-quarter of a mile along the shore to the north of Callao, at least three new plants were under construction during the third quarter, each initially with two or more production units capable of handling 40 to 50 tons of raw fish per hour, with additional units to be installed later. A feature of these plants is that anchovies can be unloaded by suction hoses, directly from the vessels. At least one of the plants has a laboratory for testing the quality of its product, radio equipment for communicating with vessels at sea, and an airplane for observation purposes. Heretofore, stickwater waste from the reduction process has been thrown away. Numerous plants are now installing equipment to treat stickwater for the recovery of valuable protein solids for addition to the fish meal during the manufacturing process. Such efforts to reduce production costs and to improve quality emphasize the determination of Peruvian producers to meet the challenge of reduced world prices in every way possible.

Fish meal prices continued at low levels during the third quarter, although they recovered to some extent as exporters sought to cover current contracts from available supplies. That activity drew to a close, however, and at the end of October, prices were running about $66-$68 a metric ton f.o.b. Peruvian ports for November delivery, $64 for December delivery, and $62 for January-June 1961 delivery.

While the continuous efforts of the Peruvian industry to initiate workable controls through self-imposed limitations of production or export have not yet been successful, there were indications at the end of October that a workable solution of the problem might be imminent. Certainly there appears to have developed a realization among Peruvian producers that controls must be instituted to avoid restrictions abroad and the possibility of chaotic conditions in the industry at home. Representatives of the Peruvian industry attended as observers the annual meeting of the International Association of Fish Meal Manufacturers held in Paris at the end of September. It is reported that Peru's leading supplier position in the world fish meal industry was recognized there, and agreement was reached that annual exports by Peru of 600,000 metric tons would be reasonable, would eliminate the uncertainties in the world markets caused by runaway Peruvian production, and would permit normal operation of world supply and demand factors, taking into account production of other supplying countries. Peruvian producers appear to have accepted the suggested 600,000-ton export figure, and to be prepared to adjust realistically to the necessity of regulating production to conform to it. It is understood that producers are working together to find ways and means of doing so. One plan mentioned would take into account production during November and December (seasonally good anchovy fishing months), and would give weight to historical sales patterns and to forward contracts. The Sociedad Nacional de Pesqueria, the industry's own organization, would control exports through a system of export permits. An initial step in the procedure was reportedly scheduled to be taken November 1, 1960, when all companies, in accordance with agreement, were to register their forward contracts with the Society. (U.S. Embassy, Lima, October 31, 1960.)

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EXPORTS OF FISHERY PRODUCTS, JANUARY-JUNE 1960:

Official Peruvian export data for fishery products for the first six months of 1960 as compared with the same period of 1959 show an increase of 109 percent in quantity and an increase of 52 percent in value. Fish meal exports increased 131 percent in quantity and 69 percent in value. There was a sharp decrease of frozen tuna (other than skipjack) exports (43 percent in quantity and value), reflecting the poor tuna fishing experienced in Peruvian waters. This has been attributed to abnormal water temperatures. Exports of canned tuna were also off.

Principal Peruvian Fishery Products Exports, January-June 1958-60

Product	Quantity			Value 1/		
	January-June			January-June		
	1960	1959	1958	1960	1959	1958
	....(Metric Tons)....			... (US$1,000)...		
Frozen Fish:						
Tuna	4,094	7,210	3,674	463	847	430
Skipjack ..	4,440	1,643	983	452	193	113
Swordfish .	85	57	35	36	26	18
Shrimp (Langostinos) .	67	25	155	58	22	136
Total frozen	8,686	8,935	4,847	1,009	1,088	697
Canned Fish:						
Bonito ...	7,534	7,727	5,849	2,705	3,073	2,234
Tuna	261	420	501	87	130	158
Total canned	7,795	8,147	6,350	2,792	3,203	2,392
Fish By-products:						
Fish meal.	285,503	123,580	49,803	23,899	14,519	5,219
Fish oil ..	13,180	6,926	1,050	1,382	628	127
Sperm oil .	5,281	4,031	4,275	633	505	651
Whale meal	308	1,825	550	18	201	41
Total by-products .	304,272	136,362	55,678	25,932	15,853	6,038
Grand total	320,753	153,444	66,875	29,733	20,144	9,127

1/ The average rate for U.S. dollars was 27.65 soles in the first half of 1960; 26.91 soles in the same period of 1959; and 22.11 soles in the first half of 1958.

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SHRIMP INDUSTRY:

There are only two companies in Peru which freeze and export salt-water shrimp--one at Mancora and the other at Caleta Cruz (Tumbes). A third company, located in Lima, acts as selling agent for both of them. All are Peruvian companies established with American capital. An official of the Lima company states that there has been no noteworthy changes in the shrimp industry during the past year. Two vessels have been added to the shrimp fleet, bringing the total number to 15. The landings for 1960 are being made at about the same rate per vessel as those for 1959, so the total landings in 1960 should be slightly higher than for 1959. He commented that the consumption of salt-water shrimp is increasing within Peru, but no data are available.

The Peruvian shrimp industry is limited to a narrow strip 30 miles long off the northern coast of Peru, near Tumbes and the shrimp are available all year. Normally the heaviest fishing takes place in May and June. In 1960, October and November have proved to be the months of heaviest fishing. The two companies are engaged in

Peru (Contd.):

shrimp fishing and processing. The shrimp are beheaded on board the vessels and are frozen at their plants at Mancora and Caleta Cruz. No other type of processing of shrimp is done.

Shrimp landings for the 1956-59 period have varied between a high of 757,000 pounds heads-off in 1957 and a low of 268,000 pounds in 1959. Exports (all to the United States) during this period reached a peak of 736,000 pounds in 1957 and by 1959 had dropped to 268,000 pounds.

Table 1 - Peru's Landings and Exports of Shrimp, 1956-59 and January-September 1960

Year	Landings[1] Qty.	Exports[1] Qty.	Exports[1] Value[3]	
	1,000 Lbs.	1,000 Lbs.	1,000 Soles	US$ 1,000
Jan.-Sept. 1960	[2]	199	2,219	82
1959	268	195	1,960	71
1958	509	502	4,511	194
1957	757	736	5,695	302
1956	[4]439	359	2,235	118

1/Headless weight.
2/Unavailable.
3/Average value of one sol: 1956 and 1957, $0.053; 1958, $0.043; 1959, $0.036; and Jan.-Sept. 1960, $0.037.
4/Revised.

The possibility of expanding the Peruvian shrimp fishery appears to be limited. It was estimated in 1955 that the present shrimp fishing area of Peru probably would not produce more than 600,000 to 900,000 pounds (heads-off) annually. Only in 1957 and 1958 were shrimp landings within this approximate range. At the end of 1959, an official of the Lima exporting firm characterized the Peruvian shrimp industry as "unflourishing." Since the 1960 catch is reported to be only slightly ahead of 1959, it may be assumed that his reaction remains the same. (United States Embassy, Lima, November 14, 1960.)

Ryukyu Islands

FISHING INDUSTRY EXPANSION PLAN DRAFTED BY JAPANESE:

The Japanese Fishery Agency towards the latter part of 1960 surveyed the Ryukyu Islands' fishing industry in order to develop a plan for Okinawa's fishing port. Made at the request of the Okinawan Government, the draft plan was completed in November 1960 and the Japanese agency expected to submit it to the Ryukyu Government shortly thereafter. The 5-year plan, which will cost some US$1,666,667 a year and a total of $7,900,000 for the five years, places emphasis on skipjack, tuna, sea bream, and mackerel fishing and calls for the establishment of a fisheries center around Naha. The major points of the plan are:

(1) A total catch of 37,000 metric tons is Okinawa's target for 1965 (it was 22,000 tons in 1958).

(2) Of the fishing vessels, 30 percent will be of the type for fishing skipjack and 13 percent for tuna. An increase of 50 percent is expected over the present 3,300 vessels. A 50-percent increase over 282 powered vessels is expected. Fish consumption is expected to reach 66 pounds per capita.

(3) A total of 16 fishing ports are planned. (Fisheries Economic News, November 8, 1960.)

Spain

SALT COD EXPORTED TO PUERTO RICO FOR THE FIRST TIME:

Cod caught and processed by the Spanish fishing industry is now being exported for the first time, so far as is known. On November 24, 1960, a shipment of 4,200 cases of salt cod with a net weight of 200 metric tons were loaded at Pasajes, Guipuzcoa, and shipped to Puerto Rico.

Until recently, Spain has been importing from 60,000 to 80,000 metric tons of salt cod per year, from Canada, Iceland, and Scandinavian countries.

The ability to export cod has resulted from the expansion and modernization (which has been in progress since 1950) of the important fishing fleet at Pasajes, Guipuzcoa.

A press report has stated that Puerto Rico's annual requirement is about 500 tons, and that this significant shipment is the result of a recent visit of a group of Puerto Ricans to the Alvis Codfisheries Association at Pasajes. (American Consulate, Bilbao, Spain, November 30, 1960.)

Sweden

SHRIMP INDUSTRY, 1958-60:

The Swedish shrimp industry consists of 235 shrimp vessels, 756 fishermen, and 9 processing plants engaged in peeling and canning. Despite the fact that Sweden's exports of shrimp are sizable, nine-tenths of the catch is consumed domestically. Sweden is a net importer of shrimp, receiving most of it from Norway. Swedish shrimp-fishing is carried out in the North Sea. Because of the proximity of Norway, and the fact that the grounds, which are located essentially

Sweden (Contd.):

in the vicinity of Oslofjord, are also a principal source of shrimp for the Norwegians, there has been conflict between Swedish and Norwegian fishermen as to the utilization of the shrimp grounds.

To preserve existing resources, the Swedish-Norwegian Fishing Agreement prescribes the amount of shrimp per week per vessel based on the size of the crew, and depending on whether for fresh consumption or processing purposes. The quantity allowed for processing is greater.

In 1958, Sweden's shrimp landings amounted to 2,147 metric tons valued at US$2,095,061. The heaviest landings were during September and October. Shrimp are taken throughout the year and there is no pattern in the monthly variations of landings.

Initial processing of shrimp takes place aboard the vessel and consists of boiling in brine. All shrimp more than $3\frac{1}{2}$ inches in length and those smaller ones not destined for canning are handled in this manner. There is no freezing of shrimp in Sweden. But the major Swedish food processing firm does freeze shrimp for the Swedish and other markets in their Danish plants.

Shrimp processing in Sweden is confined to deveining and canning at 9 plants along the Swedish west coast. Of these, 7 purchased 1,150 metric tons of boiled shrimp in 1959--peeled or packed it in glass or tin cans with a processors' sales value of US$1,222,899. Only one plant was using peeling machinery. Retail prices for 100 grams (3.5 ounces) of shrimp packed in glass ranged from Kr. 1.75-2.50 (34-48 U. S. cents). Shrimp packed in cans retailed at 125 grams (4.4 ozs.) for Kr. 1.55 (30 cents), and 100 grams (3.5 ozs.) for Kr. 1.33 (26 cents) a can. 1/

The overwhelming proportion of the shrimp caught by Swedish fishermen are the species "Pandalus borealis," called "Nordhavsrakor." A small quantity (2 tons in 1958) of Leander adspersus also is caught for domestic consumption.

In 1957, Sweden's shrimp landings (heads-on weight) amounted to 2,124 metric tons valued at 10.9 million kr. (US$2,106,207); in 1958, 2,154 tons valued at 10.9 million kr. (US$2,106,207); and in 1959, 3,214 tons valued at 13.8 million kr. (US$2,667,126).

Of these totals 1,000 metric tons in 1957 and 1958 were used for canning, while in 1959 1,200 tons were used. The estimated quantity canned in 1960 may total 1,400 metric tons. The remainder is sold for "fresh consumption."

The count of heads-on shrimp per kilo sold for fresh consumption averages between 140-180 (64-82 per pound) while the count per kilo used by canneries averages 240 to 260 (109-118 per pound).

The number of vessels engaged in shrimp fishing in 1958 totalled 235, employing 756 fishermen. The value of the boats amounted to 8.3 million kronor (US$1,603,809). The number of trawlers has increased in the past few years to 280. The size of the trawlers ranges from 40 to 60 feet, the smallest employes two fishermen, the largest four. Modern vessels are equipped with Diesel engines between 150-200 hp. Older vessels are equipped with raw oil motors averaging 100 hp. each.

According to the Agricultural Marketing Board (Jordbruksnamnden), the ownership pattern of the vessels and tackle employed in shrimp fishing is the same as the pattern generally found in the Swedish fishing industry. The vessel and equipment are the property of the fishermen themselves, owned locally. Those who are neither owners nor part-owners are usually not wage-earners either, but members of a "fishing team" formed by all those on board. Net income of the vessel is divided into shares, some going to members of the crew and some to part-owners and owners. The annual total income for each team is estimated at 50,000 kr. (US$9,664).

In Sweden shrimp are sold in lots through a sub-organization of the West Coast Fishermen's Central Association and at a minimum price of 1.75 kr. per kilo (15 U.S. cents per pound). Unsold shrimp are retained by the

Table 1 - Swedish Exports of Shrimp, 1959

Type	Quantity	Value	
	Metric Tons	1,000 Sw. Kr.	US$ 1,000
Boiled and fresh	246	521	101
Canned	65	813	157
Otherwise processed 1/	2	53	10
Total	313	1,387	268

1/Frozen shrimp imported from Denmark and subsequently reexported.
Note: Include landings abroad by Swedish shrimp fishermen.

1/Prices effective November 1960. Export prices 30-35 percent lower.

Sweden (Contd.):

association at 1.65 kr. per kilo (15 U.S. cents per pound). From the public sales price, 5 ore per kilo (US$8.77 per short ton) is deducted by the association for the maintainance of the guaranteed sales price, and one ore per kilo for the administration of the organization.

There are no export controls or special taxes affecting the Swedish shrimp industry other than quality and sanitary controls.

Table 2 - Swedish Exports of Shrimp, 1959 1/, by Type and Principal Country of Destination

Type	Destination	Quantity	Value	
		Metric Tons	100 Sw. Kr.	US$ 1,000
Boiled and Fresh	Norway	91	16.8	3.2
	Denmark	155	32.1	6.3
	Others	-	3.3	0.6
Canned	Denmark	4	5.3	1.0
	Great Britain	34	42.9	8.4
	Italy	4	5.4	1.0
	Switzerland	3	5.3	1.0
	Austria	3	4.9	0.9
	U.S.A.	3	5.3	1.0
	Others	4	7.0	1.4
Total		301	128.3	24.8

1/Preliminary.

Products prepared by the plants are subject to control by a Government organization under the Agricultural Marketing Board. The plants are required to provide the control organization upon demand with samples of prepared products. The organization checks the quality as against the label, and certifies its reliability.

The charge for the service is negligible.

The control organization also handles the inspection of plants, raw material, processing method and equipment, and sanitary conditions at all stages of the canning operation.

The shrimp industry does not receive a Government subsidy, nor is any under consideration.

The male and female workers in the processing plants are generally part-time workers, called upon when sufficient shrimp is landed. Most women employed are nearby housewives. Some employers pay for each phase of processing separately, others for the entire process, mostly at piece rates.

The workers are unionized and earn approximately 4 kr. (77 U.S. cents) per hour.

Shrimp fishing is carried out three days each week; the remaining workweek is devoted to other types of fishing.

Swedish fishermen are members of the Swedish Fishermen's Unemployment Fund.

As of November 1960 there were no plans for the expansion of either the catch of shrimp or the volume of exports. Expansion by types or species exported is unlikely as only two principal species exist on the Swedish shrimp grounds. Expansion of exports to the United States are unlikely; only 3 metric tons were exported in 1959. (American Embassy, Stockholm, November 23, 1960.)

Note: Values converted at rate of : 1957-58--5.175 Sw. Kr. equal US$1; 1959-60--5.174 Sw. Kr. equal US$1.

Taiwan

SHRIMP INDUSTRY:

The major shrimp fishing grounds of Taiwan are off the coast of southwestern Taiwan from Yunlin to Kaohsiung, waters west of Penghu (Pescadores Islands), and the northern part of the Taiwan Strait. Shrimp are caught year-around, but the best season is March-May. During those months 50 percent of the annual catch is landed.

All the shrimp landed in Taiwan are consumed locally. Large and medium shrimp are shipped with ice from producing centers to consuming centers such as Taipei, Taichung, Tainan, and Kaohsiung. They are used mostly by restaurants and hotels, as the price is too high for the average family. Small shrimp are consumed by both rural and urban families either fresh or dried. Dried shrimp are processed by boiling and then sun-drying. About 4-7 percent of the annual landings are dried. No frozen shrimp has been processed, although there are a few refrigeration plants with enough freezing capacity at Keelung and Kaohsiung. There has been no canning of shrimp. The extent of mechanization in shrimp processing will depend largely on the prospect of export; there has been no discernible trend toward such mechanization.

The production of shrimp (heads-on) in Taiwan in recent years is as follows: estimated 6,000 metric tons for 1960; 5,111 tons for 1959; 4,059 tons for 1958; 3,892 tons for 1957; and 3,858 tons for 1956. Shrimp landings have increased rather sharply since 1958. Of the total production in 1959, 70 percent was caught by small trawlers in the inshore waters of the southwestern part of Taiwan, 10 percent was caught by various kinds of fishing methods such as swing-bell net or stick-held net along the coast, 15 percent was produced by culture in brackish-water fish ponds located in the southwestern part of Taiwan, and the remaining 5 percent was landed by deep-sea trawlers.

There are more than a dozen species of shrimp produced in Taiwan. The major species are: red shrimp (Penaeopsis acclivis), thick-shell shrimp (Penaeopsis akayehi), sand shrimp (Penaeopsis monocerose), striped shrimp (Penaeus japonicus), bright shrimp (Pasiphaea sivado), and grass shrimp (Penaeus carinatus). Shrimp are graded as large, medium, and small. For large shrimp (mostly striped shrimp and grass shrimp), there are fewer than 20 heads-on shrimp per pound. Medium shrimp (mostly thick-shell shrimp, red shrimp, and

Taiwan (Contd.):

sand shrimp) run between 30 and 40 to the pound. Small shrimp (various species) run more than 40 per pound. Of the total shrimp production (heads-on), large shrimp account for about 10 percent, medium shrimp 40 percent, and small shrimp 50 percent.

There are about 900 shrimp trawlers of 5-10 tons, with 22-30 hp. engines, operating in the waters of Taiwan. Most of these vessels make one-day trips, but a few make seven-day trips to the inshore waters of Penghu. There is no overall planning for vessel construction nor for expansion of the present fleet.

Exporters in Taiwan have studied the possibilities of exporting frozen shrimp to the United States, but the high prices on the local market is the major deterent to such attempts. The current wholesale price of large shrimp is about NT$60-80 per kilogram (68-90 U.S. cents a pound), which is higher than the market price in the United States.

The current wage rate for processing dried shrimp is in the range NT$400-600 (US$10-15) a month.

Fishermen who work as employees are paid a monthly wage plus a bonus which is calculated by comparing the actual monthly catch with the average. There are also a number of fishermen-owners.

According to fishery specialists of the Sino-American Joint Commission on Rural Reconstruction (JCRR), the production of medium and small shrimp could be increased substantially from waters around Taiwan, were the demand to rise. However, to increase the production of an exportable type of shrimp would not be easy. There may be fine quality shrimp of a size suitable for the United States market or other foreign markets in the Strait of Taiwan, but much exploratory fishing would be needed before this could be established, and it would probably take 2 or 3 years before Taiwan could become a significant exporter of shrimp, even if the decision were taken to promote such a project. (United States Embassy in Taipei, November 23, 1960.)

Thailand

SHRIMP INDUSTRY:

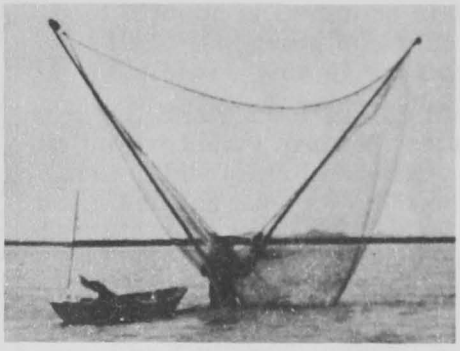
The inland, or fresh-water shrimp industry of Thailand consists mostly of fresh-water prawn; 90 percent is distributed either fresh or frozen, and the remaining 10 percent either salted or cooked. The principal inland shrimp fishing grounds are located in central Thailand. The most favorable season for catching fresh-water prawn is December-February, when the high tides of the river ebb. During this period, 8 to 15 tons of prawn are caught daily.

The sea, or brackish-water, shrimp industry consists mainly of white shrimp. The small sizes are sold salted or cooked. Only a small amount of shrimp paste is produced because of the high manufacturing cost.

The brackish-water shrimp industry is located at almost every major river delta along the Gulf of Thailand. Fishing is inactive during the monsoon season, July-September. The brackish-water shrimp grounds are also found along the coast, but the most important area is on a line extending from Chumporn to the southernmost tip of Thai territorial waters.

The Government-owned "Cold Storage Organization" in Bangkok is the only plant processing frozen shrimp. Washing, peeling and beheading is done by modern machines.

New freezing plants for processing fish at Chumporn and Songkhla are planned. Facilities for processing shrimp will be incorporated. When completed, they should be able to take care of south Thailand's fish- and shrimp-processing requirements.



Shrimp fishing in shallow water in Thailand.

The total catch of shrimp for 1960 was estimated at not less than 2,000 metric tons, heads-on weight. Unofficially, landings were 5,000 metric tons in 1956; 4,000 in 1957; 4,000 in 1958; and 3,000 in 1959. Fresh shrimp lose 42 percent their weight when beheaded, and 60 percent when peeled. The two most commonly found species of shrimp are white shrimp and spotted shrimp.

There are approximately 200 fishing vessels of 20 gross tons each. Most are equipped with 60 hp. engines. Expanding the number of shrimp fishing vessels is not under consideration. The greater part of the shrimp fishing fleet is owned by Thai nationals; some of the vessels are built locally, but a considerable number are foreign made.

The export price of headless shrimp averaged about US$1 a pound in 1958 and US$0.85 in 1959. Most exports were to Malaya.

Exports of frozen shrimp by the "Cold Storage Organization" averaged 100 metric tons in 1958 and 250 tons in 1959. The total value for the two years was about 1 million Baht (approximately US$48,000). There were no exports in 1956 or in 1957. Some exports of frozen shrimp were made to Malaya, but none to the United States nor Europe during the first ten months of 1960.

Thailand (Contd.):

There is no subsidy, export duty, or export controls on shrimp.

The cost of processing and packaging frozen shrimp amounts to about 1:50 Baht per kilogram (approximately 3 U.S. cents per lb.).

Payment to shrimp fishermen is by cash only. The average net income of the shrimp fishermen is about 40,000 Baht (US$1,905) per annum, the lowest gross income is about 10,000 Baht (US$476) and the highest about 100,000 Baht (US$4,762). In an exceptionally good season, some are able to gross as much as 80,000-90,000 Baht (US$3,810-4,286) per month. Expenses incurred in shrimp fishing are comparatively lower than other types of fishing. Total labor required is about 6 to 20 persons, and most equipment is locally produced other than the fishing vessels.

The Government of Thailand would like to expand the existing shrimp industry, but no plans exist. The types of shrimp which are exported to all countries as well as the United States are known as white shrimp and spotted shrimp. However, according to marketing circles, white shrimp is preferred over spotted shrimp in the United States. There appears to be little present possibility of physically expanding existing shrimp catches or of meeting many foreign requirements save that of Malaya. (American Embassy, Bangkok, December 2, 1960.)

Note: Values converted at rate of 21 Baht equal US$1.

Trinidad

SHRIMP INDUSTRY:

The shrimp industry in Trinidad as of November 1960 is relatively small Shrimp are generally caught during the first half of the year by small boats and by beach seining. Virtually all of the local shrimp catch is consumed fresh. There is only one 68-foot Diesel-engine shrimp vessel operating in Trinidad, which was recently purchased in Florida. This vessel also has been fishing for finfish.

The landing of shrimp in the Leeward and Windward Islands is negligible and there is no statistical data available to supply any details.

A Florida-owned company registered in Trinidad has ceased operations in Trinidad. The company started operating in Trinidad in May 1960, packing and freezing shrimp for export. A fleet of 12 to 15 United States-owned shrimp trawlers fished in waters off Surinam to provide the Trinidad plant with shrimp. The total catch from May through October amounted to about 300,000 pounds, which were cleaned, sorted, and exported to the United States. The only machinery used was a grader and a stapling machine; all other labor was done by hand.

Precise data on the local catch of shrimp is not available because of the small size of the fishery. In 1957 about 300,000 pounds of shrimp were caught and marketed in Trinidad.

The Florida-owned company while fishing off Surinam caught pink or brown shrimp. About one-quarter of the pack consisted of less than 15 shrimp to a pound, about half the pack of 15-20 count, and one quarter, 21 to 25 count.

There has been some discussion that a Trinidad subsidiary of a New York City firm may enter into an operation similar to that of the Florida-owned company. The Trinidad subsidiary of the New York City firm is constructing a cold-storage and freezing plant.

There are no current export controls, subsidies, or taxes on shrimp fishing, processing, and exporting in Trinidad.

The Florida-owned company which has ceased operating in Trinidad, employed 40-50 people in its plant and paid an average of about 60 BWI cents per hour (about 35.5 U.S. cents).

This firm paid United States vessels on the basis of shrimp prices in the United States less the costs of processing, freight to the United States, and insurance. A large part of the catch by local fishermen is sold at retail in Trinidad.

There does not seem to be any possibility of expanding the grounds for shrimp located close to Trinidad, which are not extensive.

The possibility always exists that another operation similar to that of the Florida-owned company will be established in Trinidad to pack and export shrimp catches from waters off the Guianas. The main reason for that company's failure was the desire of the United States vessel owners to return to the United States. (U.S. Consulate General, Port of Spain, November 25, 1960.)

Tunisia

PURCHASE OF TWO TUNA FISHING VESSELS UNDER CONSIDERATION:

The Tunisian National Fisheries Office announced during the third quarter of 1960 that it is investigating the possiblility of purchasing two ocean-going tuna clippers, the total cost of which would be about 400,000 dinars (about US$952,000). These clippers would be used to fish the Atlantic off the west coast of Africa and the catch would be used to supply Tunisia's canneries. These canneries have, partly because of a disappointing tuna season, become regular importers of Japanese Atlantic-caught tuna for canning.

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SHRIMP INDUSTRY

Shrimp catches by Tunisian fishermen are made incidental to trawling operations for miscellaneous groundfish. However, the shrimp catch does contribute to the economy of the trawling fleet, since they command a relatively high price, ranging from 375 millimes (US$0.90) to 1,000 millimes (US$2.38) a kilogram (about US$0.41-1.08 a pound) heads on.

Tunisia (Contd.):

Landings of heads-on shrimp for the years 1956-59 varied between a high of 200 metric tons in 1956 and a low of 103 tons in 1959. For the first six months of 1960 landings amounted to 132 tons. There are two principal types or species taken by Tunisian fishermen--royal or red (Aristomorpha) and rose (Parapenaeus). About 98 percent of the royal or red shrimp are larger than 40 count (heads-on) to the pound and about 92 percent of the rose shrimp are 40 count or larger. About 60 percent of the two shrimp types are 30 count or larger. Although taken throughout the year, shrimp are landed in commercial quantities in Tunisia only during the summer months, May through August.

There is only one processing plant at this time in Tunisia, located 7 miles north of the City of Tunis. This French-owned freezing plant is one of a chain of six which extends from Spain through North Africa to Tunisia, and which has its own retail sales outlets in France. The plant packs unpeeled whole cooked shrimp in one-kilogram (2.2 lbs.) cartons; very small and broken shrimp are peeled and packed in small polyethylene bags prior to freezing.

The packing operation of this single Tunisian plant is performed entirely by hand. However, the product is considered to be of excellent quality and well packaged. With the small output and declining supplies, it is unlikely that any effort toward mechanization will be made in the foreseeable future.

There are 60 vessels in the Tunisian trawler fleet, of which approximately 15 deliver the bulk of the shrimp catch. These vessels range in size from about 50 to 85 feet with a horsepower range of from 75 to 275.

The Government-financed fishery enterprise (Office National des Peches) has acquired a shipyard site in the Tunis port area, and employed a Yugoslav shipbuilding expert, with the intention of constructing wood and steel fishing vessels, 60 to 70 feet in length. It is understood that British-Maltese interests have also been enlisted in the project. However, there is some question as to whether the undertaking will actually materialize in the near future.

At the moment, four International Cooperation Administration-financed 20-meter (65 foot) trawlers, built in Italy, were scheduled for delivery late in 1960, and were the only known future additions to the fleet.

The entire fishing fleet is Tunisian owned. During 1956, 1957, and 1958, four Italian vessels were licensed to deliver only shrimp for processing at the local freezing plant (the fish catch was delivered in Sicily). However, this procedure has been discontinued as a result of Tunisian-Italian friction over fishing rights in Tunisian coastal waters.

Export prices for shrimp are available only for the years 1958 and 1959, when they were Dinars 690 and Dinars 614 (about US$1,642.20 to $1,461.32) per metric ton, respectively.

Exports all frozen and heads on, except for small and broken shrimp: 1956, 188 tons (includes 18.5 tons delivered by Italians); 1957, 136 tons (includes 63 tons delivered by Italians); 1958, 254 tons (includes 82 tons delivered by Italians); 1959, 97 tons; and 1960, 142 tons (for entire year).

About all of the above were exported to France, with a very small quantity going to Switzerland. (Discrepancies will be noted between these figures and the statistics on landings. These are probably attributable to landings which were not calculated in the Tunisian statistics. The Service des Statistiques of the Government of Tunisia lists exports of 194.7 and 85.2 metric tons for the years 1958 and 1959.)

Currently, there are no Tunisian export controls, subsidies, or taxes on the local shrimp industry. Wage rates for processing are 72 millimes or about 17 U.S. cents an hour while actually employed, May through August. Fishermen are paid on a share basis, except for those on Government-operated vessels. Earnings average approximately $50 a month, only a part of which is represented by the catch of shrimp. There are extra fringe benefits, such as health insurance, family bonuses, etc.

Provided that the Tunisian fishermen are willing to go further offshore in their operations, the possibility of increasing the total shrimp catch is good. However, even if the present small catch were doubled, the yield would still not be of commercially-significant proportions. It seems unlikely that the catch of the Tunisian fleet, under the best possible conditions, would exceed this doubled amount in the foreseeable future. (United States Embassy, Tunis, November 21, 1960.)

Note: Values converted at rate of 1 dinar equals US$2.38.

Union of South Africa

PARTICIPATES IN INTERNATIONAL INDIAN OCEAN EXPEDITION:

South African scientific organizations will pursue various projects as their contribution to the SCOR (Special Committee for Oceanic Research) International Indian Ocean Expedition. Scientists from the United States are also participating.

The main international effort will take place in 1962 and 1963, and data analysis will continue beyond the end of the expedition in 1964. The Indian Ocean survey was selected by SCOR because it is the least known of the oceans. It also has unique oceanographic problems. There is evidence that it is a highly productive ocean, which makes this project of great commercial significance.

The South African projects will take place from Cape Agulhas east to Delagoa Bay, up to 950-1,000 miles from the African coast. Two South African research ships are available.

One group will sail during June-July 1961, from Delagoa Bay to a point south of Madagascar, then southeast to long. 58° E., lat. 37° S.; and then straight back on the African coast to a lat. 32° S. The same cruise may be repeated in 1962.

Another group will sail from Delagoa Bay, along lat. 27° S., as far as long. 43° E., then due south and back along lat. 32° S. This will be done once in winter and once in summer, probably in 1962. While Japanese have fished the waters north of Madagascar and may have done exploratory fishing south

Union of South Africa (Contd.):

of the Island, the fishing potentialities in those waters are really unknown. They hope to locate an "upwelling" (a current carrying rich nutrients off the sea bottom towards the surface) at the southern tip of Madagascar and over a bank somewhere along the track described above. This could mean the discovery of rich feeding grounds for tuna.

The University of Cape Town's Oceanography Department is working on studies concerning the relationship between water temperatures and currents, and plankton distribution and the whereabouts of tuna, in the hope of discovering ocean conditions where tuna can predictably be found. Theories developed will be tested during the expedition. (American Consul, Cape Town, October 28, 1960.)

U. S. S. R.

EXPANSION OF FISHING AND WHALING FLEETS CONTINUES:

The first of a series of vessels for fishing in the tropics is now under construction at the East German Baltic Port of Stralsund. Over 60 have been ordered by the Soviets.

Called Tropyk class, they are East German-designed, 80 meters (282.4 feet) overall with a beam of 13 meters (42.6 feet). They will be equipped with refrigerating plant and used mainly for sardine, herring, and tuna fishing. The first vessel will be handed over in December 1961.

What is claimed to be the world's biggest factory whaler, the Sovetskaya Rossiya, is being completed at the Nikolayev shipyards in Russia. The Sovetskaya Rossiya is an ocean-going three-decker, 217.8 meters (714 feet) over-all.

Her displacement is 45,000 tons, design speed 17.5 knots, and she has a cruising range of over 9,000 miles. The ship will be powered by two 75,000 hp. engines. There will be facilities to process several thousand whales during a season and to make 100 percent use of whale meat, bone, and blubber. The whaler will have 950 electric motors with a combined power output of 15,000 kw., and stabilizing tanks to reduce the ship's rolling by half.

She will sail on her maiden voyage in 1961 and will work in Antarctic waters in company with the Slava, Sovetskaya Ukraina, and Yuriy Dolgoruki whaling fleets. (Fishing News, November 11, 1960.)

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LANDINGS OF FISHERY PRODUCTS, 1956-59:

A Soviet Union statistical yearbook for 1959 reports the total landings of "fish, marine animals, and whales" as about 6.8 billion pounds in 1959, according to the November 10 issue of Fiskets Gang, a Norwegian fishery trade periodical. This represents an increase of about 4.7 percent as compared with 1958. An increase of 10 percent was planned for 1960.

Soviet Union's Landings of Fishery Products, 1956-59

Country	1959	1958	1957	1956
	(Million Pounds)			
RSFSR (Russia proper)	4,960	4,821	4,621	4,857
Lithuania	231	207	187	163
Latvia	231	209	183	146
Estonia	159	128	128	139
Other	1,198	1,108	968	976
Total	6,779	6,473	6,087	6,281

The Russian Republic accounts for almost three quarters of the landings and the Baltic Republics for 9 percent.

Uruguay

SHRIMP INDUSTRY:

The Uruguayan shrimp fishery is conducted exclusively in brackish lakes and marshes located along Uruguay's Atlantic coast. Since no open-sea fishing is attempted, at present the shrimp industry does not come under the control of Government of Uruguay fishing monopoly (SOYP), which controls all ocean fisheries. The fishing fleet consists of small boats owned and operated by private interests. The Government monopoly hopes eventually to fish for shrimp and to that end has recently requested (in conjunction with Brazil and Argentina) through the Food and Agriculture Organization the services of a shrimp biology expert. At present the monopoly has neither the equipment nor the technical know-how for a shrimp fishery.

Shrimp fishing is normally limited to the months of March and April. Annual landings vary from about 77,000 pounds during good seasons to as little as 9,000 pounds during

Uruguay (Contd.):

poor seasons. The major determining factor in the size of the landings is the extent to which channels are opened from the ocean to the lakes to allow the free passage of salt water. Production does not normally supply domestic needs and no shrimp are exported. Most of the shrimp are marketed fresh in seaside resort towns (principally Punta del Este) and in Montevideo. The remaining small amount is peeled and canned at Government facilities for the local market.

The Government fish monopoly's future plans for expanding the shrimp fishery and perhaps entering the export market depend on the results of the survey to be made by the FAO shrimp biologist. (American Embassy, Montevideo, November 9, 1960.)

MINIMUM STOCK FOR ATLANTIC SALMON STREAM

An interesting article in the September 1960 issue of The Atlantic Salmon Journal (Fredericton, New Brunswick) discussed the basic question, "How many Atlantic Salmon does a river need to keep up the stock?" It is drawn from a report by Dr. P. F. Elson, St. Andrews (N. B.) biological Station of the Canadian Department of Fisheries.

Based on research data presently available from several salmon streams under study in New Brunswick, the conclusion was reached by Dr. Elson that the number of adult Atlantic salmon required to maintain stocks is between 40 and 50 pounds of adult females per mile of stream 10 yards wide. He also concludes that the presence of more broodstock or the stocking of hatchery products in excess of natural production resulting from this minimum of brood stock will yield little or no advantage to the resulting fishery.

On the other hand, recent forest spraying with DDT in the watersheds of some of these waters have seriously reduced the naturally-produced stocks of young. Under these circumstances, carefully planned use of hatchery stocks seems to Dr. Elson to be one way of getting better salmon production.