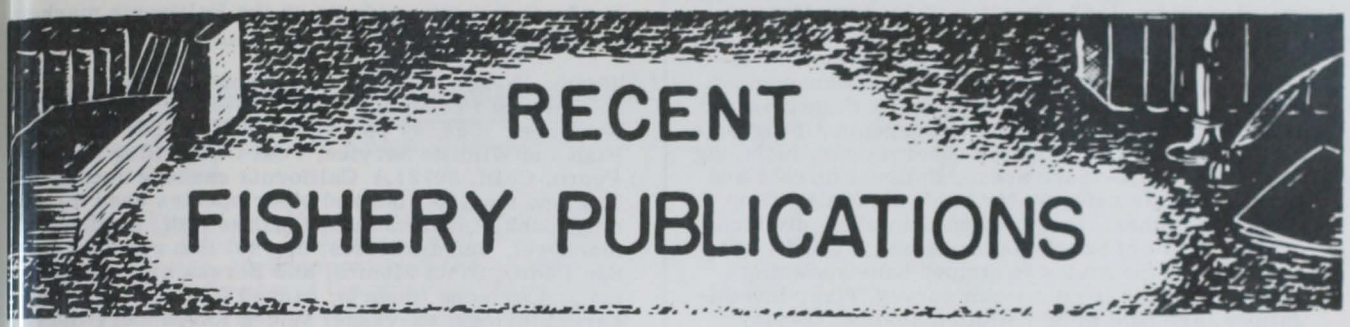


## FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE ICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHING-, D. C. 20240. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOL-S:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
FL - FISHERY LEAFLETS.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SSR.- FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

umber — Title

S-3455 - Packaged Fishery Products, 1963 Annual Summary (Revised), 5 pp.
S-3515 - Gulf Coast Shrimp Data, 1963 Annual Summary, 53 pp.
S-3652 - Massachusetts Landings, April 1964, 9 pp.
S-3653 - Massachusetts Landings, May 1964, 9 pp.
S-3657 - Gulf Coast Shrimp Data, July 1964, 21 pp.
S-3658 - Michigan, Ohio & Wisconsin Landings, July 1964, 4 pp.
S-3659 - North Carolina Landings, September 1964, 4 pp.
S-3661 - Texas Landings, August 1964, 2 pp.
S-3662 - New Jersey Landings, September 1964, 3 pp.
S-3663 - Fish Sticks, Fish Portions, and Breaded Shrimp, July-September 1964, 3 pp.
S-3664 - California Landings, July 1964, 4 pp.
S-3666 - South Atlantic Fisheries, 1963 Annual Summary, 8 pp.
S-3667 - Georgia Landings, September 1964, 2 pp.
S-3670 - Frozen Fishery Products, October 1964, 8 pp.
S-3671 - Imports & Exports of Fishery Products, 1962-63 Annual Summaries, 12 pp.
S-3673 - Maryland Landings, September 1964, 4 pp.
S-3674 - South Carolina Landings, September 1964, 3 pp.
S-3675 - New York Landings, September 1964, 5 pp.
S-3676 - Massachusetts Landings, June 1964, 9 pp.
S-3677 - Michigan, Ohio & Wisconsin Landings, August 1964, 4 pp.
S-3678 - Virginia Landings, September 1964, 4 pp.
S-3680 - Shrimp Landings, August 1964, 5 pp.
S-3682 - Louisiana Landings, September 1964, 3 pp.
S-3685 - Alabama Landings, September 1964, 3 pp.
S-3686 - South Carolina Landings, October 1964, 3 pp.
S-3687 - Florida Landings, October 1964, 8 pp.
S-3689 - Rhode Island Landings, July 1964, 3 pp.
S-3690 - Georgia Landings, October 1964, 3 pp.

CFS-3693 - Maine Landings, September 1964, 4 pp.

Sep. No. 726 - Experimental Trawling for High-Seas Salmon.

Sep. No. 727 - Estimating Residual Shell in Shucked Soft-Shell Clams (Mya arenaria L.).

FL-448 - Some Publications on Fish Culture and Related Subjects, 14 pp., revised August 1964.

FL-571 - Parasites of Freshwater Fish. II--Protozoa. 1--Microsporidea of Fish, by R. E. Putz, 4 pp. illus., August 1964.

FL-574 - Fishing Vessel Construction Differential Subsidy, 14 pp., processed, November 1964. Discusses the United States Fishing Fleet Improvement Act (P. L. 88-498), approved August 30, 1964, effective December 22, 1964. The purpose of the Act is to correct inequities in the cost of construction of U. S. fishing vessels. The Secretary of the Interior is authorized to pay up to 50 percent of the cost of construction of a new fishing vessel provided the vessel, the owner of the vessel, and the fishery in which the vessel will operate meet certain requirements. The amount that can be paid is limited to the difference between the cost of construction in domestic and foreign shipyards or 50 percent of the domestic cost, whichever is smaller. The determination of the foreign cost will be made by the Maritime Administrator. Eligibility for the subsidy is restricted to vessels of advanced design, capable of fishing in expanded areas (fishing grounds not usually fished by the majority of vessels working in a particular fishery), equipped with newly developed gear, and scheduled for operation in a fishery where such use will not cause economic hardship to other operators now in that fishery. ("Newly developed gear" is defined as the most modern gear available that is suitable for use in the fishery for which the proposed vessel is designed.) The regulations provide for hearings on each contract under the new law. Such hearings will allow any person who feels he will be economically injured by the construction of the proposed vessel an opportunity to present evidence of potential economic losses. The United States Fishing Fleet Improvement Act authorized the appropriation of $10 million annually for the construction subsidy program. Congress has appropriated $2½ million to start the program during the current fiscal year (ending June 30, 1965).

SSR-Fish. No. 488 - Spawning Ground Catalog of the Kvichak River System, Bristol Bay, Alaska, compiled by Robert L. Demory, Russell F. Orrell, and Donald R. Heinle, 302 pp., illus., June 1964.

Annual Report for 1963, Division of Fishery Management Services, by Willis King, Circular 194, 50 pp., illus., July 1964. Includes information on accomplishments of the Division of Fishery Management Services of the U. S. Bureau of Sport Fisheries and Wildlife during 1963; fishery management programs on Federal areas and Indian reservations, including Department of Defense areas, National forests and parks, wildlife refuges, Veterans Administration areas, and others; cooperation with other divisions of the Bureau of Sport Fisheries and Wildlife; cooperation with the states in striped bass spawning study, Kentucky trout stream survey, river investigations, and acid mine pollution studies; fishery management programs on other waters such as privately-owned lakes; training and extension activities; and cooperative fishery units.

Fishery Bulletin, vol. 63, no. 2, 1964, 242 pp., illus., printed. Contains articles on: "Sexual maturation and spawning of Atlantic menhaden," by Joseph R. Higham and William R. Nicholson; "An experimental evaluation of the $C^{14}$ method for measuring phytoplankton production using cultures of Dunaliella primolecta Butcher," by William H. Thomas; "Dentition of the northern fur seal," by Victor B. Scheffer and Bertram S. Kraus; "A benthic community in the Sheepscot River Estuary. Maine." by Robert W. Hanks; "Upwelling in the Costa Rica Dome," by Klaus Wyrtki; "Preconstruction study of the fisheries of the estuarine areas by the Mississippi River-Gulf Outlet Project," by George A. Rounsefell; "A morphometric study of yellowfin Thunnus albacores (Bonnaterre)," by William F. Royce; "Origins of high seas sockeye salmon," by Fred C. Cleaver; and "The relation between spawning-stock size and year-class size for the Pacific sardine (Sardinops caerulea) Girard)," by John S. MacGregor.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FREE FROM THE FISHERY MARKET NEWS SERVICE, U. S. BUREAU OF COMMERCIAL FISHERIES, RM. 510, 1815 N. FORT MYER DR., ARLINGTON, VA. 22209.

| Number | Title |
|---|---|
| MNL-10 | Swedish Fisheries, 1963, 10 pp. |
| MNL-13 | India's Fishing Industry, 1963, 12 pp. |
| MNL-17 | Italian Fisheries, 1963, 9 pp. |
| MNL-23 | Fisheries of Chile, Part I, North Chile, 1963 and January-June 1964, 32 pp. |
| MNL-60 | Netherland's Fisheries, 1963, 8 pp. |
| MNL-93 | Tuna Fishery of Western and Southern Africa, 13 pp. |

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE REPORT IS AVAILABLE ON LOAN ONLY FROM THE BIOLOGICAL LABORATORY, U. S. BUREAU OF COMMERCIAL FISHERIES, 2725 MONTLAKE BLVD. E., SEATTLE, WASH. 98102.

Fishing for Cephalopod Mollusks and Their Biological and Economic Importance, by Elvezio Chirardelli, 8 pp., processed, 1962. (Translated from the Italian, General Fisheries Council for the Mediterranean Technical Paper No. 40/60.)

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

(Baltimore) Monthly Summary--Fishery Products, November 1964, 10 pp. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore, Md. 21202.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the month indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, November 1964, 17 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif. 90731.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, sardines, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, November 1964, 8 pp., illus. (U. S. Bureau of Commercial Fisheries, Tuna Resources Laboratory, P. O. Box 271, La Jolla, Calif. 92038.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, September and October 1964, 18 and 19 pp., respectively. (Market News Service, U. S. Fish and Wildlife Service, U. S. Customs House 610 S. Canal St., Rm. 704, Chicago, Ill. 60607.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the months indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, November 1964, 11 pp. (Market News Service, U. S. Fish and Wildlife Service, Rm. 608, 600 South St., New Orleans, La. 70130.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas from Mexico; Gulf menhaden landings and production of meal, solubles, and oil; and sponge sales; for the month indicated.

Halibut and Troll Salmon Landings and Ex-Vessel Prices for Seattle, Alaska Ports and British Columbia, 1964-1963, 35 pp., December 18, 1964. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Bldg., Seattle, Wash. 98104.) Gives landings and ex-vessel prices of troll salmon and halibut at leading United States ports of the Pacific Coast; ex-vessel halibut prices and landings at leading British Columbia ports; United States and Canadian Pacific Coast halibut landings, 1936-1964; halibut landings at leading Pacific Coast ports, 1961-1964; and troll salmon landings and receipts at Seattle and Alaska ports, 1961-1964.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, November and December 1964, 4 pp. each. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va. 23369.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Caro-

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

lina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the months indicated.

w England Fisheries--Monthly Summary, November 1964, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston, Mass. 02210.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial-fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, and Provincetown), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

w York City's Wholesale Fishery Trade--Monthly Summary, September 1964, 19 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York, N. Y. 10038.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the month indicated.

eattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, December 1964, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle, Wash. 98104.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl vessels reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

## MISCELLANEOUS PUBLICATIONS

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

ACCLIMATIZATION:

"Ispol'zovanie vnutrividovoi izmenchivosti v rabotakh po akklimatizatsii ryb" (Use of intra-species variability in work on the acclimatization of fish), by S. I. Doroshev, article, Referativnii Zhurnal-Biologiia, 1963, No. 8196, printed in Russian. Akademiia Nauk SSSR, Nauchnoi-Informatsii, Moscow, U.S.S.R.

ALEWIVES:

A Report upon the Alewife Fisheries of Massachusetts, Contribution No. 11, 135 pp., illus., reprinted, 1964, 71 cents. Division of Marine Fisheries, Department of Natural Resources, 15 Ashburton Pl., Boston 8, Mass. Part I discusses the importance of the alewife fishery, natural history, natural and artificial fisheries, causes of the decline in the fishery, and remedial measures for reconstruction of the industry. In Part II, a brief description of each alewife stream in Massachusetts is given, and the practical methods for restoration of the fishery are presented.

ALGAE:

Automatic Control of Algae Cultures, by Ye. A. Ivanov and I. V. Aleksandrova, OTS 63-41013, 8 pp., processed, Oct. 28, 1963, 50 cents. (Translated from the Russian, Uspekhi Sovremennoy Biologii, vol. 56, no. 1, 1963, pp. 90-97.) Office of Technical Services, U. S. Department of Commerce. Wash., D. C. 20230.

"Chemical studies on the green alga, Monstroma nitidum Wittrock. III--Inorganic components of the alga and its mucilage," by Shizuhiko Maeshige, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 29, Apr. 1963, pp. 359-361, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-Kaigandori 6, Minato-ku, Tokyo, Japan.

"Lipids of algae. Part III--The components of unsaponifiable matter of the algae Chlorella," by Ihei Iwata and Yosito Sakurai, article, Agricultural and Biological Chemistry, vol. 27, Apr. 1963, pp. 253-258, printed. Charles E. Tuttle Co., Tokyo, Japan.

The following reports, processed in Spanish, are part of the Serie: Trabajos de Divulgacion and are available from the Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

Clave Dicotomica para la Determinacion de Algas Marinas del Pacifico (Dichotomous Key for the Identification of Marine Algae of the Pacific), by Gilbert M. Smith, vol. VII, no. 68, 27 pp., Sept. 1963. (Translated from the English, Marine Algae of the Monterey Peninsula, California, 1944.)

La Explotacion de Algas en Baja California (The Exploitation of Algae in Baja California), by Hector Chapa Saldana, vol. IX, no. 84, 34 pp., 1964.

Notas sobre el Aprovechamiento Industrial de Algunas Agarofitas (Notes on the Industrial Utilization of some Agar-Bearing Plants), by Hector Chapa Saldana, vol. VI, no. 64, 26 pp., June 1963.

ALGERIA:

Foreign Trade Regulations of the Republic of Algeria, by Robert S. McClellan, OBR 64-122, 8 pp., printed, Nov. 1964, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) The primary aims of the Algerian Government's foreign trade policy are the limitation of imports to those items considered essential for domestic consumption or economic development and the protection of local production. The report discusses

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

Algeria's import tariff system, sales and other internal taxes, documentation and fees, labeling and marking requirements, and special customs provisions. Also covers nontariff import controls, export controls, United States foreign trade controls, and Government representation between the two countries.

ALMANAC:

The American Ephemeris and Nautical Almanac for the Year 1966, 508 pp., illus., printed, 1964. $3.75. Nautical Almanac Office, U. S. Naval Observatory, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Basic calculations and data, fundamental tables and constants.

ANCHOVY:

"Vesennyaya migratsiya chernomorskoi khamsy v 1959 g. i prisposobitel'nye osobennosti ee nerestovykh populyatsii" (Spring migration of the Black Sea anchovy in 1959 and the adaptive characteristics of its spawning population), by N. N. Danilevskii, article, Referativnii Zhurnal-Biologiia, 1963, Abstract No. 8155, printed in Russian. Akademiia Nauk SSSR, Nauchnoi-Informatsii, Moscow, U.S.S.R.

BOTULISM:

"A simple method for the detection of Botulinus toxins and bacilli," by M. Zeller, article, Archiv fur Lebensmittelhygiene Insbesondere fur Fleish, Fisch, un Milchhygiene, vol. 15, no. 4, 1964, pp. 84-87, printed in German. Verlag M & H Schaper, Grazer Strasse, Hannover 20, Germany.

"What you should know about Botulism," article, Food Engineering, vol. 36, July 1964, pp. 104-106, printed. Chilton Co., Chestnut and 56th Sts., Philadelphia 39, Pa.

BRAZIL:

The following publications are reprinted (in Portuguese) from Boletim de la Sociedade Cearense de la Agronomia, vol. 5, June 1964. Sociedade Cearense de la Agronomia, Fortaleza, Ceara, Brazil:

Pescarias de Jangadas no Litoral Sul de Pernambuco, Brasil ("Jangadas" Fisheries on the Southern Coast of Pernambuco, Brazil), by Hitoshi Nomura, pp. 67-76, with English summary.

Sobre a Producao Brasileira de Pescado, no Quinquenio 1956-1960 (On Brazilian Fishery Production, in the Five-Year Period 1956-1960), by Melquiades Pinto Paiva, pp. 87-98.

CANADA:

"Canadian summer fisheries, 1964," article, Trade News, vol. 17, no. 4, Oct. 1964, pp. 9-13, processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada. In Canada expansion is strongest on the Atlantic coast where new large freezing plants are coming into production and where the fishermen in 1964's spring and summer fisheries earned nearly C$59 million, about $6 million more than in 1963 and $12 million more than the five-year average of 1959-63. In the Maritimes, the 3-million-pound increase over the previous year in the inshore groundfish catch was due in part to greater effort, resulting from uniformly high prices to fishermen. To the end of August the 1964 output of frozen sea fish, excluding shellfish, was 16 percent greater than in 1963 and sales were so satisfactory that stocks on hand were smaller by 18 percent. The scallop industry continued its expansion with a summer catch of over 8 million pounds valued at between $3 and $4 million, one million dollars more than in the previous summer. The swordfish catch continued its sharp climb in quantity and value. Fishermen in Quebec, however, were not so fortunate. After an excellent spring, with good catches of cod, halibut, herring, and smelts, their summer operations were not so successful. Newfoundland fishermen's gross income for 1964 stood at the end of August at $15.5 million. British Columbia's salmon catch was better than expected, the pack already exceeding one million cases at the end of August with large supplies coming regularly. The decline in fresh-water fisheries was due to smaller catches and consequently smaller output.

Journal of the Fisheries Research Board of Canada, vol. 21, no. 5, Sept. 1964, 479 pp., illus., printed, single copy C$2.25. Queen's Printer, Ottawa, Canada. Includes, among others, these articles: "A new species of parasitic copepod, Caligus clemensi sp. nov. (Caligoida: Caligidae), from pelagic fishes in the coastal waters of British Columbia," by R. R. Parker and L. Margolis; "Preliminary observations on the vertical distribution of Pacific salmon (genus Oncorhynchus) in the Gulf of Alaska," by J. I. Manzer; "Ocean growth and mortality of pink and chum salmon," by W. E. Ricker; "Oceanographic regions and assessment of temperature structure in the seasonal zone of the north Pacific Ocean," by John P. Tully; "Salinity preference: an orientation mechanism in salmon migration," by John E. McInerney; "Estimation of sea mortality rates for the 1960 brood-year pink salmon of Hook Nose Creek, British Columbia," by Robert R. Parker; "Seasonal variations in the sterol, fat and unsaponifiable components of scallop muscle," by D. R. Idler, T. Tamura, and T. Wainai; "Preliminary results of studies on growth and mortality of Pacific cod (Gadus macrocephalus) in Hecate Strait, British Columbia," by K. S. Ketchen; "Growth rate of central British Columbia pink salmon (Oncorhynchus gorbuscha)," by R. J. LeBrasseur and R. R. Parker; "Distribution and synonymy in the Pacific Ocean, and variation, of the Greenland halibut, Reinhardtius hippoglossoides (Walbaum)," by Carl L. Hubbs and Norman J. Wilimovsky; "Distribution of introduced marine Mollusca in British Columbia waters," by D. B. Quayle; "The respiratory metabolism and swimming performance of young sockeye salmon," by J. R. Brett; "Ocean migrations of Pacific salmon," by Ferris Neave; "A model for simulation of the population biology of Pacific salmon," by P. A. Larkin and A. S. Hourston; "A key to five species of Pacific salmon (genus Oncorhynchus) based on scale characters," by H. T. Bilton, D. W. Jenkinson, and M. P. Shepard; "A Quantitative estimate of the number of Pacific herring in a spawning population," by D. N. Outram and F. H. C. Taylor; and "Further information on spawning stock size and resultant production for Skeena sockeye," by M. P. Shepard and others.

Rapport sur les Pecheries pour l'Exercice Financier 1962/63 (Report on the Fisheries for the Fiscal Year 1962/63), 1 vol., illus., printed in French. Quebec Department of Trade and Commerce, Quebec, Canada.

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

Seventeenth Annual Report, 1963/64, 11 pp., printed, 1964. Fisheries Prices Support Board, Ottawa, Canada.

CANNING:
"Fish cooker tray," (British Patent 935,989), article, Food Manufacture, vol. 39, May 1964, p. 81, printed. Trampian Press, Ltd., The Tower, Shepherds Bush Rd., Hammersmith, London W6, England.

CEYLON:
Administration Report of the Director of Fisheries for 1962-63, Part IV--Education, Science and Art (L), 84 pp., printed in Singhalese and English, 2/75 plus postage -/50 (about 55 U. S. cents plus postage). Government Publications Bureau, P. O. Box 500, Secretariat, Colombo, Ceylon. Reports on the activities of the Ceylon Department of Fisheries for 1962-63. Includes information on international assistance, disputes and regulations, loans to fishermen, cooperative societies, housing for fishermen, coastal navigation aids, and fishing harbors. Also covers fresh- and brackish-water fisheries, pearl fisheries, Mutwal fisheries factory and harbor, trawler fishing, and fisheries research. Included are statistical tables giving data on production of fresh-water and marine fish, mechanized fishing vessels, and imports and exports of fishery products for fiscal year October 1962-September 1963.

Bulletin of the Fisheries Research Station, Ceylon, vol. 17, no. 1, June 1964, 150 pp., illus., printed, single copy Rs. 5.00 (about US$1). Fisheries Research Station, Colombo, Ceylon. Includes these articles: "Socio-economic survey of fisher families, 1958-59," by G. N. De Silva; "A review of the parasitic copepods of fish recorded from Ceylon with descriptions of additional forms," by P. Kirtishighe; and "Assessment and possible development of the fishery resources of Pedro Bank," by S. Sivalingam.

CLAMS:
The following reports are available from the Division of Marine Fisheries, Department of Natural Resources, 15 Ashburton Pl., Boston 8, Mass.:

The Quahaug Fishery of Massachusetts (Including the Natural History of the Quahaug and a Discussion of Quahaug Farming), by David L. Belding, Marine Fisheries Series--No. 2, Contribution No. 5, 41 pp., illus., reprinted, 1964, 44 cents. Part I, covering the natural history of the quahaug, discusses its anatomy, early life history, the habits of the quahaug, the rate of growth, natural conditions affecting growth, and growth tables. Part II, concerning the quahaug fishery, describes the fishing grounds, industrial practices, laws pertaining to that clam, and quahaug culture.

The Soft-Shelled Clam Fishery of Massachusetts (Including the Natural History of the Soft-Shelled Clam and a Discussion of Sewage Pollution and Shellfish), by David L. Belding, Marine Fisheries Series--No. 1, Contribution No. 3, 65 pp., illus., reprinted, 43 cents, 1964. Part I, on natural history of the soft-shelled clam (Mya arenaria), covers distribution, anatomy, spawning, early life history, movements, enemies, growth, conditions regulating its growth, and growth tables. Part II, on clam culture, discusses clam farming, laws, operating the clam farm, and the clam set. Part III, on the Massachusetts clam fishery, covers history of the fishery, fishing grounds, the clam industry, and methods of improving the clam fishery. Part IV, on sewage pollution and shellfish, describes shellfish and disease, methods of determining polluted shellfish areas, shellfish pollution in Massachusetts, biological activities of the clam, and purification by chlorine treatment.

CLAMS AND OYSTERS:
A Report upon the Quahaug and Oyster Fisheries of Massachusetts (Including the Life History, Growth and Cultivation of the Quahaug--Venus mercenaria--and Observations on the Set of Oyster Spat in Wellfleet Bay), Contribution No. 12, 205 pp., illus., printed, 1964, 89 cents. Division of Marine Fisheries, Department of Natural Resources, 15 Ashburton Pl., Boston 8, Mass. The section devoted to the quahaug discusses the distribution and range of that clam; the anatomy and its relation to the quahaug's habits; and the spawning, early life history, reproduction, and propagation. Also covered are the habits of both young and adult, the rate of growth, the quahaug fishery--its present extent and possibilities, and the cultivation of quahaugs. The section on oyster spat includes information on the natural history of the American oyster (Ostrea virginica), methods of spat collection, spat conditions in Wellfleet Bay, collection of spat with a plankton net, spat-collecting experiments, and results of a spat survey in Wellfleet Bay in 1908.

COD:
"The effect of gear on spawning cod," by Gunnar Sundnes, article, World Fishing, vol. 13, July 1964, pp. 59-60, printed. John Trundell & Partners Ltd., St. Richard's House, Eversholt St., London NW1, England.

"Polyphosphate treatment of frozen cod. Protein extractability and lipid hydrolysis," by W. J. Dyer and others, article, Journal of the Fisheries Research Board of Canada, vol. 21, no. 1, Jan. 1964, pp. 101-106, illus., printed. Queen's Printer, Ottawa, Canada.

The following articles are from Rybnoe Khoziaistvo, 1962. Rybnoe Khoziaistvo, V. Krasnosel'skaia 17, B-140, Moscow, U.S.S.R.:

"Biologiya treski raionov Labradora i N'yufaundlenda" (Biology of the cod of the Labrador and Newfoundland regions), by A. I. Postolakii, pp. 345-354, printed in Russian with English summary.

"Nekotorye dannye po pitaniyu treski v N'yufaundlendskom raione Severo-Zapadnoi Atlantiki" (Some data on the food of cod in the Newfoundland region of the northwestern Atlantic), by O. A. Popova, pp. 235-253, printed in Russian with English summary.

"Pitanie treski v vodakh Zapadnoi Grenlandii" (The food of cod in West Greenland), by I. N. Sidorenko, pp. 255-261, printed in Russian with English summary.

"Razmernovozrastnoi sostav i nerest treski na yugo-zapadnom sklone banki Flemish-Kap" (Size and age composition and spawning of cod on the southeastern slope of the Flemish Cap), by E. M. Mankevich and V. S. Prokhorov, pp. 355-360, printed in Russian.

COMMISSIONS:
Gulf States Marine Fisheries Commission Fifteenth Annual Report, 1963-1964 (to the Congress of the

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

United States and to the Governor and Legislators of Alabama, Florida, Louisiana, Mississippi, and Texas), 44 pp., illus., printed. Gulf States Marine Fisheries Commission, 312 Audubon Bldg., New Orleans, La. 70112. Outlines the Commission's activities for the period Oct. 1963-Oct. 1964, with a summary of actions and recommendations. Describes briefly the activities of each of the member States during that period. Includes short discussions of U. S. Fish and Wildlife Service activities in shellfish, menhaden, bottomfish, and pelagic fish exploration; offshore gear research; faunal assessment; experiments in electrical stimulation of pink shrimp; and studies of spawning and population dynamics of shrimp. Also discusses the shrimp ecology program, estuarine program, industrial bottomfish studies, pesticides program, red tide program, biochemical studies of blue crab, studies of the botulism organism, standards and specifications program, the Inspection Service, marketing programs, and financial assistance to the commercial fishing industry. Also contains the financial report of the Commission for the year ended June 30, 1964.

CONGO REPUBLIC (BRAZZAVILLE):

Basic Data on the Economy of the Republic of Congo (Brazzaville), by Charles E. Rushing, OBR 64-100, 12 pp., illus., printed, Nov. 1964, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) The Congo has few natural resources and generally infertile soil. The agriculture is almost entirely oriented toward the production of foodstuffs for local consumption. The country's industrial production is relatively insignificant, limited to the wood industry, sugar refining, soap, beer, and canned fish. The report discusses general information on the two Congos, geography and climate, Government, population, and education; structure of the economy; agriculture; livestock; forestry; petroleum and mining; industry; and power supplies. Also covers transportation, communications, finance, foreign trade, program for economic development, marketing, and diplomatic representation between the Congo and the United States. A section on fishing and fish processing explains that most fishing is done along ocean beaches and river banks, and the catch is generally consumed by the African population. A new fishing operation has recently begun construction of a 1,500 ton freezing and temporary cold-storage plant for tuna which is shipped to the United States and Europe for canning.

COOLING:

"Cooling fish in ice and sea water," by J. Herrmann and A. Wolschon, article, Journal of the Science of Food and Agriculture, vol. 14, no. 12, 1963, p. ii 304, printed. Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

CRABS:

King Crab, PARALITHODES CAMTSCHATICA (Tilesius), Trawl Survey of Long Island Bank, East of Kodiak Island, Alaska, June 1963, by Richard E. Reynolds and Guy C. Powell, Informational Leaflet 44, 8 pp., illus., processed, Aug. 1964. Department of Fish and Game, Subport Bldg., Juneau, Alaska.

"Processing of canned crab from frozen material," by E. Tanikawa, M. Akiba, and T. Motohiro, article, Refrigeration, vol. 39, no. 437, Mar. 1964, pp. 1-10, illus., printed in Japanese. Nihon Reito Kyokai, No. 3, 1-Chome, Ginza Nishi, Chuo-ku, Tokyo, Japan.

The following reports, processed in Spanish, are part of the Serie: Trabajos de Divulgacion and are available from the Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico D. F.:

Claves de Identificacion de Cangrejos Grapsoideos de America (Key to the Identification of Grapsoid Crabs of America), by Mary J. Rathbun, vol. IX, no. 82, 47 pp., illus., Jan. 1964. (Translated from the English, The Grapsoid Crabs of America, Bulletin 97, U. S. National Museum, Washington, D. C., 1918.)

Claves de Identificacion para los Cangrejos Oxystomados de America (Key to the Identification of the Oxystomatous Crabs of America), by Mary J. Rathbun, vol. IX, no. 83, 21 pp., illus., Apr. 1964. (Translated from the English, The Oxystomatous and Allied Crabs of America, Bulletin No. 166, U. S. National Museum, Washington, D. C., 1937.)

CRAYFISH:

"Adaptation in stretch receptor neurons of crayfish," by Shigehiro Nakajima, article, Science, vol. 146, no. 3648, Nov. 27, 1964, pp. 1168-1170, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

CROAKER:

Studies on the Fishery Biology of the Yellow Croaker in the East China and the Yellow Seas, by Ikuo Ikeda, Bulletin No. 31, 80 pp., printed in Japanese with English summary, 1964. Sekai Regional Fisheries Research Laboratory, Suisan-cho Seikai-ku, Suisan Kenkyusho, Marvo-Machi, Nagasaki-shi, Japan.

CRUSTACEANS:

Lista Preliminar de los Crustaceos Existentes en el Laboratorio Central del I.N.I.B.P. (Preliminary List of the Crustaceans Living in the Central Laboratory of the National Institute for Fishery Biological Investigations), by Hector Chapa Saldana, Serie Trabajos de Divulgacion, no. IX, no. 87, 41 pp., processed in Spanish, Feb. 1964. Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

DENMARK:

Danmarks Fiskeri Erhverv (Denmark's Fishing Industry), Vol. I, edited by Anders Finsing, 473 pp., Apr. 1964; Vol. II, edited by Zinklar Zinglersen, 523 pp., October 1964, illus., printed in Danish, limited edition $90. Forlaget Liber A/S, Copenhagen, Denmark. Volume I consists of 10 sections preceded by a historical review of the fisheries. The sections include one or more articles by experts in the various fields. With a few exceptions most of the articles are historical and general in content. The sections cover the following subjects: (1) growth of fishing industry organizations--2 historical articles on the 2 largest organizations of fishermen; (2) the fishermen in art and culture--4 articles with more history and references to the stage, literature, and painting; (3) vessels

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

methods, and gear--4 general articles on vessel history, steel cutters, mechanization, and methods and gear; (4) allied services--articles on rescue services, rescue vessels, and weather and radio services; (5) trade and industry--12 articles on canning, filleting, industrial fish, fish meal and oil, pond trout culture, pond trout research, smoking, wholesaling and exporting, retailing, Copenhagen's Fish Market, fishery cooperatives, and present industry structure; (6) Greenland and the Faroes--2 general articles summarizing the fish and fisheries of Greenland and a brief review of the Faroese industry; (7) research--a 28-page explanation of research programs and progress; (8) insurance and financing--2 brief but descriptive articles on fishermen's accident insurance and vessel insurance, and one on industry financing; (9) education--a historical general discussion; and (10) administration and organizations--a listing of Fisheries Ministry officials, offices, laboratories, and other activities plus brief data on the 2 large fishermen's organizations and the national association of organizations, and on 14 smaller trade groups organized according to their producing, processing, and marketing interests. Volume II represents the first attempt to provide biographical and technical data on living persons engaged in the Danish fishing industry. About 4,800 persons are included, listed alphabetically by surname. The average sketch runs about 70 words, concluding with the current occupation and address. About one-third of the sketches include photographs. A spot check of the entries indicates that a great many are vessel skippers, simply because the Danish fishing fleet has over 4,000 motored vessels over 5 gross tons. However, other activities in the fishing industry also seem to be relatively well represented.

--A. W. Anderson

Fiskeriarbogen 1965 (The Fisheries Yearbook, 1965), edited by J. Fr. Simony, 861 pp., illus., printed in Danish, Nov. 1964, 13 Kr. (about US$1.90) plus 9 percent tax. Iver C. Weilbach & Company, Amaliegade 30, Copenhagen K, Denmark. A comprehensive collection of information on navigation, fishery rules and regulations, inspection, and other information, primarily for Danish, Faroese, and Greenland fishermen, but it also is used by yachtsmen and small craft. It is issued annually by the Ministry of Fisheries in December for the following year, the current issue being the 72nd edition. Subjects covered include the 1965 calendar; navigation tables, courses, and distances; rules of navigation and carrying of lights--harbor bylaws, buoyage, precautions with respect to submarine cables, light and signal stations, radio telephony, and telegraphy; and Acts and regulations governing the fishing industry (including the Northeast Atlantic Convention) in Denmark, Faroe Islands, and Greenland--control of quantity and exports of fish, fisheries statistics, and shipping. Also discussed are harbor signal letters and index of fishing vessels; Acts and regulations governing inspection of ships, ship construction and equipment, medical supplies, and medical examination of crews; fishery inspection and quarantine regulations; accident insurance; Acts concerning loans to the fishing industry; Acts and regulations about hunting; guidance on shipwrecks and accidents; institutions and addresses; and fish names and market classifications, courses, measures and weights. There is a detailed alphabetical index of the subject matter, and a list, by type of product, of the numerous trade advertisements in the Yearbook. The final section is an illustrated article "Aids to navigation (buoyage) in Danish Waters." The Nordic countries have agreed upon uniform colors for marking buoys. Danish authorities will carry out the changes in Danish waters in the spring of 1965.

--A. W. Anderson

DIRECTORIES:

Fisheries Year Book and Directory, 1964, 508 pp., illus., printed, $4.50 postpaid. British-Continental Trade Press Ltd., 222 Strand, London WC2, England. Contains short summaries of fishery landings and production in some of the leading countries of the world. After a short introductory chapter on the prospects for the world's fisheries, the book describes developments, landings, and production in the United Kingdom, United States, Japan, Iceland, the U.S.S.R., and the Federal Republic of Germany. Under the title of "Around the World," there are pithy summaries covering catches, foreign trade, processing, fishing fleets, and industrial products in 54 other countries from Algeria to Zanzibar. Under "Preservation of Fish" is described the work of the Torry Research Station (Aberdeen) and the Humber Laboratory (Hull). Progress in quick-freezing, packaging, and handling frozen fish is discussed. There are articles on (1) standards and requirements for handling, processing, and distribution of fish and quality control; (2) manufacture of fishing nets; (3) developments in fish meal. A chapter on the construction and design of fishing vessels describes features of interesting new vessels built in 1963, and lists the vessels built or under construction in various fishery countries. Includes a dictionary of fish names in eight languages; a fish supply calendar; a list of the fishery organizations throughout the world; a list of trade journals of interest to the fishery industry; a world directory giving the particulars of over 5,000 firms in 68 countries, including fishing companies, wholesalers, importers, canners, firms dealing in fish byproducts, suppliers (of machinery, equipment, and packing materials), and cold-storage and transport firms; a list of trade marks; and a classified guide for buyers. An unusual feature is photographic plates showing 9 stamps with fish designs issued by Vietnam and the Maldive Islands.

DOLPHINS:

"Microvibrations in man and dolphin," by Manfred Haider and Donald B. Lindsley, Science, vol. 146, no. 3648, Nov. 27, 1964, pp. 1181-1183, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

ELECTRICAL FISHING:

"Applications de la pêche électrique a la récolte d'animaux pour aquariums" (Application of electrical fishing methods in collecting animals for aquariums), by Pierre Lamarque, article, Ier Congres International d'Aquariologie, vol. D, pp. 109-115, printed in French with German and English summaries, 1963. Musee Oceanographique, Monaco-Ville, Monaco.

FATTY ACIDS:

"A comparative study on fatty acid composition of shellfish," by Y. Shimma and H. Taguchi, article,

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

Bulletin of the Japanese Society of Scientific Fisheries, vol. 30, 1964, p. 153, printed in Japanese. Japanese Society of Scientific Fisheries, Shiba-Kaigandori 6, Minato-ku, Tokyo, Japan.

"The effect of environmental temperature on the fatty acid composition of crustacean plankton," by Tibor Farkas and Sandor Herodek, article, Journal of Lipid Research, vol. 5, July 1964, pp. 369-373, printed. University Publishers, Inc., 59 E. 54th St., New York, N. Y. 10022.

"Fatty acid composition of vitamin A ester contained in fish liver oil," by T. Kinumaki, H. Taguchi, and K. Iwasaki, article, Chemical Abstracts, vol. 59, 1963, col. 15506, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

FISH-LIVER OIL:

"Some nutritional aspects of cod liver oil. I--Its essential fatty acid and hypocholesterolaemic activity," by S. A. Reed, article, Journal of the Science of Food and Agriculture, vol. 15, June 1964, pp. 399-407, printed. Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

FISH MEAL:

Fish Meal Bag Material vs. Spontaneous Heating, Progress Report No. 73, 4 pp., illus., printed, 1964. Fishing Industry Research Institute, University of Cape Town, Rondebosch, Cape Province, Republic of South Africa.

"Fish oil-solvent-water system examined for the foundation of the preparation of fatless fish meal," by K. Suzuki and K. Saruya, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 30, 1964, p. 37, printed in Japanese. Japanese Society of Scientific Fisheries, Shiba-Kaigandori 6, Minato-ku, Tokyo, Japan.

"Herring meal, antioxidants and the quality of meat--results of feeding experiments," by H. Astrup, H. Hvidsten, and L. Aure, article, News Summary, no. 15, Sept. 1964, pp. 54-64, processed in English with French, Spanish, and German summaries, limited distribution. International Association of Fish Meal Manufacturers, 70 Wigmore St., London W1, England.

"The influence of solvent extracted fish meal and stabilized fish oil in broiler rations on performance and on the flavor of broiler meat," by J. O. Hardin, J. L. Gilligan, and Virginia D. Sidwell, article, Poultry Science, vol. 43, July 1964, pp. 858-860, printed. Poultry Science Association, Kansas State College, Manhattan, Kans.

"Pepsin digestibility as an index of quality in fish meal. Part II--Some British studies," by J. A. Lovern, June Olley, and R. Pirie; "Some South African studies," by G. M. Dreosti, S. G. Wiechers, and W. J. Conradie, articles, Fishing News International, vol. 3, no. 4, Oct.-Dec. 1964, pp. 310, 312, 314-316, 318, illus., printed, single copy 6s. 6d. (about 95 U. S. cents). Arthur J. Heighway Publications, Ltd., Ludgate House, 110 Fleet St., London EC4, England. The British studies concluded that the sensitivity of the pepsin digestibility test can be greatly increased by drastic reduction in the strength of the pepsin solution, that is, to one thousandth of the standard in the AOAC (Association of Official Agricultural Chemists) method. Also, it is only possible to compare different types of fish meal by this test when allowance is made for the varying content of water-soluble nitrogenous material. Such "corrected" pepsin digestibilities appear to show a reasonable correlation with available lysine values. The South African studies showed that a crude relationship was found to exist in the practical application between available lysine and a function of digestibility and solubility of fish meal.

FISH OIL:

"Refining of crude commercial sardine oil," by D. P. Sen and others, article, Food Science, vol. 12, 1963, p. 189, printed. Central Food Technological Research Institute, Mysore, India.

FISH PROTEIN CONCENTRATE:

"Fish flour in replacement of dry buttermilk and soybean meal in starter rations for pigs," by J. C. Hillier, Ray Washam, and Lynn Byram, article, Feedstuffs, vol. 36, Aug. 22, 1964, pp. 58-59, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

The following articles appeared in News Summary, no. 15, Sept. 1964, processed in English with French, German, and Spanish summaries, limited distribution. International Association of Fish Meal Manufacturers, 70 Wigmore St., London W1, England:

"An assessment of nutritive value of fish flour in the treatment of convalescent Kwashiorkor patients," by P. J. Pretorius and A. S. Weymeyer, pp. 98-114.

"United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas--Fish flour production in Sweden," by Bo Hallgren, pp. 30-35.

FISH STOCKS:

"Biological aspects, their influence on future supplies," by H. A. Cole, article, Chemistry and Industry, no. 29, July 18, 1964, pp. 1293-1295, printed. Society of the Chemical Industry, 14 Belgrave Sq., London SW1, England.

FLORIDA:

Algunos Observaciones Preliminares Relacionadas con el Estudio de los Problemas de Venta de Pescado en la Florida (Some Preliminary Observations Related to the Study of the Problems of the Sale of Fish in Florida), by H. C. Osterbind, Serie: Trabajos de Divulgacion, vol. X, no. 91, 13 pp., processed in Spanish, Sept. 1964. (Translated from the English, Department of Economics and Commercial Studies, University of Florida.) Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

FOOD AND AGRICULTURE ORGANIZATION:

The Food and Agriculture Organization has published reports describing that Agency's activities under the Expanded Program for Technical Assistance for developing the fisheries of many countries. These reports have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

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

Report to the Government of the Federation of South Arabia on Tuna Longlining in the Gulf of Aden, by Tatsuso Suzuki, ETAP Report No. 1844, 31 pp., 1964.

First Report to the Government of Thailand on Fishing Boats, by Peter S. Hatfield, ETAP Report No. 1846, 95 pp., 1964.

Informe al Gobierno del Ecuador sobre Mejoramiento de los Metodos de Pesca y Mecanizacion de las Pesqueras Embarcaciones de Pesca Costera (Report to the Government of Ecuador on the Improvement in the Fishing Methods and Mechanization of the Fishing Vessels in the Coastal Fishery), by Erling Oswald, ETAP Report No. 1857, 40 pp., 1964.

Report to the Government of Libya on Fishery Administration and Planning, by Joseph J. Asciak, ETAP Report No. 1858, 18 pp., 1964.

FRANCE:
"Situation et perspectives de la pêche maritime" (Status and prospects of the marine fishery), article, La Pêche Maritime, vol. 43, no. 1040, Nov. 1964, pp. 781-783, illus., printed in French, single copy 14 F (about US$2.85). Les Editions Maritimes, 190 Blvd. Haussmann, Paris, France.

FREEZE-DRYING:
"Freeze-drying faces the future," by Roy V. Hughson, article, Chemical Engineering, vol. 71, July 20, 1964, pp. 155-160, printed. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York, N. Y. 10036.

FREEZING:
"Nitrogen extends horizons of freezing technology," article, Frosted Food Field, Aug. 1964, p. 14, printed. Frosted Food Field, 321 Broadway, New York, N. Y. 10007.

FRESH-WATER FISH:
The following articles are from Referativnii Zhurnal-Biologiia, 1963. Akademiia Nauk SSSR, Nauchnoi-Informatsii, Moscow, U.S.S.R.:

"Formirovanie rybnykh zapasov v vodokhranilishchakh SSSR" (Formation of fish stocks in USSR reservoirs), by P. A. Dryagin, No. 8187, printed in Russian.

"Osobennosti formirovaniya zapasov promyslovykh ryb v Volgogradskom vodokhranilische" (Characteristics of formation of stocks of commercial fish in the Volgograd reservoir), by A. N. Yakovleva, No. 8191, printed in Russian.

FROZEN FISH:
"Manipulacao de peixe congelado" (Handling of frozen fish), by A. R. Prater, article, Boletim de Estudos de Pesca, vol. 3, no. 6, June 1963, pp. 19-23, printed in Portuguese. Boletim de Estudos de Pesca, Rio de Janeiro, Brazil.

GEAR:
"New purse seine hauling system," article, World Fishing, vol. 13, June 1964, pp. 37-38, printed. John Trundell & Partners Ltd., St. Richard's House, Eversholt St., London NW1, England.

Technical Terms in Fishing Gear Materials and Gear Fabrication, by P. K. Eapen, 32 pp., illus., printed. (Reprinted from Fishery Technology, vol. 1, no. 1.) Government of India, Offshore Fishing Station, Cochin-5, India.

The following articles are from Pacific Fisherman, vol. 62. Miller Freeman Publications, 71 Columbia St., Seattle 4, Wash.:

"Iceland: world's first purse seiner with active rudder and bow-thruster," by W. Nitter Egenaes, July 1964, pp. 13-15.

"Robbie's hydraulic boom handles crab pots easily," Aug. 1964, pp. 22-23.

GEORGIA:
The following reports are published by Governor's Commission for Efficiency and Improvement in Government, Atlanta, Ga.:

The Georgia Game and Fish Department; Its Management and Operations, 26 pp., printed, 1964.

Management and Operations of the Georgia Game and Fish Department, by Seth Gordon, 113 pp., printed, 1964.

GHANA:
The following articles are from Fisheries Research Report, vol. 1, no. 2, 1962. Fisheries Inspectorate Unit, Accra, Ghana:

"Report on fitting outboard motors to Ghanaian fishing canoes (April 1959)," by G. C. Rawson, pp. 1-7.

"Report on population and earnings survey of Faana fishing villages of Accra (February-March 1961)," by H. S. Dua, pp. 8-26.

HALIBUT:
Halibut Preying on Large Crustacea, by George W. Gray, Jr., 1 p., illus., printed. (Reprinted from Copeia, no. 3, Sept. 10, 1964, p. 590.) American Society of Ichthyologists and Herpetologists, 18111 Nordhoff St., Northridge, Calif.

HAWAII:
Hawaii Marine Laboratory, University of Hawaii, by Albert H. Banner, Contribution No. 191, 3 pp., illus., printed. (Reprinted from American Zoologist, vol. 3, no. 3, Aug. 1963.) American Society of Zoologists, 104 Liberty St., Utica, N. Y. Discusses the history of the Laboratory and its administration; use by scientific researchers; and its ideal geographical location. Also discusses research on the biology of reef and inshore animals, current studies on systematics, embryology, ecology, behavior, and physiology of both invertebrates and fish; and programs with national-agency support including studies on toxicity of marine fish, ecological succession on submarine lava flows, investigation of trophic levels by means of isotopic tracers, and studies in marine parasitology. Also covers laboratory facilities at the Waikiki and Coconut Island laboratories, planned additional facilities, Laboratory publications, and collection of local marine animals.

HERRING:
"Chemical studies on the herring (Clupea harengus). X--Histidine and free sugars in herring flesh," by

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

R. B. Hughes, article, Journal of the Science of Food and Agriculture, vol. 15, May 1964, pp. 293-299, printed. Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

"Osobennosti raspredeleniya i sostoyanie chislennosti bankovykh sel'dei Severnogo morya v 1959 g." (Distribution characteristics and numerical abundance of the bank herring of the North Sea in 1959), by N. I. Skornyakov, article, Trudy Baltiiskogo Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khoziaistva i Okeanografii, vol. 7, 1961, pp. 50-58, printed in Russian. Trudy Baltiiskogo Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khoziaistva i Okeanografii, Verkhn. Krasnosel'skaia U1. No. 17, Moscow, U.S.S.R.

"Oxygen uptake of developing eggs and larvae of the herring (Clupea harengus)," by F. G. T. Holliday, J. H. S. Blaxter, and Reuben Lasker, article, Journal of the Marine Biological Association of the United Kingdom, vol. 44, no. 3, Oct. 1964, pp. 711-723, illus., printed, single copy $13.50. Cambridge University Press, 32 E. 57th St., New York, N. Y. 10022.

"Zavisimost'srokov neresta salaki ot ee plodovitosti" (Relationship of spawning time to fecundity in Baltic herring), by M. N. Krivobok, article, Trudy Vsesoiuznyi Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khoziaistva i Okeanografii, vol. 44, 1961, pp. 160-164, printed in Russian. Institut Morskogo Rybnogo Khoziaistva i Okeanografii, Verkhn. Krasnosel'skaia U1. No. 17, Moscow, U.S.S.R.

The following English translations from the Russian, Soviet Fisheries Investigations in North European Seas, 1960, are available from the Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food, Lowestoft, Suffolk, England:

The Distribution and Migrations of Summer Spawning Herring in the Norwegian Sea, by K. A. Lyamin, Translation No. N. S. 50, 6 pp., illus., printed, 1964.

The Dynamics of the Biological Condition of the Atlanto-Scandian Herring during the Summer Period, by D. A. Shubnikov, Translation No. N. S. 46, 10 pp., illus., printed, 1964.

Features of the Distribution, Growth, and Maturation of Herring of Certain Year-Classes in the Barents Sea, by I. V. Shutova-Korzh, Translation No. N. S. 49, 10 pp., printed, 1964.

Migrations of the Atlanto-Scandian Herring, by Yu. Yu. Marti, Translation No. N. S. 45, 11 pp., illus., printed, 1964.

Soviet Investigations Concerning Spawning Grounds of the Atlanto-Scandian Herring, by I. G. Yudanov, Translation No. N. S. 48, 18 pp., printed, 1964.

ICHTHYOLOGY:

Nomenclatura Ictiologica; Nombres Cientificos y Vulgares de los Peces Españoles (Ichthyological Nomenclature; Scientific and Common Names of Spanish Fish), Trabajos No. 31, 271 pp., printed in Spanish, 1963. Instituto Espanol de Oceanografia, Ministerio de Marina, 27 Alcalá, Madrid, Spain.

INDIA:

Gujarat Fisheries Central Co-Operative Association, Ltd., Annual Report, 1962/63, 1 vol., printed. Gujarat Fisheries Central Co-Operative Association, Ltd., Ahmedabad, India.

INDUSTRIAL PRODUCTS:

Un Desafio a la Industria de Harinas y Aceites de Pescado en el Golfo de Mexico (A Challenge to the Fish Meal and Oil Industry of the Gulf of Mexico), by John W. Reintjes and Fred C. June, Serie: Trabajos de Divulgacion, vol. VIII, no. 75, 14 pp., processed in Spanish, Nov. 1963. (Translated from the English, Proceedings of the Gulf and Caribbean Fisheries Institute, Thirteenth Annual Session, Nov. 1960, pp. 62-66.) Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

"Price recovery registered in industrial fisheries product market," by Clarence F. Winchester, article, Fishing Gazette, vol. 81, no. 13 (1964 Annual Review Number), pp. 112, 114-115, 183, printed. Brown & Ross, Inc., 17 Battery Pl., New York, N. Y. 10004.

Photocopies of the following patents may be obtained from the International Association of Fish Meal Manufacturers, 70 Wigmore, St., London W1, England:

"Process of Manufacture and Sterilisation of Meat Meals and Fish Meals," by C. Jouandel and A. Duval, French Patent 1,313,225, printed in French, Nov. 19, 1964.

Process for Treating Oil-Containing Animal Material, such as Fish and Fish Offal, by H. M. Ehlert, United States Patent 3,041,174, printed in English, June 26, 1962.

Apparatus for Sterilising Fish Meal or Meat Meal, by R. Christiansen, German Patent 1,132,788, printed in German, July 5, 1962.

Process for Sterilising Fish Meal or Meat Meal, by R. Christiansen, German Patent 1,134,574, printed in German, Aug. 9, 1962.

Process for Solvent Recovery from the Miscella Obtained in the Extraction of Fish Pulp or Fish Meal with a Water-Soluble Organic Solvent, such as Ethyl Alcohol, by E. Fleming and R. Druger, German Patent 1,136,895, printed in German, Sept. 20, 1962.

Production of Fish Protein, by R. J. Moshy, Canadian Patent 663,559, printed in English and French, May 21, 1963.

INSPECTION:

Regulations Governing the Inspection of Canned Fish and Shellfish and the Operation of Canneries, 41 pp., processed, Oct. 1964. Department of Fisheries, Ottawa, Canada. These regulations, cited as the canned fish and shellfish inspection regulations, cover interpretation of terms, general provisions, labeling, chicken haddie or flaked fish, clams and mussels, crabs, finnan haddie, gaspereau, herring, lobster, mackerel, pollock, salmon (Atlantic), salmon (Pacific), sardines, shad, shrimp cocktail, and tuna. Requirements for each species are designated under fancy, standard, and commercial grades.

Regulations Respecting the Inspection of Processed Fish and Processing Establishments, 44 pp., processed, Oct. 1964. Department of Fisheries, Ottawa, Canada.

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

These regulations, cited as the fish inspection regulations, cover interpretation of terms, general provisions, labeling, pickled fish, smoked fish, salted fish, fresh and frozen fish, smelts, oysters, scallops, breaded fish, and whitefish. Also included are Schedule A--requirements for pickled, marinated, salted, and smoked fish plants; Schedule B--construction and equipment requirements for fresh and frozen fish-processing establishments; Schedule C--operating requirements for fresh and frozen fish-processing establishments; and Schedule D--requirements for establishments storing frozen fish.

ADIATION PRESERVATION:
ood preservation by ionizing radiations. I--The combined effects of ionizing radiation and smoking on fish meat preservation," by Byung Sun Cnung, article. Bulletin of Fisheries College, Pusan National University, vol. 5, Sept. 1963, pp. 45-51, printed. Fisheries College, Pusan National University, Pusan, Korea.

APAN:
ulletin of the Faculty of Fisheries, Nagasaki University, no. 17, Sept. 1964, 144 pp., illus., printed in Japanese with English summaries. The Faculty of Fisheries, Nagasaki University, Nagasaki, Japan. "Studies on a marine viviparous teleost, Ditrema temmincki Bleeker. IV--On the origin of oocystes of Ditrem temmincki, Sebastiscus marmoratus and Sebastes inermis," by Kazuhiro Mizue; "Studies on the little toothed whales in the west sea area of Kyusyu. X--About Prodelphinus sp. so-called 'Hashinaga-iruka' in Japan caught in the sea area around Goto Is., Nagasaki Pref.," by Kazuhiro Mizue, Kazumoto Yoshida, and Seizaburo Sonoda; "Analysis of fish-finder records. V--On winter shrimp trawl in the Yellow Sea (1)," by Deishi Shibata; "Freeze-preservation of Porphyra thalli in viable state. I--Viability of Porphyra tenera preserved at low temperature after freezing in the sea water and freezing under half-dried conditions; "Studies on Penaeus orientalis Kishinouye. I--Seminal mechanism and its function," by Masao Oka and Soichiro Shirahata; "Studies on the little toothed whales in the west sea area of Kyushu. XI--On the fatty alcohols of head oils from a porpoise and some dolphins," by Ryoiti Kanazu and Tadanobu Fukuhara; and "Studies on the decree of fishery-ground in Meiji," by Shigeshi Aotuka.

he Canners Journal, vol. 43, no. 10 (special statistical issue), 1964, 160 pp., illus., printed in Japanese. Japan Canners Association, Tokyo, Japan. Presents, in addition to articles of interest to the canning and food industries, statistical tables on shifts in production and exports of canned foods in Japan, 1954-63; shifts in consumption of canned foods, 1957-63; production of canned foods, actual and standard cases, 1948-55; exports of canned foods, actual and standard cases, 1948-55; and production of canned foods by kinds and can-types (round cans), Jan.-Dec. 1963. Also includes data on production of canned fishery products by prefectures, Jan.-Dec. 1963; exports of major canned foods by destinations, Jan.-Dec. 1963; exports and value of canned foods, 1959-63; wholesale prices of major marine products for 1963; catches of major fishery products, 1959-63; catches of whales, 1959-63; and production of tinplate by major Japanese manufacturers.

Japanese Fisheries Resource Conservation Association Major Activities in FY 1963, 24 pp., printed, Oct. 1964. Japanese Fisheries Resource Conservation Association, c/o Futaba Bldg., 24, Nishikubo, Sakuragawa-cho, Minato-ku, Tokyo, Japan.

Statistic Tables of Fishing Vessels (as of the End of 1963), General Report No. 16, 309 pp., printed in Japanese and English. Japanese Fisheries Agency, Tokyo, Japan. An annual report containing statistical data in detail on the various types of Japanese fishing craft, both powered and nonpowered, as obtained by a fishery registration system.

The following issues are published by Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Tokyo, Japan:

Bulletin of the Japanese Society of Scientific Fisheries, vol. 30, no. 7, July 1964, 75 pp., illus., printed in Japanese with English summaries. Contains, among others, articles on: "A transient glucosuria (Diabetes Mellitus) of rainbow-trout (Salmo irideus) induced by bovine growth hormone injection," by Yoshimasa Enomoto; "A preliminary experiment on the growth promoting effect of growth hormone with thyroid-stimulating hormone and prolactin to the young rainbow-trout (Salmo irideus)," by Yoshimasa Enomoto; "Studies on the oil pollution of the fishing ground in Seto Inland Sea. I--Distribution of oily wastes in the Sea," by Hitomi Sugimoto, Masaya Suzuki, and Osamu Takeuchi; "Frequency distribution of hauls by the Danish seiners in the Bristol Bay with respect to catch in tons," by Hiroshi Maeda and Shiro Minami; "On the cause of annual variation of fishing condition of big-eyed tuna in the area from Marshall Islands to Palmyra Island. VI--Relation between longline catch-rate and dominant age group and year the dominant age group was spawned." by Jun Nakagome; "Preparation of fatless fish meal by solvent extraction," by Kosaku Suzuki and Kuman Saruya; "Quality of Kombu, one of the edible seaweeds, belonging to the Laminariaceae. VIII--Conditions for extraction of total and amino-nitrogens with aqueous ethanol," by Ayako Okumura, Keiichi Oishi, and Kiichi Murata; and "A simple method for the determination of metmyoglobin content in tuna meat," by Kazuo Ando.

Bulletin of the Japanese Society of Scientific Fisheries, vol. 30, no. 8, Aug. 1964, 120 pp., illus., printed in Japanese with English summaries. Includes, among others, these articles: "Granographical life record curve method for identifying each stock of pelagic fishes. VII--Identification of sardine stocks in coastal waters of Japan, 1938-48," by Hideaki Yasuda; "Egg development and prolarval stages of the turbot, Pleuronichthys cornutus (Temminck et Schlegel)," by Toru Takita and Shiro Fujita; and "Studies on fishing conditions of the dolphin, Coryphaena hippurus L., in the western regions of the Sea of Japan. IX--Quantitative analysis on stomach contents," by Shumpei Kojima; and "Distribution pattern of groundfishes hooked along a row of setline in the shallower part of the continental slope in the Bering Sea. III--Distribution near the outer edge of the continental shelf," by Hiroshi Maeda.

Bulletin of the Japanese Society of Scientific Fisheries, vol. 30, no. 9, Sept. 1964, 95 pp., illus., printed in Japanese with English summaries. Includes, among others, these articles: "Studies on reproduction of rainbow trout, Salmo gairdneri, with special reference to egg taking. VI--The activities of spermatozoa

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

in different diluents, and preservation of semen," by Minoru Nomura; "On the population and migration of adult red salmon in the western parts of the North Pacific and Bering Sea, as estimated by age composition," by Akira Ochiai and Toranosuke Yoshimitsu; "Studies on the propagation of abalone, Haliotis diversicolor supertexta Lischke. I--On the spawning habits," by Toshio Oba; "Studies on the antisepsis for agar during the manufacturing process in the mild winter. XI--On the causative bacteria on the 'Dankan' phenomenon, the spoilage of 'Tokoroten' and agar," by Hiroaki Fujisawa; "Studies on the behavior and the effect of some preservatives in fish products. I--Behavior of tylosin in fish products on the basis of antibacterial action," by Motonobu Yokoseki and others; "Distribution of Vibrio parahaemolyticus in plankton and fish in the open sea," by Susumu Horie and others; and "Denaturation of fish muscle proteins by freezing," by Taneko Suzuki.

KELP:

"Harvesting brown kelp--new industry for Tasmania," by P. C. Pownall, article, Fisheries Newsletter, vol. 23, no. 11, Nov. 1964, pp. 11, 13, 15, illus., printed. Fisheries Branch, Department of Primary Industry, Canberra, Australia. Extensive beds of giant brown kelp (Macrocystis pyrofera), which a 1950 survey indicated could yield approximately 355,000 tons of wet weed a year, form the basis of a new alginates industry established on the East Coast of Tasmania. The kelp will be processed at a modern plant near the fishing port of Triabunna, and planned production is adequate to meet Australian requirements. Brown kelp is a natural source of sodium alginate (in its pure form a white powder) for which there is a worldwide demand. Alginates are used primarily in foods, pharmaceutical and cosmetic preparations, and in a variety of industrial products. Alginic acid is an unusual compound found only in brown seaweeds. It is used as a thickening agent in foodstuffs, medicines, and textile printing.

KOREA:

Korean Inspection Laws of Fishery Products (A Guide for Foreign Traders and Distributors), Inspection Service Series No. 1, 15 pp., illus., printed, 1964. Central Fisheries Inspection Station, Ministry of Agriculture and Forestry, 103 Wunnam-Dong, Congro-Ku, Seoul, Korea. Contains information on development of the Korean fishery products inspection system; types of inspection performed--continuous inspection, each piece inspection, and random sampling inspection; organization and functions of the Central Fisheries Inspection Station; text of the fishery products inspection law of 1962; other decrees and ordinances pertaining to fishery products inspection; and a copy of the inspection certificate.

LIVESTOCK NUTRITION:

"The nutrition of the early-weaned calf. VII--The relative value of four different fish meal products as the major protein source in the diet," by F. G. Whitelaw, T. R. Preston, and N. A. MacLeod, article, News Summary, no. 15, Sept. 1964, pp. 90-98, processed in English with French, German, and Spanish summaries, limited distribution. International Association of Fish Meal Manufacturers, 70 Wigmore St., London W1, England.

LOBSTERS:

"The economics of lobster fishing," by R. D. Leakey, article, Fishing News, no. 2688, Dec. 11, 1964, pp. 6, 7, illus., printed, single copy 9d. (about 15 U. S. cents). Arthur J. Heighway Publications Ltd., 110 Fleet St., London EC4, England. "The yardstick of efficient fishing is simply how much a lobster fisherman earns an hour for his effort... . In terms of value for labor, therefore, it is more efficient to buy pots than to make them even when there is as big a difference as £2 (US$5.60) to set against the bought pots... . Incidentally, a pot for quick fishing must have a large, easy entrance--which all too often is also an easy exit... . Slow moving shellfish are best caught profitably with a large number of pots left down for as long as the bait can be kept fresh and in place... . Just how important the cost of your gear is in relation to time, is only appreciated when you work out how soon a lobster pot pays for itself in value of caught lobsters," states the author. He suggests the use of a power-driven pulley on the vessel to assist in servicing pots more rapidly and thus more economically.

"Quality changes in vacuum-packed and nonvacuum-packed frozen lobster meat during storage at different temperatures," by W. A. Murphy and H. L. Newson, Canadian Fisheries Report, no. 2, 1963, pp. 29-32, printed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada.

A Study of the Hatching Process in Aquatic Invertebrates. XIII--Events of Eclosion in the American Lobster, HOMARUS AMERICANUS Milne-Edwards (Astacura, Homaridae), by Charles C. Davis, Contribution No. 2, 8 pp., illus., printed. (Reprinted from The American Midland Naturalist, vol. 72, no. 1, July 1964, pp. 203-210.) Division of Marine Fisheries, Massachusetts Department of Natural Resources, 15 Ashburton Pl., Boston 8, Mass.

MARINE AIDS:

Light List, Vol. III--Pacific Coast and Pacific Islands, 303 pp., illus., printed, 1964, $2. U. S. Coast Guard, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Contains a list of lights, fog signals, buoys, daybeacons, lightships, radiobeacons, and loran stations for the Pacific Coast and Pacific Islands.

MARINE BORERS:

El Teredo (The Teredo), by Charles E. Lane, Serie; Trabajos de Divulgacion, vol. VIII, no. 76, 14 pp., illus., processed in Spanish, Nov. 1963. (Translated from the English, Scientific American, vol. 204, no. 2, Feb. 1961.) Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

MARINE ENGINES:

"Selection of marine engines under 50 hp.," by E. Kvaran, article, Fishing News International, vol. 3, Apr.-June 1964, pp. 48-59, printed. Arthur J. Heighway Publications, Ltd., Ludgate House, 110 Fleet St., London EC4, England.

MARINE MAMMALS:

Notas sobre Mamiferos Acuaticos (Notes on Aquatic Mammals), by Daniel Lluch Belda, Serie Trabajos de

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

Divulgacion, vol. IX, no. 85, 10 pp., processed in Spanish, June 1964. Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

ASSACHUSETTS:
ollowing issued by Commonwealth of Massachusetts, Department of Natural Resources, Division of Marine Fisheries, 15 Ashburton Pl., Boston 8, Mass.:

lueprint for Tomorrow, by Hal Lyman, 4 pp., illus., printed. (Reprinted from Salt Water Sportsman.) n Massachusetts, sport and commercial fisheries nterests join forces to chart a modern approach o ancient problems.

eport Relative to the Coastal Wetlands in the Commonwealth, and Certain Shellfish Grants (under Chapter 75 of the Resolves of 1962), Document No. 635, 22 pp., printed, 1963.

ivision of Marine Fisheries, Annual Report, Fiscal Year July 1, 1962-June 30, 1963, 74 pp., illus., processed, Sept. 1, 1963. Discusses accomplishments of the Division of Marine Fisheries during 1962/63 in marine fisheries administration; Marine Fisheries Advisory Commission; lobster fishery statistics; sea crab fishery; shore, net, and crab fishery; Massachusetts landings; commercial permits and certificates; sport fishing survey; and present status of proposed legislation affecting marine fisheries in 1963. Also covers research and management work in lobster research, lobster measurements, shellfish work, coastal wetlands study, finfish, estimate of the volume of alewife fishery, alewife propagation 1963, flounder tagging summary, and Newburyport Shellfish Purification Plant. In addition, covers shellfish production for 1962, summary of diggers, appraisal of coastal or marine engineering projects, sanitation program, detergents and cleansing agents approved by the Director of Marine Fisheries, and Estuarine research program. Also includes a progress report relative to the management of the blackback flounder fishery in Massachusetts.

eneral Laws Relating to Marine Fish and Fisheries, Chapter 130, As Amended Through 1963 (Special Laws on Torching, Dragging and Other Marine Fisheries Subjects Not Included), 45 pp., printed. Includes State laws covered under general provisions; miscellaneous powers and duties of Director, coastal wardens, etc., pollution of coastal waters; riparian proprietors; regulation of fish weirs, nets, seines, trawls, and traps; annual reports of catches; smelt; lobsters, etc.; local control of shellfisheries; private shellfish grants; certain shellfish; shellfish in contaminated areas; purification plants; commercial permits and certificates; inspection of fish; herring, alewives, etc.; and miscellaneous provisions such as minimum length for fish taken from coastal waters.

pecial Report of the Department of Natural Resources Relative to Restricting the Use of Beam or Otter Trawls, the Appointment, Powers and Duties of Shellfish Constables, the Control and Eradication of Dogfish, the Taking of Lobsters, and the Enforcement of Certain Laws Relative to Fish by Local Police, Under Chapter 43 of the Resolves of 1963, 141 pp., illus., printed, 1964. Contains Minutes of the Marine Fisheries Advisory Commission Public Hearing, Gloucester, Mass., May 22, 1963; a report on a suit brought by the Commonwealth against defendants charged with violating the Acts which prohibit the use of otter trawls in certain parts of the territorial waters; study of the groundfisheries; value of groundfish caught during the study; silver hake study; the line trawl fishery study; report of dragging on bottom life and on the bottom; and report on the study area as the spawning and nursery grounds for species of sports and commercial importance. Also includes a study of the lobster fishery; proposed legislation relative to taking fish by otter trawl in certain coastal waters; statement submitted by Gloucester Fishermen's Cooperative Association pertaining to use of otter trawls; an Act authorizing and directing the Division of Marine Fisheries to establish and maintain a dogfish nuisance control and eradication program; an Act relative to the taking of lobsters; an Act permitting local police officers to enforce certain laws relative to fish and their authority in relation thereto; and an Act relative to the appointment of a shellfish constable or shellfish supervisor and his duties and powers.

MEXICO:
La Isla de Guadalupe, Mexico. Contribucion al Conocimiento de sus Recursos Naturales Renovables (The Island of Guadalupe, Mexico. Contribution to the Knowledge of Its Renewable Natural Resources), by Julio Berdegue A., 80 pp., illus., printed in Spanish, 1957. Direccion General de Pesca e Industrias Conexas, Secretaria de Marina, Mexico, D. F.

"Mexico's fisheries projects could mean Canadian sales," by J. E. G. Gibson, article, Foreign Trade, vol. 122, no. 7, Oct. 3, 1964, pp. 26-28, illus., printed, single copy 25 Canadian cents. Queen's Printer, Government Printing Bureau, Ottawa, Canada. Millions of dollars are being spent on modernizing and expanding Mexico's fishing industry--much of it on new equipment that Canadian manufacturers could supply, according to the author. Mexico's plans to modernize its fisheries include: establishing marine biological research stations; exploring and charting the coastline; training workers in all aspects of the fishing industry; opening a fish meal plant at Alvarado late in 1964; providing loans for the fishing cooperatives to help them increase their fleets and improve their facilities; building a pilot fishing port on the Gulf of Mexico with a five-boat, all-purpose fleet, wharves and channels, processing plants, and research facilities; and sponsoring a travelling exhibition of the country's sea resources, the Salon del Mar, as part of a program to encourage Mexicans to eat more fish.

The following reports, processed in Spanish, are issued in the Serie: Trabajos de Divulgacion, and are available from the Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.:

Condiciones que guarda el aprovechamiento de los Recursos Pesqueros en los Estados de Tabasco, Chiapas y Porcion Istmica de Oaxaca y Veracruz (Conditions

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

which Assure the Utilization of the Fisheries Resources of the States of Tabasco, Chiapas, and the Isthmian Portion of Oaxaca and Veracruz), by Aurelio Solorzano P., vol. VIII, no. 72, 33 pp., illus., Oct. 1963.

Informe sobre la Situacion Pesquera del Estado de Oaxaca. Apuntes para la Programacion de ese Renglon Economico Estatal (Report on the Fishery Situation in the State of Oaxaca. Memoranda on the Planning of this item in the State Economy), by Aurelio Solarzano Preciado, vol. VIII, no. 74, 41 pp., Oct. 1963.

Investigaciones Pesqueras en el Pacifico (Fishery Investigations in the Pacific), by Cardenas Figueroa, vol. VII, no. 63, 38 pp., illus., June 1963.

Prospeccion Pesquera en Avion (Fishery Exploration by Airplane), by Hector Chapa Saldana, vol. II, no. 20, 17 pp., illus., Oct. 1961.

Proyecto de Fomento Pesquero para Ayudar a la Rehabilitacion Economica de la Tribu Seri (Fishery Development Project to Help in the Economic Rehabilitation of the Seri Tribe), by Rodolfo Ramirez Granados, vol. III, no. 26, 18 pp., June 1962.

Usion Biologico Pesquera y Conservacion (Uses of Fishery Biology and Conservation), by Mauro Cardenas Figueroa, vol. VI, no. 56, 21 pp., May 1963.

MILT:

"Growth inhibitory effect of extracts from milt (testis) of different fishes and of pure protamines on microorganisms," by Olaf R. Braekkan and Gjermund Boge, article, Fiskeridirektoratets Skrifter Serie Teknologiske undersokelser, vol. 4, no. 6, 1964, 22 pp., printed. Fiskeridirektoratet, Bergen, Norway.

MINK RATIONS:

"Feeding with herring waste. Trials on the use of herring waste in mink feeding," by K. S. Thomsen, article, Dansk Pelsdyravl, vol. 26, 1963, p. 431, printed in Danish. Dansk Pelsdyravl, Sdeasdy 8, Copenhagen, Denmark.

NORTHWEST ATLANTIC:

Las Pesquerias del Atlantico Noroeste y el Convenio de Washington (The Northwest Atlantic Fisheries and the Washington Convention), by Olegario Rodriguez, 103 pp., illus., printed in Spanish, Dec. 1961. Direccion General de Pesca Maritima, Subsecretaria de la Marina Mercante, Madrid, Spain.

NORTHWEST EUROPE:

Havfisk og Fiskeri i Nordvesteuropa (Ocean Fish and Fisheries in Northwest Europe), by Bent J. Muus and Preben Dahlstrøm, 244 pp., illus., printed in Danish, Nov. 1964, hard cover 38.50 Kr., paperback 29.75 Kr. (about US$5.60 and $4.30). G. E. C. Gad, Vimmelskaftet 32, Copenhagen, Denmark. This beautifully illustrated and excellently written handbook on the fish of the Northeastern Atlantic Ocean is outstanding in the field of popular, semitechnical reference books. Despite the fact it is written in Danish, the illustrations of the fish, their food, their habitat, the gear with which they are taken, and the commercial uses to which the fish are put, are so colorful and clear that any non-Danish reader will get full value for his money, even in the illustrations alone. The accompanying text discusses, in simple terms, the life histories of the fish, where and how they are caught, and many other interesting facts.

The pocket-size book contains illustrations in 6 colors of 173 species of fish. In most instances the large illustration of the mature fish is surrounded by smaller sketches in color of its special characteristics, younger stages, most important food, and the area it inhabits. Also included are the various types of gear and vessels used in its capture, and the end result--an iced, frozen, salted, smoked, canned or otherwise processed or preserved product. The small sketches alone number over 800.

There are nine brief illustrated chapters or sections in addition to the 179 pages devoted to the "Descriptions and Illustrations" of fish. "Portrait of a Fish" describes the skin, scales, organs, senses, colors, form, and swimming. "The Fish's Life" includes schooling, migrations, spawning, development, growth, age, food, plankton and food chains, habitat, and hydrography. "Keys" to the more important groups are so clearly illustrated that identifying a fish belonging to these groups is a simple matter. "History of the Fisheries" briefly touches upon significant events from ancient times to the present. "Fishing Methods" depicts and describes all of the significant types of gear (including a powerblock and an air-bubble curtain) and present day fishing vessels and their electronic equipment. "Utilization of the Fish" explains the usual processing techniques. "Fishery Biology" touches on determination of age and growth, food research, tagging, races and stocks, recruitment, and assessment. "Name Index" includes two alphabetical lists (one of fish names in Danish and one in Latin). "Literature Reference" lists one Swedish, one Norwegian, and three Danish works on fisheries.

The author, Bent Muus, is a biologist at Denmark's Fisheries and Marine Research Institute at Charlottenlund, just north of Copenhagen. The illustrator, Preben Dahlstrøm, has illustrated a number of natural history books. Together they have turned out a work which is an unusual combination of popular appeal, technical information, and the printer's art. It should rank high as a Danish contribution to fishery books.

--A. W. Anderson

NUTRITION:

"The effect of a supplementary protein food containing fish flour, groundnut flour and Bengal gram flour and fortified with vitamins on the growth and nutritional status of children," by T. R. Doraiswany and others, article, Indian Journal of Pediatrics, vol. 30, 1963, p. 266, printed. Indian Pediatric Society, 56/2 Creek Row, Calcutta, India.

OCEANOGRAPHIC EQUIPMENT:

"A hydraulically actuated safety device," by Peter L. Sachs, article, Journal of Marine Research, vol. 22, no. 1, 1964, pp. 105-109, illus., printed. Sears Foundation for Marine Research, Bingham Oceanographic Laboratory, Yale University, New Haven, Conn. Reduces accidental premature operation of oceanographic samplers.

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

OCEANOGRAPHY:

A Bibliography of Articles Pertinent to Marine Primary Productivity, compiled by Maxwell S. Doty, TID-3913, 31 pp., processed, Oct. 1963, 75 cents. Division of Technical Information, U. S. Atomic Energy Commission, Washington, D. C. (For sale by the Office of Technical Services, U. S. Department of Commerce, Washington, D. C. 20230.)

"Flip: an oceanographic buoy," by Philip Rudnick, article, Science, vol. 146, no. 3649, Dec. 4, 1964, pp. 1268-1273, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005. Discusses in detail the construction and functions of the large manned spar buoy "Flip" (Floating Instrument Platform) used by the Scripps Institution of Oceanography. Reasonably mobile, it is towable in the horizontal position. When vertical it is an acoustically quiet platform of great stability extending simultaneously to 90 meters below and 17 meters above the sea surface. Once "Flip" was planned, it was evident that she would have important uses beyond the initial project not only for instrumental investigations of the uppermost 90-meter layer of the ocean, but as a more nearly stationary support from which to lower instruments by cable into the deeper layers. The hull, 315 feet (95 meters) long, is joined to a boxlike structure which serves as a bow when the buoy is horizontal and as a superstructure when it is vertical. The superstructure contains, in addition to fuel and freshwater tanks, four compartments which are used in both horizontal and vertical positions and constitute the inhabited part of the buoy. Power for the two air compressors is supplied by two 60 kw. diesel-driven generators. The buoy has no self-propulsion, but is fitted with two propellors mounted near the center of the hull and driven by hydraulic motors which maintain it in any desired position. "Flip" is manned by a crew of seven. Most work thus far has involved her response to wave action.

Oceanographic Cruise USCGC NORTHWIND, Bering & Chukchi Seas, July-Sept. 1962, Oceanographic Report No. 1, CG373-1, 111 pp., illus., printed, 1964, $1.50. U. S. Coast Guard, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.)

Oceanographic Observations, North Atlantic Ocean Station Delta, 44°N. 41°W., March-Apr. 1963, by J. W. McGary and R. M. Morse, Oceanographic Report No. 3, CG 373-3, 35 pp., illus., printed, 1964. U. S. Coast Guard, Washington, D. C.

Oceanographic Observations - North Atlantic Ocean Station Echo, 35°N. 48°W., Jan.-Feb. 1963, by R. M. Morse and J. W. McGary, Oceanographic Report No. 2, CG 373-2, 36 pp., illus., printed, 1964. U. S. Coast Guard, Washington, D. C.

"Oceanography: cost-effectiveness technique employed to support case for basic research program," by D. S. Greenberg, article, Science, vol. 146, no. 3652, Dec. 25, 1964, pp. 1659-1660, printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005. Discusses a report by the Committee on Oceanography of the National Academy of Sciences-National Research Council supporting the thesis that oceanographic research can be expected to produce an attractive economic return. It concludes that an annual nondefense expenditure of $165 million over the next 10 to 15 years (the current figure is $138 million) could be essential in saving $3 billion a year (principally through conservation practices) and in adding annual production of about another $3 billion. To reach this conclusion, the committee not only took up the obvious matter of fish and minerals; it went even farther afield and estimated that oceanography's contributions to weather forecasting could produce substantial savings for cattle and hog producers.

Oceanography and Marine Biology: an Annual Review, vol. 2, edited by Harold Barnes, 548 pp., printed, 1964, 75s. (about US$10.50). George Allen and Unwin, Ltd., 40 Museum St., London WC1, England.

Second Annual Report, 1963, 16 pp., printed, 1963. Canadian Oceanographic Data Centre, Ottawa, Canada.

OCEAN PERCH:

The following articles are from Rybnoe Khoziaistvo, 1962. Rybnoe Khoziaistvo, V. Krasnoselskaia 17, B-140, Moscow, U.S.S.R.

"O gruppirovkakh okunya-klyuvacha (Sebastes mentella Travin) v Labradorsko-Nyufaundlendskom raione" (On the stocks of deepwater redfish--Sebastes mentella--in the Labrador-Newfoundland region), by K. P. Yanulov, pp. 285-296, printed in Russian with English summary.

"Razmerno-vozrastnoi sostav okunyaklyuvacha Severo-Zapadnoi Atlantiki" (Size and age composition of Sebastes mentella Travin of the northwestern Atlantic), by E. I. Surkova, pp. 297-311, printed in Russian with English summary.

OYSTERS:

"Louisiana leads in oyster production!" by Lyle St. Amant, article, Louisiana Conservationist, vol. 17, nos. 1 & 2, Jan.-Feb. 1965, pp. 14-17, illus., printed. Louisiana Conservationist, Wild Life & Fisheries Bldg., 400 Royal St., New Orleans, La. 70130. Louisiana produced 20 percent of all the oysters in the United States in 1963, placing her in the number one position. However total production in the United States was down by 11 percent during the five-year period 1959-63. Louisiana has a large oyster-growing area with mostly optimum characteristics for oyster production, but faces many problems in this industry. Predators, pollution, and high salinity are grave dangers to this mollusk. Culture from seed oysters is practiced in many areas. Rapid growth of oysters in warm waters makes it possible for the oysterman to plant seed oysters in the fall and harvest them in the spring.

"Total solids in oysters," by Norman W. Durrant, article, Journal of the Association of Official Agricultural Chemists, vol. 46, Aug. 1963, pp. 744-746, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington, D. C. 20004.

PACKAGING:

A New Device for Testing the Airtightness of Fish Preserve Packaging, by L. M. Kazakov, Translation No.

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

I-4193, 5 pp., printed. (Translated from the Russian, Rybnoye Khozyaystvo, vol. 37, no. 1, 1961.) Headquarters, Dept. of the Army, Office, Assistant Chief of Staff for Intelligence, Washington 25, D. C.

"Packaging requirements for irradiated fishery products," by Louis J. Ronsivalli and John A. Peters, article, Fishing Gazette, vol. 81, no. 13 (1964 Annual Review Number), pp. 134, 136, 138, printed. Brown & Ross, Inc., 17 Battery Pl., New York, N. Y. 10004.

PARASITES:

A Second List of Parasites from Marine and Coastal Animals of Florida, by Robert F. Hutton, 9 pp., printed, 1964. (Reprinted from Transaction of the American Microscopical Society, vol. 83, no. 4, 1964, pp. 439-447.) American Microscopical Society, 50 E. Broad St., Columbus, Ohio.

PITUITARY GLAND:

The Pituitary Gland and Its Relation to the Reproduction of Fishes in Nature and in Captivity, An Annotated Bibliography for the Years 1956-1963, compiled by James W. Atz and Grace E. Pickford, Fisheries Biology Technical Paper No. 37, 65 pp., processed in English with French and Spanish introductions, Apr. 1964. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

PLANKTON:

Apuntes Preliminares sobre Tecnicas Planctonologicas (Preliminary Memoranda on Planktonological Techniques), by Maria Luisa Sevilla, Publicacion No. 9, 30 pp., illus., printed in Spanish, 1964. Instituto Nacional de Investigaciones Biologico Pesqueras, Comision Nacional Consultiva de Pesca, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

POLAND:

"Sea Fishing Act" (Ustawa o Rybolowstwie Morskim), 21 May 1963; Dziennik Ustaw Polskiej Rzeczypospolitej Ludowej No. 22, 28 May 1963, p. 270, Text 115, Food and Agricultural Legislation, vol. XIII, no. 1, Sept. 1964, Poland, XVI/3, 10 pp., printed, single copy $1. Columbia University Press, International Documents Service, 2960 Broadway, New York, N. Y. 10027. Contains general provisions such as area covered, restriction of fishing to Polish vessels, and definitions; fishing authorizations covering issuance of permission to fish; registration and designation of fishing vessels and gear; observance of fishing orders covering safety measures; fisheries protection covering conservation practices; fisheries supervision including enforcement; penal provisions comprising fines and other sentences for violations; and final provisions including repeal of prior laws.

"Statki rybackie dla malych portow Polskiego wybrzeza. Czese III" (Fishing vessels for Poland's small fishing harbors. Part III), by Bohdan Pradzynski, article, Bodownictwo Okretowe, vol. 9, no. 11, Nov. 1964, pp. 382-384, illus., printed in Polish with English summary. Wydawnictwa Czasopism, Technicznych NOT, Czackiego 3/5, Warsaw, Poland. Parts I and II discussed the traditional types of fishing vessels. This part deals with tuna boats and catcher-trawlers. The author visualizes a tuna boat with Poland's small harbors as base ports. The tuna boat discussed is in part patterned after the modern French tuna vessel.

POLLUTION:

Contaminacion de las Aguas y Otras Alteraciones Ambientales que Afectan Nocivamente a los Organismos Acuaticos (Contamination of the Waters and Other Environmental Changes which Adversely Affect Aquatic Organisms), by Felipe Brizuela A., Serie: Trabajos de Divulgacion, vol. VII, no. 62, 22 pp., processed in Spanish, Aug. 1963. Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

PORTUGAL:

"Portugal: evolucion de las pescas en 1963. I"; "II" (Portugal: development of the fisheries in 1963. I; II), articles, Industrias Pesqueras, vol. 38, no. 894, July 15, 1964, pp. 328-329; no. 895, Aug. 1, 1964, pp. 348-350, illus., printed in Spanish, single copy 50 ptas. (about 85 U. S. cents). Industrias Pesqueras, Policarpo Sanz, 21 - 2°, Vigo, Spain.

POULTRY NUTRITION:

The following articles are from News Summary, no. 15, Sept. 1964, processed in English with French, German, and Spanish summaries, limited distribution. International Association of Fish Meal Manufacturers, 70 Wigmore St., London W1, England.:

"The protein requirements of laying hens," by J. R. Couch, pp. 77-81.

"Response to fish meal in laying hen diets," by J. H. Quisenberry, pp. 65-77.

POULTRY RATIONS:

"The influence of solvent-extracted fish meal, stabilized fish oil and texture of corn in broiler rations," by J. O. Hardin and J. L. Milligan, article, Poultry Science, vol. 42, 1963, p. 1275, printed. Poultry Science Association, Kansas State College, Manhattan, Kans.

QUALITY:

"Liquor loss as an index to fish texture," by W. T. Little and R. H. Smithies, article, Chemistry and Industry, no. 29, July 18, 1964, pp. 1293-1295, printed. Society of the Chemical Industry, 14 Belgrave Sq., London SW1, England.

REFRIGERATION:

"Refrigeration for small fishing vessels," by A. C. Blain, article, Fisheries Newsletter, vol. 23, no. 10, Oct. 1964, pp. 23-25, illus., printed. Fisheries Branch, Department of Primary Industry, Canberra, Australia. This is the first of two articles describing some of the methods of refrigeration suitable for small vessels in the 30-foot to 50-foot range, particularly those where no provision has been made for refrigeration equipment. Installation of refrigeration equipment in existing vessels creates two problems: (1) space for equipment; and (2) allowance for displacement. The basic requirement for any refrigerated hold is good insulation. It has been found that if the hold is piped on the basis of $1\frac{1}{2}$ cubic feet of hold space for each lineal foot of 1-inch diameter refrigeration pipe (or

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

in the same ratio with other size pipes) and the compressor and condensor balanced against the piping, a satisfactory system results. Brine-freezing of crustaceans has been found to be the more rapid and economical method for smaller vessels, as salt penetration is not as marked as it is for trawl fish immersed in brine solution. It is preferable to operate the equipment prior to loading to ensure a cold reserve when the product first enters the freezer. Agitated or circulated brine will increase efficiency considerably.

FETY:

"Avoiding accidents on deck," article, World Fishing, vol. 13, July 1964, pp. 72, 75, printed. John Trundell & Partners Ltd., St. Richard's House, Eversholt St., London NW1, England.

LMON:

ffect of the March 27, 1964 Earthquake on Pink Salmon Alevin Survival in Prince William Sound Spawning Streams, by Wallace H. Noerenberg, Informational Leaflet No. 43, 10 pp., processed, 1964. Department of Fish and Game, Subport Bldg., Juneau, Alaska.

The Fourth Annual Johnson Strait Report on the Status of the Even Year Pink Salmon Stocks and of the Chum Salmon Stocks of the Johnson Strait Study Area and on the Prospects for 1964, 43 pp., printed, 1964. Department of Fisheries, Pacific Area, Vancouver, B. C., Canada.

"Lipids of salmonoid fish. III--Acetone-soluble lipid from muscle of Oncorhynchus keta," by Mutsuo Hatano and others, article, Chemical Abstracts, vol. 58, Mar. 4, 1963, abstract no. 4841e, printed. American Chemical Society, 1155 16th St., NW., Washington, D. C. 20006.

Research Briefs, vol. 10. no. 1, June 1964. 74 pp., illus., printed. Fish Commission Research Laboratory, Route 1, Box 31A, Clackamas, Oreg. 97015. Contains, among others, these articles: "Analysis of average-weight sampling of commercial catches of Columbia River chinook salmon," by Earl F. Pulford; "Fecundity of Columbia River chinook salmon," by James L. Galbreath, and Richard L. Ridenhour; "The effect of confinement on blood lactate levels in chinook and coho salmon," by Robert J. Ellis; "Ranking of wet ingredients for Oregon pellets," by John W. Westgate, Thomas B. McKee, and Duncan K. Law; "Experiments with repeated spawning ground counts of coho salmon in three Oregon streams," by Raymond A. Willis; "A modified method of analyzing stomach contents with notes on the food habits of coho salmon in the coastal waters of Oregon and Southern Washington," by Paul E. Reimers; and "Occurrence of juvenile salmon in stomachs of adult coho salmon," by Richard L. Angstrom and Paul E. Reimers.

The following articles are from Izvestia Tikhookeanskogo Nauchno-Issledovatel'skogo Instituta Rybnogo Khoziaistva i Okeanografii, vol. 48, 1962. Four Continent Book Corp., 156 Fifth Ave., New York, N. Y. 10010.:

"O primenenii vital'nogo okrashivaniya mal'kov tikhookeanskikh lososei dlya ikh kolichestvennogo ucheta" (Use of a vital stain for marking Pacific Ocean salmon young for their quantitative censusing), by V. Ya. Levanidov, pp. 206-207, printed in Russian.

"Zapasy amurskikh kososei in gidrostroitel'stvo" (Stocks of Amur salmon and hydroelectric construction), by V. Ya. Levanidov, pp. 133-140, printed in Russian.

The following articles, printed in Russian, are from Referativnii Zhurnal-Biologiia, 1963. Akademiia Nauk SSSR, Institut Nauchnoi-Informatsii, Moscow, U.S.S.R.:

"Khod gorbushi v reku Volongu" (Run of pink salmon in the Volonga River), by L. A. Danilenko, No. 8154.

"Metodika i ruzul'taty mecheniya val'chakov semgi v r. Varzuge v 1958-1959 gg." (Procedure and results of tagging salmon kelts in the Varzuga River in 1958-1959), by M. N. Mel'nikova, No. 819.

"Vyrashchivanie molodi lososya na iskusstvennom korme KRT-III" (Rearing young salmon on the artificial food KRT-III), by E. M. Malikova, No. 12176.

"Vyrashchivanie zhivykh kormov v prudakh dlya molodi lososya pri nizkikh temperaturakh" (Raising live food in ponds for young of salmon at low temperatures), by M. M. Isakova-Keo, No. 35245.

SALMON AND STEELHEAD:

Oregon Coastal Salmon and Steelhead Tagging Programs. Part I--Tillamook Bay, 1953, by Kenneth A. Henry; Part II--Siletz River, 1954, by Alfred R. Morgan, Contribution No. 28, 62 pp., illus., printed, May 1964. Oregon Fish Commission Research Laboratory, Route 1, Box 31A, Clackamas, Oreg. 97015.

SALTED FISH:

Review of Salted Fish Production and the European Markets, 1963-64 Season, 58 pp., printed, 1964. Hawes and Company (London) Ltd., London, England.

SCALLOPS:

The Scallop Fishery of Massachusetts (Including an Account of the Natural History of the Common Scallop), by David L. Belding, Marine Fisheries Series--No. 3, Contribution No. 13, 57 pp., illus., reprinted, 1964, 40 cents. Division of Marine Fisheries, Department of Natural Resources, 15 Ashburton Pl., Boston 8, Mass. The scallop differs from the clam, oyster, and quahaug in that it has more rapid growth, a shorter life, is less likely to transmit disease if taken from contaminated waters, and is less adapted to cultivation. Part I, covering natural history of the scallop, discusses its anatomy, early life history, habits, and growth. Part II, encompassing the scallop fishery, presents information on the fishing grounds, the industry, laws concerning scallops, and methods of improving the scallop industry.

SCOTLAND:

Scottish Fisheries Bulletin, no. 21, June 1964, 28 pp., illus., printed. Department of Fisheries for Scotland, Edinburgh, Scotland. Includes, among others, articles on: "Forecast for Scottish North Sea and West Coast herring fisheries in 1964," by B. B. Parrish and A. Saville; "Artificial hatching and rearing of lobsters--a review," by H. J. Thomas; "Herring trawling off the West Coast of Scotland," by I. G. Baxter; "The

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

sprat fishery," by Alan Saville; and "Scallops in Scotland," by Bennet B. Rae.

SEALS:

"The use of electric current in catching seals," by B. I. Badamshin, V. N. Lukashev, and A. Kh. Pateyev, article, General Studies on the Fishing Industry, USSR, JPRS 25, 581, pp. 17-24, processed, July 24, 1964, $3. (Translated from the Russian, Rybnoe Khozyaistvo, no. 4, April 1964, pp. 51-55.) Office of Technical Services, U. S. Department of Commerce, Washington, D. C. 20230.

SEAWEED:

Proceedings of the 4th International Seaweed Symposium, Biarritz, September 1961, edited by Ad. Davy de Virville and J. Feldmann, 490 pp., printed, 1964, £5 (about US$14). Pergamon Press, 122 E. 55th St., New York, N. Y. 10022.

SHAD:

"Mesta i usloviya neresta sel'dei roda Alosa v Severnom Kaspii v 1934-1937 gg." (Localities and conditions of spawning of shad of the genus Alosa in the North Caspian Sea in 1934-37), by T. A. Pertseva-Ostroumova, article, Trudy Instituta Okeanologiia, Akademiia Nauk SSSR, vol. 62, 1963, pp. 28-48, printed in Russian with English summary. Trudy Instituta Okeanologiia, Akademiia Nauk SSSR, Moscow, U.S.S.R.

SHARKS:

Aspectos Interesantes para la Pesca de Tiburon en Mexico (Interesting Aspects of the Shark Fishery in Mexico), by Victoria Marin A., Serie: Trabajos de Divulgacion, vol. IX, no. 88, 26 pp., illus., processed in Spanish, July 1964. Departamento de Estudios Biologico Pesqueros, Direccion General de Pesca e Industria Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

Feeding Behavior in Three Species of Sharks, by Edmund S. Hobson, Contribution No. 180, 24 pp., illus., printed. (Reprinted from Pacific Science, vol. 17, no. 2, Apr. 1963, pp. 171-194.) Hawaii Marine Laboratory, University of Hawaii, Honolulu, Hawaii.

A Revision of the Carcharhinid Shark Genera SCOLIODON, LOXODON, and RHIZOPRIONODON, by Victor G. Springer, Proceedings of the United States National Museum, Smithsonian Institution, Washington, D. C., vol. 115, no. 3493, 1964, pp. 559-632, printed. U. S. National Museum, Washington, D. C. 20560.

Sharks and Survival. Chapter 8--Olfaction, Gustation, and the Common Chemical Sense in Sharks, by Albert L. Tester, Contribution No. 188, 28 pp., illus., printed. (Reprinted from Sharks and Survival; pp. 255-282. Hawaii Marine Laboratory, University of Hawaii, Honolulu, Hawaii.

SHELLFISH CULTURE:

"Artificial cultivation of clams, oysters proved practical in N. C. (North Carolina) laboratory," by Bob Simpson, article, National Fisherman/Maine Coast Fisherman, vol. 45, Aug. 1964, p. 13, printed. Journal Publishing Co., Belfast, Maine.

SHRIMP:

"Gefriertrocknung soll Deutschen krabbenfishern helfen" (Freeze-drying must help German shrimp fishermen), article, Ties Kuhlkette, vol. 8, no. 95, Nov. 1963, p. 28, printed in German. H. E. Albrech Verslag KG., Freihamerstrasse No. 2, Munich T. Germany.

General Information about Canned Shrimp, 4 pp., illus., processed, Aug. 1964. Robinson Canning Co., Inc., P. O. Box 4248, New Orleans, La. 70118. Discusses briefly types of canned shrimp--wet or dry pack; style--regular or deveined pack; sizes--broken, tiny, small, medium, large, jumbo, and colossal; inspection in plants during and following World War II; can sizes--4½-oz. and 5 oz.; equivalent can contents in terms of fresh raw shrimp; private label buyers; packaging and shipping, and shipping data; and routing of shipments.

"A note on the prawn fishery of Kutch," by S. Ramamurthy, article, Journal of the Marine Biological Association of India, vol. 5, no. 1, 1963, pp. 146-148, printed. Marine Biological Association of India, Marine Fisheries, P. O., Ramanathapuran Dist., South India.

Radiation Pasteurization of Shrimp. Final Summary Report for the Period January-December 1962, by Arthur F. Novak and J. A. Liuzzo, ORO-601, 1 vol., illus., printed. Division of Technical Information, U. S. Atomic Energy Commission, Washington, D. C. 20545.

"Rapid method for determination of moisture in freeze-dehydrated shrimp," by J. E. Despaul and D. W. Ezerski, article, Journal of the Association of Official Agricultural Chemists, vol. 46, no. 6, 1963, pp. 1001-1003, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington, D. C. 20004.

"What future trading means to the U. S. shrimp industry," article, Fish Boat, vol. 9, Aug. 1964, pp. 23-24, 37-40, printed. H. L. Peace Publications, 624 Gravier St., New Orleans 9, La.

SMALL BUSINESS MANAGEMENT:

The following reports are published by Small Business Administration, Washington, D. C. 20416.:

Cost Reduction in Small Manufacturing Plants, by E. C. Keachie, Management Research Summary, 4 pp., illus., processed, 1964. Unit manufacturing costs decrease in a special way not revealed by traditional techniques for estimating costs--rapidly at first, and then at a diminishing but predictable rate. Improvement takes place according to a simple relation that can be charted as the "learning curve"; the same percent of increase in productivity takes place every time the total production doubles. The learning curve can be a prime tool of small manufacturers in cost reduction and control. Those who used it in connection with this study reported improvement in productivity, methods and product design, lot sizing, worker aptitudes, checking bids, and promptness in meeting delivery dates.

Operations Research for Small Business, by John E. Hosford, Technical Aid for Small Manufacturers No. 89, 4 pp., processed, Nov. 1964. Operations research (OR) is a technique which uses various fields of knowledge--such as mathematics, chemistry, and other

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

sciences--to solve industrial problems. For example, OR uses mathematics to examine various possible solutions to problems such as inventory, warehousing, transportation, resource allocating, and scheduling. In examining alternatives, OR does two things: (1) defines and clarifies the operational problem, and (2) predicts what will happen if any particular part of the operation is changed. This leaflet explains how operations research is used and describes several of its basic tools, such as queueing, linear programing, dynamic programing, and simulation.

ax Guide for Small Business, 1965, Publication No. 334, 160 pp., illus., printed, 1964, 50 cents. Internal Revenue Service, U. S. Treasury Department, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) A guide for use in filing the 1964 income tax returns, excise tax returns, and other returns for 1965. Answers the Federal tax questions of corporations, partnerships, and sole proprietorships. Explains in plain layman's language the tax results from buying, starting, operating, and the sale and other disposition of a business. In addition, contains a tax calendar for 1965 which should prove helpful to the businessman throughout the year, since it indicates what he should do and when he should do it in regard to the various Federal taxes. Also has a checklist of special interest for the man just starting in business in that it affords a quick method of determining for what Federal taxes he may be liable. This edition has been brought up to date and includes explanations of the provisions of the new tax law, as they affect businessmen. Some of the changes discussed are new lower rates, income averaging, travel expense rules, interest on certain deferred payments, and disposition of depreciable property.

OKING:
Improving the traditional method of smoking," article, Fisheries Research Report, vol. 1, no. 1, 1962, pp. 8-11, printed. Fisheries Inspectorate Unit, Accra, Ghana.

UTH AFRICA REPUBLIC:
The Fishing Industry of South and South West Africa, (supplement to the Standard Bank Review), by Peter Hjul, 15 pp., illus., printed, November 1964. The Standard Bank of South Africa Limited, Cape Town, Republic of South Africa. This attractively color-illustrated booklet discusses the growth of the fishing industry from a catch of 20 million metric tons a year immediately after World War II to 45 million metric tons in 1962; research by the Government's Division of Sea Fisheries; species landed, such as hake, spiny lobster, tuna, maasbanker, mackerel, and pilchard; and the quota system for landings by the various factories. Also covered are production and marketing of canned fish and fish meal; production techniques for fish meal, fish oil, and canned fish; plans for the future by the Fisheries Development Corporation; protection, landings, and exports of spiny lobsters; increase in number of trawlers and production of quick-frozen fillets and fish sticks; and fishing by vessels of Russia, Poland, Japan, and Spain off the coasts of South and South West Africa.

Index to the Publications of the Fishing Industry Research Institute, January 1947-June 1963, compiled by C. R. Houba, 97 pp., processed, 1964. Fishing Industry Research Institute, University of Cape Town, Cape Town, Republic of South Africa.

The South African Fishing Industry Handbook and Buyers' Guide, 1964/65 (Seventh Edition), 320 pp., illus., printed, R4.20 (about US$5.90). Thomson Newspapers, South Africa (Pty.) Ltd., Box 80, Cape Town, Republic of South Africa. This edition of the handbook reviews the progress of the South African and South-West African fishing industry during 1963 and 1964 and gives details of the catch and production of fishery products. Included is information on recent developments in the fishing industry; fish-processing factories; fish and shellfish landings; South African fish species; legal minimum size limits of South African fish; and organizations serving the industry. Also lists the leading personalities in the industry; South and South-West African fishing companies; distributors of fresh and frozen fish; producers of processed fish; suppliers to the fishing industry; regulations for fishing vessels, motor vessels, trawlers, and steam trawlers; types of marine engines; and suppliers of fuels and lubricants. An excellent guide for anyone interested in the South and South-West Africa fisheries.

SOUTH AMERICA:
Anuario de Pesca, 1963/1964 (Fisheries Yearbook, 1963/1964), 130 pp., illus., printed in Spanish, $7. Ediciones Sudamerica S. A., Av. Wilson 911, Oficina 301, Apartado 877, Lima, Peru. Includes articles on: "Urge mejorar puertos" (It is urgent to improve ports); "Conservas: crisis que perdura" (Canning industry: a crisis that continues); "Hay que pescar para todos" (There is fishing for all); "Harina de pescado: perspectivas ilimitadas" (Fish flour: unlimited prospects); "Tributación en Chile y Peru" (Taxation in Chile and Peru), by M. Bapalu; "Sigue subiendo produccion de harina y aceite de pescado" (There follows a rising production of fish meal and oil); "Productores Pesqueros del Peru" (Peruvian fishing firms); and "Proveedores de la pesqueria" (Suppliers for the fishing industry).

SPAIN:
Estadistica de Pesca, 1963 (Fishery Statistics, 1963), 646 pp., illus., printed in Spanish, Aug. 1964. Direccion General de Pesca Maritima, Ministerio de Comercio, Madrid, Spain.

SPINY LOBSTERS:
Ensayo de Nasas para Langosta en la Bahia de la Ascencion, Quintana Roo, Mexico (Experiment with Traps for Spiny Lobsters in La Ascencion Bay, Quintana Roo, Mexico), by Manuel J. Solis Ramirez, Serie: Trabajos de Divulgacion, vol. VII, no. 66, 19 pp., illus., processed in Spanish, July 1963. Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

SPONGES:
A Revision of the Classification of the Calcareous Sponges (with a Catalogue of the Specimens in the British Museum), by Maurice Burton, 698 pp., printed, 1963, 300s. (about US$42.00). British Museum (Natural History), London WC1, England.

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

STARFISH:

"Spawning of starfish: action of gamete-shedding substance obtained from radial nerves," by Haruo Kanatani, article, Science, vol. 146, no. 3648, Nov. 27, 1964, pp. 1177-1179, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

STERN TRAWLERS:

"Badania modelowe nad okersleniem wlasnosci napedowych i manewrowych trawlerow rufowych ze sterem normalnym oraz z obrotowa dysza Korta" (Model testing for the determination of propulsion and maneuver properties of stern trawlers with a normal rudder and rotary Kort nozzle), by G. Hahnel, article, Bodownictwo Okretowe, vol. 9, no. 11, Nov. 1964, pp. 385-390, illus., printed in Polish. Wydawnictwa Czasopism, Technicznych NOT, Czackiego 3/5, Warsaw, Poland.

STRIPED BASS:

The Striped Bass in Massachusetts, by George C. Matthiessen, 21 pp., illus., printed. Department of Natural Resources, Division of Marine Fisheries, 15 Ashburton Pl., Boston 8, Mass.

STURGEON:

"Sostav stada i razmnozhenie osetra na Volge nizhe Volzhskoi GES imeni Lenina" (Composition of the stock and reproduction of Russian sturgeon on the Volga below the Lenin Hydroelectric Station), by A. T. Dyuzhikov, article, Referativnii Zhurnal-Biologiia, 1963, No. 8144, printed in Russian. Akademiia Nauk SSSR, Nauchnoi-Informatsii, Moscow, U.S.S.R.

SUBMARINES FOR RESEARCH:

"Biologicheskie issledovaniya, provedennye na podvodnoi lodke 'Severyanka'" (Biological studies conducted on the submarine Severyanka), by M. I. Ryzhenko, article, Trudy Okeanograficheskoi Komissii, Akademiia Nauk SSSR, vol. 14, 1962, pp. 95-102, printed in Russian. Trudy Okeanograficheskoi Komissii, Akademii Nauk SSSR, Moscow, U.S.S.R.

TAGGING:

"A comparison of spaghetti and Petersen tags used on steelhead trout at Gnat Creek, Oregon," by Thomas E. Kruse, article, Research Briefs, vol. 10, no. 1, June 1964, pp. 57-66, illus., printed. Fish Commission Research Laboratory, Route 1, Box 31A, Clackamas, Oreg. 97015.

TECHNOLOGY:

"Fish technology in Britain," by G. H. O. Burgess, article, Chemistry and Industry, no. 29, July 18, 1964, pp. 1293-1295, printed. Society of the Chemical Industry, 14 Belgrave Sq., London SW1, England.

TILAPIA:

"Metody razvedeniya tilyapii v Demokraticheskoi Respublike V'etnam" (Methods of rearing tilapia in the Democratic Republic of Viet-Nam), by Kong T'Am Chang, article, Referativnii Zhurnal-Biologiia, 1963, Abstract No. 12187, printed in Russian. Akademiia Nauk SSSR, Institut Nauchnoi-Informatsii, Moscow, U.S.S.R.

TOXICITY:

Fish Poisoning in Hawaii, by Philip Helfrich, Contribution No. 186, 18 pp., illus., printed. (Reprinted from the Hawaii Medical Journal, vol. 22, May-June 1963, pp. 361-372.) Hawaii Marine Laboratory, University of Hawaii, Honolulu, Hawaii. Fish poisoning has affected more than 433 persons in over 54 recorded outbreaks in Hawaii since 1900, according to this study. Of the four categories of poisoning reported in Hawaii (ciguatera, hallucinatory mullet poisoning, tetraodon or puffer fish poisoning, and scombroid or histamine poisoning), only poisoning by the puffer fish has caused death--seven of them. Gymnothorax (moray), elasmobranch (shark), and clupeid (herring) poisoning have not been recorded in Hawaii. Ciguatera, caused by a neurotoxic substance, is the most serious hazard of all; it is a recent affliction in Hawaii, difficult to predict or control, and produced by many species of fish that are highly esteemed as food; and the toxin seems to have a cumulative effect.

TROUT AND SALMON:

El Cultivo de la Trucha y del Salmon. La Nutricion (The Culture of Trout and Salmon. Nutrition), by Earl Leitritz, Serie: Trabajos de Divulgacion, vol. VIII, no. 73, 39 pp., illus., processed in Spanish, Oct. 1963. (Translated from the English, Trout and Salmon Culture, Fish Bulletin No. 107, California Department of Fish and Game, 1959.) Departamento de Investigaciones Industriales y Economicas, Laboratorio de Tecnologia Quimica Pesquera, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

TUNA:

Background of the U. S. Regulatory Act for Yellowfin Tuna, 1962, by Ryuzo Ohyama and Koya Mimura, 60 pp., printed in Japanese. Japan Fisheries Resource Conservation Association, c/o Futaba Bldg., 24, Nishikubo, Sakuragawa-cho, Minato-ku, Tokyo, Japan.

"A pesca do atum no arquipelago de Cabo Verde" (The tuna fishery in the Cape Verde Islands), article, Jornal do Pescador, vol. 26, no. 309, Oct. 1964, p. 37, printed in Portuguese, single copy 5 escudos (about 20 U. S. cents). Junta Central das Casas dos Pescadores, Rua de S. Bento, 644-4° Esq., Lisbon, Portugal.

"Pesca e industrializacion del atun" (The fishery and commercialization of tuna), article, Industrias Pesqueras, vol. 38, no. 897, Sept. 1, 1964, pp. 388-389, printed in Spanish, single copy 50 ptas. (about 85 U.S. cents). Industrias Pesqueras, Policarpo Sanz, 21 - 2°, Vigo, Spain.

"Quelques aspects techniques du probleme thonier" (Some technical aspects of the tuna problem), by E. Postel, article, La Peche Maritime, vol. 43, no. 1040, Nov. 1964, pp. 786-791, illus., printed in French, single copy 14 F (about US$2.85). Les Editions Maritimes, 190, Blvd. Haussmann, Paris, France.

Statistical Report on Tuna Longline Fisheries by Fishing Grounds for 1963, 33 pp., printed in Japanese, Sept. 1964. Statistical Research Division, Agriculture-Forestry Economic Bureau, Ministry of Agriculture and Forestry, 2-1, Kasumigaseki, Chiyoda-ku, Tokyo, Japan. Describes tuna long-line production trends, catch by species, fishing grounds, and by the 6 licensed tuna fisheries (i.e. Japan-based fleet, overseas-based fleet, Atlantic fleet, mothership-type fleets, etc.). Also includes data on prefectural landings, by species

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

and by vessels of different size categories. The report shows that in 1963 the Japanese tuna long-line fleet totaled 1,380 vessels (1959--1,437 vessels). They landed a total of 531,500 metric tons of tuna, spearfish, and shark. The catch of yellowfin totaled 125,100 metric tons, declining 19,100 tons, and the catch of albacore totaled 88,900 tons, down 6,900 tons. Bluefin catch increased by 11,200 metric tons, totaling 47,800 tons, and the big-eyed catch increased by 3,000 tons, totaling 128,000 tons. By ocean areas, there were increases in catches for the Pacific Ocean (9,800 tons) and Atlantic Ocean (12,600 tons); Indian Ocean catch declined 24,300 metric tons.

--Lorry M. Nakatsu

Kaibei Maguro Kanzume Shosha Kyotei wo Meguru Kobo (Discussion of Exporters' Agreement Covering Canned Tuna Exports to U.S.), 16 pp., printed in Japanese, Oct. 1, 1964. Suisan Tsushin-sha, Chiyoda Bldg., 2-1, Kudan, Chiyoda-ku, Tokyo, Japan. A special issue put out by a Japanese newspaper firm covering problems involving the exporters' agreement on canned tuna for export to the United States. The agreement, renewed annually December 1, was under critical attack in 1964 from segments within the packing industry due to declining canned tuna exports, despite an increase in the United States consumption of canned tuna. The report describes the reasons for the packers' dissatisfaction and the defense made in behalf of the agreement. As of December 4, 1964, settlement over a new agreement covering the period December 1, 1964-November 30, 1965, had not been reached.

--Lorry M. Nakatsu

"Tuna--international fish," by Jean V. Leyendekkers, article, Fisheries Newsletter, vol. 23, no. 11, Nov. 1964, pp. 23-25, illus., printed. Fisheries Branch, Department of Primary Industry, Canberra, Australia. Tuna has been caught and eaten by man since earliest times. Its place in the fishing world of today is no less dominant, since it is one of the major fisheries in Japan, the United States, Chile, France, and a number of other nations. This article, the first in a series of two, discusses the habits and habitats of tuna, occurrence of various species in Australian waters, research by Australian scientists, tagging information and its uses, and distribution and migration paths.

Tuna Long Line Operations in the West Coast of India, by P. K. Eapen, 7 pp., illus., printed. (Reprinted from Indian Sea Foods, vol. 2, no. 1.) Government of India, Offshore Fishing Station, Cochin-5, India. Discusses tuna fishing methods, commencement of tuna long-line fishing in India, exploratory vessel and gear used for long-lining, details of operation, catch rate, and uses and commercial possibilities. Includes statistical tables showing data on 5 exploratory cruises for tuna; and length and weight of fish landed.

TURKEY:
Balik ve Balikcilik (Fish and Fishery), vol. 12, no. 11, Nov. 1964, 32 pp., illus., printed in Turkish with English table of contents. Et ve Balik Kurumu G. M., Balikcilik Mudurlugu, Besiktas, Istanbul, Turkey. Includes, among others, articles on: "Arrangement of otter boards to deep trawl," by Tekin Mengi; and "Observations of Ancona International Fishery Fair and Italy fisheries by technical point of views (Part IV)," by Muzaffer Ozay.

TURTLES:
Clasificacion de las Tortugas de Norteamerica (Capitulo XXXVI) y las Tortugas Marinas (Capitulo XXXVII), (Classification of the Turtles of North America--Chapter XXXVI--and the Marine Turtles--Chapter XXXVII), by Raymond L. Ditmars, Serie: Trabajos de Divulgacion, vol. IX, no. 81, 17 pp., processed in Spanish, Jan. 1964. (Translated from the English, The Reptiles of North America.) Departamento de Estudios Biologicos Pesqueros, Direccion General de Pesca e Industrias Conexas, Secretaria de Industria y Comercio, Mexico, D. F.

UNDERWATER ACOUSTICS:
"Underwater sound: deep-ocean propagation," by Robert A. Frosch, article, Science, vol. 146, no. 3646, Nov. 13, 1964, pp. 889-894, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005. Variations of temperature and pressure have great influence on the propagation of sound in the ocean.

U. S. S. R.:
"Developments of large-scale chemistry and technical progress in the fishing industry," by V. P. Zaytsev, article, Recent Developments in the Fishing Industry, USSR, JPRS 25,670, pp. 1-11, processed, July 31, 1964. $2. (Translated from the Russian, Rybnoe Khozyaistvo, no. 5, 1964, pp. 3-7.) Office of Technical Services, U. S. Department of Commerce, Washington, D. C. 20230.

WASHINGTON:
Washington State Department of Fisheries, 1963 Annual Report, edited by Don Reed, 216 pp., illus., printed. Washington State Department of Fisheries, Rm. 115, General Administration Bldg., Olympia, Wash. Includes information on the activities of the Department of Fisheries during 1963 in research and management--Puget Sound commercial fisheries, troll salmon, coastal investigations, ocean sport fishery, Columbia River fisheries, otter-trawl fisheries, and chum sampling; and power dam research--Cowlitz River project, Lake Merwin program, Priest Rapids spawning channel, Rock Reach spawning channel, Baker River studies, and 1963 fish facilities for power dam projects. Sections are also included on pink salmon research, Indian fisheries, 1963 sport salmon fishery, reimbursable services program, stream improvement, Patrol Division--enforcement, and engineering and construction. Specialized problems are dealt with in chapters on razor clam fisheries in 1963, oyster work, Willapa Bay shellfish management, hatchery runs, salmon marking programs, fish disease investigations, silver salmon studies, fish feeding 1963, egg takes at individual hatcheries, adult escapement to hatchery rocks, fish planted from State salmon hatcheries in 1963, total plants by district and species 1950-63, and fish planted by major watersheds 1963. A considerable portion of the report is devoted to 1963 fisheries statistics on commercial landings and fishway counts.

WATERFRONT BOUNDARIES:
Shore and Sea Boundaries. Volume Two--Interpretation and Use of Coast and Geodetic Survey Data, by Aaron L. Shalowitz, Publication 10-1, 775 pp., illus., printed, 1964, $5.25. Coast and Geodetic Survey, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Print-

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

ing Office, Washington, D. C. 20402.) Deals with the use and interpretation of Coast and Geodetic Survey data, particularly the early surveys and charts, with special emphasis on those features and aspects having legal significance. It interprets for the engineer and the lawyer the topographic and hydrographic surveys and nautical charts of this 157-year-old Government agency in their relation to the establishment of riparian boundaries. It reflects participation by the nation's oldest scientific bureau--through its records and through the expert testimony of its officials--in many important waterfront litigations, some of which involved a boundary demarcation on the ground. Contains 12 chapters which cover the history and organization of the Coast and Geodetic Survey since 1807, when it was established by Thomas Jefferson; technical data pertinent to waterfront boundaries; geographic datums; judicial structure and land ownership in the United States; and the application of Coast Survey data to engineering and legal problems. Numerous citations are furnished to legal and technical authorities. Also contains 7 appendixes, including a comprehensive glossary of terms used in the text; a bibliography of technical and legal sources cited; selected statutes pertaining to the Coast Survey; cases which have had an important impact on the development of the law of tidal boundaries in the United States; and a multicolor reproduction of nautical chart symbols and abbreviations.

WHALE OIL:

"Analysis of fatty acids and fatty alcohols composition of sperm whale oil by gas-liquid chromatography," by M. Mori and others, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 30, 1964, p. 161, printed in Japanese. Japanese Society of Scientific Fisheries, Shiba-Kaigandori 6, Minato-ku, Tokyo, Japan.

WHALES:

"O svyazyakh v raspredelenii zooplanktona morskikh ptits i usatykh kitov" (On interrelations in the distribution of zooplankton, marine birds and baleen whales), by V. M. Gudkov, article, Trudy Instituta Okeanologiia Akademiia Nauk SSSR, vol. 58, 1962, pp. 298-313, printed in Russian. Izdatel'stvo Akademiia Nauk SSSR, Moscow, U.S.S.R.

## USES OF PORPOISE-JAW OIL

Porpoise-jaw oil is one of the many materials that keep the wheels of American industry turning. Marine mammals of the cetacean group (including certain whales and most dolphins and porpoises) have small quantities of oil in cavities of the head, especially in the brain "melon" and in the glands of the "hinges" of the jaws. This porpoise-jaw or dolphin-head oil is unique in its chemical composition (different from blubber oil), and its physical characteristics make it an excellent lubricant for watches, micrometers, and other fine instruments.

While the market for these special oils is understandably small (one gallon is said to be sufficient to lubricate at least a million watches), it is nevertheless an important one. Synthetic oils have taken over in some applications, but most of the major industrial companies in the United States use at least small quantities of the dolphin oil for special needs, usually in combination with oils from other sources. The resulting lubricants have a low-pour point--that is, they maintain their liquid state at temperatures as low as 30° below zero F. and they are resistant to oxidation, gumming, and evaporation. Also, because of their unique fatty acid content, porpoise-jaw oils are relatively more "oily" than other oils. The combination of properties leads to their use on delicate mechanisms that must function smoothly after standing idle for prolonged periods.

The business of supplying porpoise-jaw oil was established in the whaling port of New Bedford, Massachusetts, in the middle of the last century, but only the refining process is carried on there today, by one sole remaining refiner. The present raw material source is the blackfish, or pothead whale, one of the largest of the dolphins, which is harvested in Newfoundland. The meat is sold for mink feed, the blubber is rendered for soap, margarine, and other shortening, and the head oil is shipped to New Bedford for refining and formulating. (Industrial Bulletin of Arthur D. Little, Inc., September 1964.)

## JAPANESE CULTURED PEARLS

Pearls were originally obtained only in their natural state in pearl oysters living in the a. The pearl is formed from nacre secreted gradually by the oyster. The pearl is formed hen foreign matter accidently gets into the oyster and the oyster, in order to protect itself om the intruder, secretes nacre around it and seals it off.

There are many types of mollusks which emit such nacre, but not all of the pearls formed e valued for use in jewelry. The pearl-like substance found in the common clam and the ortnecked clam is only a white lump and has no value whatsoever. The only pearl shells ich produce genuine pearls are the pearl oyster, the white and black-lip oyster, and a w others.

Natural pearls were found in the past in oysters in the bays of Persia, near the island Ceylon, and off the Australia coast. However, the quantity was limited and only kings d noblemen were able to acquire those rare jewels.

Pearl cultivation was started relatively long ago. It has been recorded that a Swede ceeded in cultivating hemispherical pearls in 1760. According to the method used then, hole was drilled in the shell of the oyster and a bit of foreign matter was inserted into the sh of the oyster. Other methods developed were similar to the Swedish method. All utilized e instinctive power of the oyster to cover the foreign matter with nacre.

The first person in Japan to succeed in cultivating pearls was the late Kokichi Mikimoto, ho later gained fame as the "Pearl King." His first products were hemispherical pearls hich were attached to the shell. Five years later, in July 1893, Mikimoto discovered several mispherical pearls in the type of pearl oyster called Akoyagai. Since then cultured pearls oduced in Japan have been exported to overseas markets, and in 1904, on the occasion of e St. Louis World's Fair, Japan exhibited its cultured pearls abroad for the first time.

Mikimoto's success in cultivating pearls provided the basis for a flourishing business and oduction of a large quantity of cultured pearls began. However, the products were all miround pearls and were not suitable for adornment. Therefore, it was necessary to round t the flat part of the pearl by joining it with a piece of pearl shell or another semispherical arl. Studies to rectify this defect were carried out by Mikimoto and other pearl cultivators d finally, about 1908, they succeeded in developing perfectly round pearls.

With successful cultivation of round pearls, the industry has flourished in Japan to this y. Some 24 prefectures, centering around the Nankai district, are now cultivating pearls. e mother oyster used in Japanese pearl farms is the Akoyagai. The ideal place for the tivation of this mollusk is a quiet sea where the water is not too salty and the temperature the water is from 15° to 25° C. (59°-77° F.). In other words, the most ideal places are small inlets and bays of islands in the southern part of Japan.

Pearl cultivation begins with the raising of the Akoyagai oyster. During June and July, ts are floated on the sea and clusters of the foliage of the Japanese cedar are tied with pes and hung under the rafts. These two months are the egg-laying period for the Akoyagai, d a large number of eggs become attached to the leaves. The eggs are then collected and ced in woven wire baskets and hung under the raft for another two to three years. When shell grows to 30 to 40 grams in weight, it can be used as a mother oyster. This operation handled by the oyster cultivators.

The pearl cultivators now take over and insert pieces of foreign matter into the oysters. nce the foreign matter will become the core of the pearl, care must be taken in the selec-on of the material to be used. The material generally used for the core are pieces of shell

(Continued on next page.)

from ditch clams. The shell is cut into small pieces of several millimeters in thickness and are inserted into the body of the mother oyster with a pincet. The mother oyster then starts to secrete the lustrous nacre.

When the piece of shell is inserted, part of the membrane of the mantle of the living oyster is cut out and inserted together with the nucleus. This step is supposed to accelerate the rate of secretion of nacre by the oyster. After the nucleus has been implanted in the oyster, the oyster is again placed in a basket and hung under the raft. The oyster secretes nacre which gradually surrounds the nucleus and in a year, small cultured pearls are available. It takes from 2 to 3 years to produce medium pearls and from 5 to 6 years for large pearls.

However, not all of the oysters will survive. Because of the "red current" and other damaging parasites which afflict the oyster, only about 4,000 out of 10,000 oysters will manage to survive and produce pearls. Of the pearls produced by the 4,000 oysters, only about 10 to 15 percent are commercially marketable.

The size of pearls produced in Japan is generally from 1 to 3 millimeters in diameter with a maximum of 10 millimeters. It is considered difficult to cultivate pearls of more than 12 millimeters as the size of the mother oyster is limited.

There are numerous colors ranging from white and silver to pink, cream, black, and blue. Pink and white pearls are popular in Japan and Western countries. Pearls of different colors are produced not only because of the individual differences of the nacre excreted by the oysters but also due to the type of sea water the oyster had been placed in. Studies on producing any color desired have been conducted but objections have been raised, claiming that to do so commercially would devalue the pearl's value as jewelry.

Japan produces about US$56 million worth of cultured pearls a year. Some 90 percent are exported. Last year, exports amounted to $47.2 million--a two-fold increase over the $23.6 million exported in 1959. Some 40 percent of the exports are consigned to the United States, another 20 percent to Switzerland, and the bulk of the remainder to West Germany, Hong Kong, France, Italy, and India.

Prior to export, a Government inspector examines each pearl to prevent any inferior product from being shipped overseas to maintain the prestige of Japanese cultured pearls in the world market. (Japan Information Service, Consulate General of Japan, New York City.)

## WOMEN TAKE PART IN FISHERY RESEARCH CRUISES

A new precedent has been set at the U. S. Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Mass. Women now routinely take part in the Bureau's biological-oceanographic cruises. Mrs. Ruth Stoddard, Fishery Research Technician, and Miss Lisbeth Francis, Antioch trainee, broke the ice on the fall 1964 survey cruise. This particular cruise lasted 15 days and was noteworthy for the consistent bad weather encountered. But the young ladies suffered not one day of seasickness. It was the considered opinion of the scientific and vessel crew that the ladies were as good or even better than their male counterparts in getting the work done.

## BIOLOGICAL CONTROL SOUGHT FOR BOAT DESTROYER

A United Nations agency and the Indian Government are joining forces with a marine flatworm to hunt the teredo, a sea worm which devours the keels of fishing vessels.

The teredo, a molluscan borer, is found in all parts of the world, although it is most active in tropical waters. It is a thin marine worm which eats its way through wood, extending its body to as much as six feet in length, and destroying piers, rafts, fishing traps, and wooden boats.

Recently, the Indian Government became alarmed at the damage which was being suffered by its fishing industry because of this undersea menace. A United States woman zoologist has been sent to India as a forestry officer for the Food and Agriculture Organization in order to begin basic research into the life history of these small creatures and to explore methods of controlling their destructive activities.

All timber exposed to sea water is also exposed to the ravages of the teredo. It attaches itself to the outside of the timber and, with the aid of its grinding teeth, bores right through into the interior, eating the sawdust as it goes. A borer can grow up to six feet in length. The end of the body, which is equipped with a muscle to close the hole behind it when necessary, usually sticks out into the water. A series of tiny feelers are used to eject the body wastes and pass in water and minute particles of food.

These borers have been known to man since he first began sailing the seas, and have in fact, gradually encircled the earth as a consort of man. Burrowed deep within the wooden keel of the windjammers, the teredo has been given free passage through all the oceans.

A boat in infested waters can be completely destroyed in as little as three months. The traditional method of clearing infested timber is to bring the boats into fresh water, though experience has shown that the teredo can retire into the woodwork, seal itself in, and remain dormant for long periods of time.

Nowadays timber is impregnated with chemicals, usually creosote. Even so, an adult borer will on occasion go through a creosote-impregnated plank.

The zoologist is investigating a completely new and untried biological method of controlling the borer while she is in India. She has found that certain species of marine flatworms eat the eggs of the teredo. She believes that flatworms distributed in badly-infested areas might attack and wipe out the borer population.

Disappearance of the teredo would not be universally welcomed for the borer is regarded as a food delicacy in some parts of the world. It is eaten as a normal part of the diet by many fishing populations of South East Asia, as well as the Australian aborigines. Malayan fishermen go so far as to harvest the borer. They set out softwood stakes in the sea-bed and wait for them to become infested with these creatures. Then the stakes are pulled up and taken to land and the borers pulled out and eaten.

The zoologist is working with the India Forest Research Institute at Dehra Dun, where she is training research staff in the identification and laboratory breeding of marine wood-boring molluscs, and in the development of control methods against the molluscs. (Food and Agriculture Organization, Rome, Italy, December 16, 1964.)