



RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

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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.
 SL - STATISTICAL LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
 SSR. - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number	Title
CFS-3872	- Virginia Landings, April 1965, 4 pp.
CFS-3888	- California Landings, May 1965, 4 pp.
CFS-3889	- Virginia Landings, May 1965, 4 pp.
CFS-3890	- Maryland Landings, June 1965, 4 pp.
CFS-3899	- Louisiana Landings, 1964 Annual Summary, 7 pp.
CFS-3900	- Frozen Fishery Products, August 1965, 8 pp.
CFS-3901	- Texas Landings, 1964 Annual Summary, 8 pp.
CFS-3902	- Imports of Fish Meal and Scrap, 1937-1964, H.S. No. 1 (Revised), 6 pp.
CFS-3903	- U. S. Fish Meal and Scrap Production, 1929-1964, H. S. No.2 (Revised), 4 pp.
CFS-3904	- Foreign Trade in Fish and Marine-Animal Oils, 1925-1964, H. S. No. 3 (Revised), 10 pp.
CFS-3905	- Menhaden Fishery, 1873-1964, H. S. No. 4, 7 pp.,
CFS-3908	- Fish Meal and Oil, July 1965, 2 pp.
CFS-3909	- California Landings, June 1965, 4 pp.
CFS-3910	- South Atlantic Fisheries, 1964 Annual Summary, 9 pp.
CFS-3911	- Alabama Landings, July 1965, 3 pp.
CFS-3913	- Georgia Landings, June 1965, 2 pp.
CFS-3916	- Michigan, Ohio & Wisconsin Landings, June 1965, 4 pp.
CFS-3917	- Shrimp Landings, March 1965, 5 pp.
CFS-3918	- Gulf Coast Shrimp Data, March 1965, 15 pp.
CFS-3920	- Oregon Landings, 1964 Annual Summary, 2 pp.
CFS-3921	- Washington Landings, 1964 Annual Summary, 2 pp.
CFS-3924	- Mississippi Landings, June 1965, 3 pp.
CFS-3925	- Maine Landings, July 1965, 4 pp.
CFS-3927	- New York Landings, July 1965, 4 pp.
CFS-3928	- Louisiana Landings, July 1965, 3 pp.
CFS-3931	- Florida Landings, August 1965, 8 pp.

Wholesale Dealers in Fishery Products (Revised):

- SL-25 - Wisconsin (Great Lakes Area), 1964, 2 pp.
 SL-32 - Minnesota (Mississippi River and Tributaries), 1964, 1 p.
 SL-34 - Wisconsin (Mississippi River and Tributaries), 1964, 2 pp.

Sep. No. 746 - A Japanese Gill-Net Fishery for Bottom-fish in the Gulf of Alaska.

Sep. No. 747 - Reduction Process to Convert Raw Fish into Thiaminase-Free Press Cake.

Sep. No. 748 - Technical Note No. 1--Rapid Field Method for Determining the Salt Concentration in Fresh and Smoked Chub.

FL-147 - List of National Fish Hatcheries, 11 pp., revised July 1965.

FL-190 - Turtle Trapping, 8 pp., illus., revised March 1965.

FL-579 - Castnets Constructed of Machine-Made Netting, by Hilton M. Floyd, 14 pp., illus., processed, June 1965.

FL-580 - Sea Lamprey, by Lola T. Dees, 10 pp., illus., Aug. 1965. Discusses the history of the sea lamprey invasion of the Great Lakes following the completion of the Welland Canal between Lakes Erie and Ontario in 1829; effect of lamprey attacks on the Great Lakes fishery; natural history--spawning, larval and adult lampreys; value of lampreys; their control; and restoring the lake trout after decimation by lampreys.

FL-585 - Fisheries Loans for Vessels and Gear, 14 pp., August 1965.

SSR-Fish. No. 505 - Spiny Lobster Explorations in the Pacific and Caribbean Waters of the Republic of Panama, by Johnny A. Butler and Norman L. Pease, 30 pp., illus., July 1965. An interagency agreement, signed in June 1962, between the U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, and the U. S. Agency for International Development resulted in a survey of the spiny lobster potential in Panamanian waters. Bureau staff members used the chartered 72-foot vessel Pelican. This report describes explorations in 1962 carried out in both Caribbean and Pacific waters with wood, reed, and wire traps. Wood traps proved most economical and successful. Bait for the traps (small, mixed

bottomfish) was obtained locally. Indications of commercial potential for a spiny lobster fishery were found. During 1963 work included simulated commercial fishing with traps and trawls. Excellent catches were made. In addition to spiny lobsters, sand lobsters and bay scallops were found in sufficient numbers to start a new Panamanian industry.

SSR-Fish. No. 517 - A Raft for Direct Subsurface Observation at Sea, by Reginald M. Gooding, 7 pp., illus., June 1965.

SSR-Fish. No. 518 - Industrial Bottomfish Fishery of the Northern Gulf of Mexico, 1959-63, by Charles M. Roithmayr, 27 pp., illus., Sept. 1965.

A Review of the Gulf of Mexico Red Snapper Fishery, by James S. Carpenter, Circular 208, 39 pp., illus., printed, Aug. 1965. Discusses the red snapper fishery and its development in the Gulf of Mexico. From a relatively small fleet of sail-powered schooners with live-wells for keeping fish, the vessels have now become a group of diesel powered boats using ice for preserving the catch. The fishing grounds have grown from areas lying close to the mainland (inside 40 fathoms) off Florida and the "middle grounds" southeast of Pensacola to the "western grounds" off Texas and the Campeche Banks off Mexico. Gear has developed from cotton hand lines using the hand-over-hand technique to stainless-steel lines with reels and improved terminal gear. Navigation has metamorphosed from dead-reckoning and sounding techniques to modern electronic equipment, complete and accurate charts, and celestial navigation. Gear has been improved from the generally ineffective cod gill nets, long lines, hoop nets, and fish traps to the highly successful modified otter trawls. Unsatisfactory fish-handling techniques, resulting in poor quality, have evolved into greatly improved methods. Marketing has changed from almost exclusive use of railroads for shipping fish iced in barrels to the predominant use of trucks for shipping boxes of iced fish.

Annual Report of the Bureau of Commercial Fisheries Radiobiological Laboratory, Beaufort, N. C., for the Fiscal Year Ending June 30, 1964, Circular 217, 37 pp., illus., June 1965. Presents details on accomplishments of the Radiobiological Laboratory in programs on estuarine ecology, pollution studies, and radiation effects. Also includes information on staff activities, new laboratory facilities, meetings attended by laboratory personnel, scientific papers presented, and staff publications.

Fishery Product Inspection, Circular 218, 12 pp., illus., printed, April 1965. Discusses the USDI voluntary inspection service; U. S. grade standards; the three types of inspection--continuous inspection, lot inspection, and unofficial sample inspection; how you can get USDI inspection service; and inspection fees.

Fish Go in Schools, by Bob Finley and Ann Davies, Circular No. 222, 16 pp., illus., printed. Discusses how fishery products have kept pace with innovations in convenience, and are excellent for use in school lunches. Variety is offered in the many species of shellfish and finfish on the market; the many market forms and ways in which they can be prepared. Further advantages are found in their economy, excellent nutritive value, and ease of preparation. Tips on baking fish are offered. The many market forms of fish, standards in selecting fresh fish, quality in

frozen fish, and thawing procedures are discussed. A section on how to arouse interest and awaken appetites covers use of imaginative planning, food education and acceptance, romance of science, posting of menus, coordination of nutrition classes with the school-lunch program, and visual communication.

Biological Laboratory, Galveston, Tex., Fishery Research for the Year Ending June 30, 1964, Circular 230, 113 pp., illus., Aug. 1965. Presents details on accomplishments of the Galveston Laboratory in programs on shrimp biology, shrimp dynamics, industrial fishery, estuarine ecology, and experimental biology. Also contains information on special reports on biological indicators in East Lagoon, Galveston Island, distribution of bottom sediments in Clear Lake, Tex., research on the molecular basis of brain function in fish, and description of salt-water laboratories; library and laboratory facilities; meetings attended by laboratory personnel; work conferences attended; publications by staff members; manuscripts in press and submitted.

The Fishery-Oceanography Center, La Jolla, California, edited by Robert I. Clutter and Glenn A. Flittner, Circular 232, 37 pp., illus., Oct. 1965. Describes briefly the facilities of the laboratory and research vessels operated in connection with the La Jolla Fishery-Oceanography Center. Provides information on accomplishments of the California Current Resources Laboratory conducting research on the California sardine--population dynamics, subpopulations, pelagic surveys, life history and taxonomy, physiology, behavior, and plankton dynamics. Discusses work of tuna resources laboratory--forecasting and oceanography, tuna behavior, temperate tuna biology, operations research, and contract research; Scripps tuna oceanography research; Inter-American Tropical Tuna Commission; and California's Marine Research Committee.

Fishery Management Services Annual Report for 1964, Resource Status Report 2, 53 pp., illus., June 1965.

Make Your Seafood Menus Sing--Perk 'Em Up with Pecans, Fisheries Marketing Bulletin, 6 pp., illus., printed. Introduces the use of pecans in fish cookery. Contains recipes for shrimp 'n' cranberry salad, tuna waldorf salad, salmon party log, crab salad in lime mold, and shrimp-cheese dreams.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE 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-17	- The Italian Fishing Industry, 1964, 15 pp.
MNL-90	- Belgian Fishing Industry, 1964, 31 pp.

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

California Fishery Market News Monthly Summary, Part I--Fishery Products Production and Market Data, September 1965, 16 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, 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; prices for fish meal, oil and solubles; for the month indicated.

California Fishery Market News Monthly Summary, Part II-Fishing Information, September 1965, 8 pp., illus. (U. S. Bureau of Commercial Fisheries, Tuna Resources, 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.

California Fishery Products and Byproducts Brokers, Importers, and Exporters, 1964, SP List I (Revised), 11 pp., Oct. 1965. (U. S. Bureau of Commercial Fisheries, Market News Service, Post Office Bldg., San Pedro, Calif. 90731.)

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, September 1965, 9 pp. (Market News Service, U. S. Fish and Wildlife Service, Rm. 609, 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; Gulf menhaden landings and production of meal, oil, and solubles; fishery imports at Mobile, Ala., Morgan City and New Orleans, La., Miami, Fla., and Houston, Port Isabel, and Brownsville, Tex.; and sponge sales; for the month indicated.

List of Primary Receivers of Imported Fishery Products and Byproducts, New Orleans, La., 1965, 4 pp., Sept. 30, 1965. (U. S. Bureau of Commercial Fisheries, Market News Service, 608 Federal Bldg., 600 South St., New Orleans, La. 70130.)

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, September 1965, 4 pp. (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 Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New England Fisheries--Monthly Summary, September 1965, 24 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.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, September 1965, 9 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 hal-

ibut 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.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE ONLY FROM THE ICHTHYOLOGICAL LABORATORY, BUREAU OF COMMERCIAL FISHERIES, U. S. NATIONAL MUSEUM, WASHINGTON, D. C. 20560.

The Composition of Species of the Genus CYCLOTHONE (Pisces, Gonostomidae) in the Pacific Ocean, by V. A. Mukhacheva, Translation No. 36, 51 pp., 1965. (Translated from the Russian, Trudy Instituta Okeanologii, Akad. Nauk SSSR, vol. 73, 1964, pp. 93-138.)

On the Life Colors of Some Fishes. XIII; Scientific Names of "Gingao-Iwashi," by Nagamichi Kuroda, Translation No. 37, 10 pp., 1965. (Translated from the Japanese, Japanese Journal of Ichthyology, vol. 8, nos. 5/6, June 30, 1962, pp. 122-125; Zoological Magazine, vol. 70, no. 3, March 15, 1951, pp. 98-101.)

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402.

Dolphins and Porpoises, Fisheries Center Leaflet 1, 8 pp., illus., printed, 1965, 5 cents. This is the first of a new series of leaflets to be published by the forthcoming National Fisheries Center and Aquarium. It describes dolphins and porpoises, smaller members of the suborder Odontoceti, or toothed whales. In spite of their strong resemblance to fish, they are warm-blooded, aquatic mammals, bearing their young alive and nursing them on milk as do more easily recognized mammals. Although much alike, dolphins and porpoises are frequently placed in different families by zoologists--chiefly on the basis of the form of the teeth and the presence of small bony protuberances on the forward edge of the dorsal fin. The structure, behavior, and reproduction of the two are described and compared. Short descriptions, accompanied by illustrative drawings, are given for the Atlantic bottlenose dolphin, spotted dolphin, spinner dolphin, common dolphin, Pacific whitesided dolphin, Amazon freshwater dolphin, pink fresh-water dolphin, harbor porpoise, Burmeister porpoise, Dall porpoise, and finless black porpoise.

Marine Decapod Crustaceans of the Carolinas, by Austin B. Williams, Fishery Bulletin, vol. 65, no. 1, 1965, 309 pp., illus., printed, \$2.

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.

ANCHOVY:

Considerations on the Sampling of Marine Fish. IV--Sampling of ANCHOVIELLA HUBBSI Hildebrand, by Hitoshi Nomura, Contribution No. 31, 6 pp., printed

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in English with Portuguese summary. (Reprinted from *Revista Brasileira de Biologia*, vol. 24, no. 4, Dec. 1964, pp. 365-370.) Sociedade de Biologia de Brasil, Caixa Postal 1587, Rio de Janeiro, Brazil.

AQUATIC BIOLOGY:

"Floating classroom for aquatic biology," by H. Charles Laun, article, *Turtlex News*, vol. 43, no. 5, 1965, pp. 130-133, illus., printed. General Biological Supply House, Inc., 8200 S. Hoyne Ave., Chicago, Ill.

ARAL SEA:

"O sokhraneni basseina Aral'skogo morya kak vazheishego istochnika tsennykh rybnikh produktov" (On the preservation of the Aral Sea basin as a major source of valuable fish products), by L. S. Berdichevskii, article, *Rybnye Zapasy Aral'skogo Morya i Puti Ikh Ratsional'nogo Ispol'zovaniya* (Fish Resources of the Aral Sea and Ways of Their Rational Utilization), pp. 132-134, printed in Russian. Nauka, Tashkent, U.S.S.R.

ARGENTINA:

"La produccion Argentina de pescado en 1964" (Argentina's fishery production in 1964), by Carlos Taboas, article, *Industrias Pesqueras* (Statistics Annual for 1964), vol. 39, nos. 913-914, May 15, 1965, p. 208, printed in Spanish. Industrias Pesqueras, Apartado 35, Vigo, Spain.

Produccion Pesquera Argentina, 1964 (Argentina's Fishery Production, 1964), 114 pp., illus., processed in Spanish. Departamento de Investigaciones Pesqueras, Direccion General de Pesca, Secretaria de Estado de Agricultura Ganaderia, Brasil y Florencio Sanchez, Buenos Aires, Argentina. Presents a brief summary of the Fisheries of Argentina in 1964--landings totalling 160,306 metric tons, production of processed products, development of fishery resources, increase of per capita fish consumption, production of 11,852.2 tons of fish meal, increase in number of fishing vessels, principal fishing ports, installation of processing plants, distribution of fishery products by refrigerated trucks, production of fresh-water fisheries, and foreign trade in fishery products. Most of the report is devoted to statistical tables showing quantity and value of fishery landings, 1935-64; quantity and value of processed products, 1964; marine fishery production by species and by months and ports; high-seas fishery production by species and ports; coastal fishery production by ports and by species and months; fresh-water fishery production by areas and months; production of processed fishery products and byproducts; and foreign trade in fishery products.

AUSTRALIA:

Additions to the Fish Fauna of Western Australia, by G. F. Mees, *Fisheries Bulletin* No. 9, pt. 4, printed, 1964. Western Australia Fisheries Department, Perth, Australia.

Guide to Fishes (Queensland), by E. M. Grant, *Fisheries Notes*, vol. 2, no. 2, 1965, 288 pp., illus., printed. Department of Harbours & Marine, Edward St., Box 509H, G.P.O., Brisbane, Australia. This book contains a representative selection of the fish and crustaceans (including those used for bait) most commonly encountered by fishermen along the Queensland coast. The book is an aid to anglers and com-

mercial fishermen in the visual identification of principal species. It provides general information on habits, coloration, catchability. It helps the amateur naturalist in distinguishing between related species and gives a taxonomic description for the scientific worker. Chapters cover the sharks and rays, marine fish (general), fresh-water fish, poisonous fish, and crustaceans. Also included are an index of common names and an index of scientific names, an adequate bibliography, and descriptions of crustaceans. Each page describing a fish bears the best available illustration of the principal fish described, and details the more easily discernible points of dissimilarity from other and related species. Although intended primarily for biology students, the book will interest both commercial and sport fishermen, as well as amateur naturalists.

BACTERIOLOGY:

Der Phenolgehalt des Wassers in Seiner Auswirkung auf den Fischorganismus (The Phenol Content of Water and Its Effect on Fish Organisms), by H. H. Reichenbach-Klinke, 16 pp., illus., printed in German with English summary. (Reprinted from *Archiv für Fischereiwissenschaft*, vol. 16, no. 1, July 1965, pp. 1-16.) Bundesforschungsanstalt für Fischerei, Palmallee 9, Hamburg-Altona 1, Federal Republic of Germany.

BARENTS SEA:

"New data on the northern limit of occurrence of young cod, haddock, Norway haddock, and herring in the Barents Sea," by T. S. Berger, B. A. Popov, and R. A. Cheremisina, article, *Dokl. Akad. Nauk SSSR Biol. Sci. Sect.*, vol. 143, no. 176, 1962, printed in Russian. Akademiya Nauk SSSR, Podmosenski per. 21, Moscow B-64, U.S.S.R.

BENTHIC FISH:

A Photographic Survey of Benthic Fishes in the Red Sea and Gulf of Aden, with Observations on Their Population Density, Diversity, and Habits, by N. B. Marshall and D. W. Bourne, *Bulletin* vol. 132, no. 2, 244 pp., 1964, illus., printed. Harvard University, Museum of Comparative Zoology, Cambridge, Mass.

BERING SEA:

"Khimicheskaya kharakteristika zheltoperoi kambaly, treskii mintaya yugo-vostochnoi chasti Beringova morya" (Chemical composition of yellowfin sole, cod and walleye pollock of the southeastern Bering Sea), by M. N. Krivobok and O. I. Tarkavskaya, article, *Trudy Vses. Nauch. Issled. Inst. Morsk. Rybn. Khoz. Okeanogr.*, vol. 49, 1964, pp. 257-272, printed in Russian. Four Continent Book Corp., 156 Fifth Ave., New York, N. Y. 10010.

BILLFISH:

Distribution and Relative Abundance of Billfishes (Isiophoridae) of the Pacific Ocean, by John K. Howard and Shoji Ueyanagi, *Studies in Tropical Oceanography* No. 2, 144 pp., illus., printed, July 1965, \$5.50. Publications Department, Institute of Marine Science, 1 Rickenbacker Causeway, Miami, Fla. 33149.

BIOLOGICAL SPECIMENS:

A Method for Preserving Color in Biological Specimens, by Richard A. Waller and William N. Eschmeyer, 1 p., printed. (Reprinted from *BioScience*, vol. 15, no. 5, 1965, p. 361.) American Institute of Biological Sciences, 2000 P St. NW., Washington, D. C.

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BRAZIL:

Peixes Marinhos (Marine Fish), by Hitoshi Nomura and N. Menezes, 43 pp., printed in Portuguese. (Reprinted from Historia Natural dos Organismos Aquaticos do Brasil (Natural History of Aquatic Organisms of Brazil), 1964, pp. 343-485. Instituto Oceanográfico, Universidade de São Paulo, São Paulo, Brazil.

CANADA:

Journal of the Fisheries Research Board of Canada, vol. 22, no. 5, Sept. 1965, 216 pp., illus., printed, single copy C\$2. The Queen's Printer, Ottawa, Canada. Some of the articles are: "Fatty acids derived from lipids of marine origin," by P. M. Williams; "Paralytic shellfish poison in sea scallops (Placocecten magellanicus, Gmelin)," by N. Bourné; and "Fluctuations in the success of year-classes of whitefish populations with special reference to Lake Erie," by G. H. Lawler.

CASPIAN SEA:

"Okhrana zapasov tsennykh promyslovykh ryb Kaspiiskogo basseina" (Protection of the stock of economically valuable fish of the Caspian basin), by L. S. Berdichevsku, article, Priroda, vol. 10, 1958, pp. 51-54, printed in Russian. Akademiia Nauk SSSR, M. Khariton'yevski per. 4, Moscow, U.S.S.R.

CIGUATERA:

"Countering a fish poison," by Howard Simons, article, New Scientist, vol. 27, no. 461, Sept. 16, 1965, p.680, printed, single copy 1s.3d. (about US\$0.20). Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

CLAMS:

Articles from Biological Bulletin, illus., printed, single copy \$3.75. Marine Biological Laboratory, Woods Hole, Mass.:

"Chromosomes of two species of quahog clams and their hybrids," by R. Winston Menzel and Margaret Y. Menzel. vol. 129, no. 1, Aug. 1965, pp. 181-188.

"Reproductive cycle of Mya arenaria in New England," by John W. Ropes and Alden P. Stickney, vol. 128, no. 2, 1965, pp. 315, 327.

Development of a Hydraulic Pressure Dredge for Harvesting Clams, Research Development Bulletin No. 15, 4 pp., illus., processed, Sept. 1965. White Fish Authority, 2/3 Cursitor St., London EC4, England. In September 1964, a commercial shellfish operator in the United Kingdom took delivery of a Dutch hydraulic dredge designed for cockle harvesting, and the White Fish Authority took the opportunity to carry out trials with this equipment on a bed of clams. The trials were highly successful, though it was recognized that modifications to the gear could most likely improve its efficiency on clams. A new dredge was built for the Authority and this gear incorporated the proposed modifications. The principle of hydraulic dredging is, basically, that powerful jets of water are directed to the bottom within which species to be caught are recessed. A dredge blade follows the water jet and both blade and jet combine in a lossening-excavating operation and the animals are taken in a following bag.

Large Quahog Clams from Boca Ciega Bay, by Harold W. Sims, Jr., Contribution No. 84, 1 p., printed, 1964. Marine Laboratory, Florida State Board of Conservation, Bayboro Harbor, St. Petersburg, Fla.

Washington Razor Clams; Regulations, 7 pp., illus., printed, 1965. Washington State Department of Fisheries, Rm. 115, General Administration Bldg., Olympia, Wash.

COD:

"Essais de pêche pélagique de la morue au Labrador" (Pelagic fishing explorations for cod off Labrador), by C. Nedelec, article, France Pêche, no. 98, Sept. 1965, pp. 36-38, illus., printed in French, single copy 2.5 F. (about US\$0.50). France Pêche, Boite Postale 179, Lorient, France.

COD AND HADDOCK:

"Beskatningen av torsk- og hysebstanden in vare nordlige farvann" (Assessment of the cod and haddock stock in our northern waters), by Arvid Hylen, article, Fiskets Gang, vol. 51, no. 37, Sept. 16, 1965, pp. 539-543, illus., printed in Norwegian. Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

COLORADO:

Research in Colorado: Report 1, edited by Richard W. Gregory and W. C. Nelson, 1 vol., illus., printed, 1964. Fisheries Research Division, Colorado Game, Fish, and Parks Department, Fort Collins, Colo.

CONSERVATION:

Compilation of Federal Laws Relating to the Conservation and Development of Our Nation's Fish and Wildlife Resources, compiled under the direction of Warren G. Magnuson, Chairman, Committee on Commerce, U. S. Senate, 486 pp., printed, 1965, \$1.50. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Contains sections on Federal laws on fish and wildlife, general; fish and fisheries; wildlife; water resource statutes relating to fish and wildlife; and other laws relating to fish and wildlife. Some of the laws outlined under the part on fish and fisheries are: Federal aid programs relating to the sport and commercial fishing; fishing vessel construction differential subsidy program; prohibitions and penalties relating to fishing by foreign-flag vessels; United States fishing vessels; fishermen's cooperative associations; medical care for seamen; fishery educational authorities; surplus fishery products; laws implementing international agreements or conventions; and interstate compacts. Other laws relating to fisheries are: authorities relating to specific fish hatcheries and to other facilities; authorities relating to fishery research, studies, and propagation; prohibitions regarding certain fisheries; proclamation on coastal fisheries in certain areas of the high seas; executive order on fishery conservation zones; dogfish shark eradication; management of seals in Alaska; vessels of the Fish and Wildlife Service, and Coast Guard; fishery attache program; loans to farmers, including fish farmers; and authority for a National Fisheries Center and Aquarium.

CRABS:

"Regulations and the market crab fishery," by Richard Poole and Dan Gotshall, article, Outdoor California,

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vol. 26, no. 9, Sept. 1965, pp. 7-8, illus., printed. State of California, Office of Procurement, Documents Section, P. O. Box 1612, Sacramento, Calif. 95807.

CRUSTACEANS:

Biologiya Massovykh i Naibolee Obychnykh Vidov Rakooobraznykh Barentseva i Belogo Morei (The Biology of the Most Abundant and Common Species of Crustaceans of the Barents and White Seas), by V. V. Kuznetsov, 242 pp., illus., printed in Russian, 1964, 1 Ruble 49 Kop. (about US\$1.65). Nauka, Moscow, U.S.S.R.

DANGEROUS FISH:

Poisonous and Dangerous Fish, USSR, by Yevgeniy Sergeevich Prosvirov, TT: 65-31806, 66 pp. illus., processed, July 29, 1965, \$3. Clearinghouse for Federal Scientific and Technical Information, U. S. Department of Commerce, Braddock and Port Royal Rds., Springfield, Va. 22151.

DENMARK:

"Lovforslag om regulering av fiske-eksporten fra Danmark" (Legislative bill on regulation of fish exportation from Denmark), article, Tidsskrift for Hermetikindustri (Norwegian Cannery Export Journal), vol. 51, no. 7, July 1965, pp. 272-273, printed in Norwegian. De Norske Hermetikfabrikers Landsforening, Stavanger, Norway.

DICTIONARIES:

New Marine and Fisheries Dictionary - Nuevo Diccionario de Pesca y Marina, Spanish-English - English-Spanish, printed in Spanish and English, to be published soon, \$10. Fernando Flores Ltd., 705 N. Windsor Blvd., Los Angeles, Calif. 90038. This forthcoming English-Spanish, Spanish-English dictionary of marine and fisheries terms will be the first of its kind. It will contain complete terminology of commercial fisheries, the entire field of naval terminology, shore and ships, marine gear, fishing gear, names of commercial fish, shore plant terminology, ichthyology, and marine biology. It will be a pertinent, up-to-date, and practical reference book for sailors, merchant seamen, shipbuilders, ichthyologists, marine industrialists and, most of all, fishermen. Only those terms will be included which are of salient importance, of current usage, and which may be indispensable to anyone who fishes for pleasure or profit or writes about the sea and fishing.

DOLPHIN:

"El sonar de los cetáceos" (The sonar of the cetaceans), by Andres Munoz, article, Iberica, vol. 43, no. 36, June 1965, pp. 219-222, illus., printed in Spanish, 18 ptas. (about US\$0.30). Iberica, Palau, 3, Apartado 759, Barcelona-2, Spain.

DRYING:

Food Dehydration. Volume II--Products and Technology, edited by Wallace B. Van Arsdel and Michael J. Copley, 732 pp., illus., printed, 1964, domestic \$23.50, foreign \$24.50. The Avi Publishing Co., Inc., P. O. Box 238, Westport, Conn. This volume is organized into two major sections. The first deals broadly with food dehydration principles and practice applicable generally to all food commodities or a large group of them; the second handles the specific science and technology of individual dehydrated food commodities. This second group is itself organized

into two great divisions: first, the world of plant products, and second, that of animal products. Foods are dried or dehydrated for one or both of the following purposes: to preserve a perishable raw food commodity against deterioration or spoilage under the intended conditions of storage and eventual use; to reduce the cost or difficulty of packaging, handling, storing, and transporting the material by converting it to a dry solid, thus reducing its weight and also, usually but not necessarily, its volume. The intangible quality of convenience may also be served. The introductory chapter is devoted to a simplified statement of the principles of drying. In the second chapter, emphasis is placed on the fact that the "best" drying method for a food product is determined by quality requirements, raw material characteristics, and economic factors. A chapter on dehydration plant operations is devoted to raw material procurement, plant location, plant layout and construction, raw material preparation, finished product handling, and general business considerations. There follow chapters discussing procedures for dehydrating vegetables, potatoes, coffee and tea, dry soups and other dry mixes, fruits, fruit and vegetable juices, dry milk products, and eggs. A chapter on drying of meat, poultry, and fishery products considers the nature of the raw material--structure, physical properties, and chemical composition; effects of physical treatments--heat and denaturation, freezing and thawing; dehydration--drying in the thawed state, and freeze-drying; rehydration; deterioration in freeze-dried meat and fish during storage--reactions involved, and effects of external factors; nutritive value of dehydrated meats; and applied aspects--production of air-dried meat during World War II, developments other than freeze-drying, and freeze-drying of meat. Appendixes contain charts showing moisture contents of various foods, and expected ratios of fresh to dried weights; glossary of some of the technical terms used; and peroxidase test procedure to indicate adequacy of blanching. Each chapter is followed by its own bibliography and a complete index is placed at the end of the volume. The book will be of vital interest to food researchers as well as food processors, distributors, and retailers. Volume I published in 1963 presented a brief history of the food dehydration industry, some data on its growth and present importance in the United States, and a concise statement of scientific principles upon which this food preservation technology is based.

EAST AFRICA:

East African Freshwater Fisheries Research Organization, Annual Report, 1964, 75 pp., illus., printed, 1965, 6s. (about US\$0.85). East African Freshwater Fisheries Research Organization, P. O. Box 343, Jinja, Uganda. Describes the scientific work accomplished during 1964 in the study of the Lake Victoria fisheries; the Nile perch in Lake Victoria; ecology and productivity, especially of young Tilapia; fishery surveys in Kenya and Tanzania; anadromous fish; and mormyrid fish. Also includes a bibliography of recent publications on East African fisheries and related subjects; and appendices of research papers on fisheries.

EAST GERMANY:

"Die fischerei an der Afrikanischen Kuste" (The fishery off the African Coast), article, Fischerei-Forschung, vol. 3, no. 1, 1965, 140 pp., illus., printed in

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

German. Institut für Hochseefischerei und Fischverarbeitung, Rostock-Marienehe, German Democratic Republic.

"Jahresfischereibericht, 1963" (Annual fisheries report, 1963), article, Fischerei-Forschung, vol. 2, no. 2, 1964, pp. 1-166, illus., printed in German. Institut für Hochseefischerei und Fischverarbeitung, Rostock-Marienehe, German Democratic Republic.

EXPORTS:

Commercial Exports under A.I.D. Programs, 48 pp., illus., printed, 1965. Office of Material Resources, Agency for International Development, U. S. Department of State, Washington, D. C. 20523. A simple non-technical booklet describing how businessmen in the United States can participate in the export sales opportunities generated by A.I.D.-financed programs of commodity procurement. A.I.D. is not a purchaser of commodities, except in a very few instances, and thus should be regarded only as a financier. The purchasers are foreign businessmen/importers, foreign governments, general contractors for A.I.D.-financed projects, and other U. S. Government Agencies who purchase for A.I.D. The booklet answers the questions: How can you learn of opportunities for A.I.D.-financed business? What are the procedures governing A.I.D. sales? What A.I.D. requirements must be met as you fill the order? How does A.I.D. help to deliver the commodities? How do you get paid under A.I.D. financing?; and explains other ways A.I.D. can help you.

FISH COOKERY:

"Delicacies from Louisiana waters," article Louisiana Conservationist, vol. 17, nos. 9 & 10, Sept.-Oct. 1965, pp. 12-13, illus., printed. Louisiana Conservationist, Wild Life & Fisheries Bldg., 400 Royal St., New Orleans, La. 70130. Presents cook-out recipes for charcoal-grilled red snapper steaks, flounder 'n foil with crab stuffing, and fried yellow perch fillets.

FISH DISEASES:

Fischkrankheiten in Bayern im Jahre 1964 (Fish Diseases in Bavaria in 1964), by H. Reichenbach-Klinke, 2 pp., illus., printed in German. (Reprinted from Allgemeine Fischerei-Zeitung, vol. 90, no. 4, 1965.) Landesfischereiverband Bayern e.V., 5 Kaiser Ludwigs Platz, Munich 15, Federal Republic of Germany.

FISHERMEN:

Anatomy of a Fisherman, by John Donaldson Voelker, 117 pp., illus., printed, 1964. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York, N. Y. 10018.

FISH MEAL:

Articles from Poultry Science, vol. 44, no. 2, March 1965, printed. Poultry Science Association, Kansas State University, Manhattan, Kans.:

"Biological evaluation of fish meal proteins as sources of amino acids for the growing chick," by R. E. Smith and H. M. Scott, pp. 394-400.

"Measurement of the amino acid content of fish meal proteins by chick growth assay," by R. E. Smith and H. M. Scott, pp. 401-413.

The Effect of Antioxidant Treatment on the Metabolizable Energy and Protein Value of Herring Meal, by

B. E. March and others, 7 pp., printed. (Reprinted from Poultry Science, vol. 44, no. 3, May 1965, pp. 679-685.) Poultry Science Association, Kansas State University, Manhattan, Kans.

"To compare the growth rate in chicks by using meat meal as a substitute for fish meal in chick starter ration," by O. P. Agarwala and G. P. Agarwala, article, Indian Poultry Gazette, vol. 48, no. 3, Oct. 1964, pp. 82-85, printed. Indian Veterinary Research Institute, Izatnagar, Up. India.

"Fish meal and yeast in poultry feed," by U. P. Kralovanszky and G. M. Szelenyi, article, Baromfitenyestés, vol. 9, no. 4, Apr. 1965, pp. 6-7, printed. Baromfitenyestés, Posta Kozponti Hirlap Iroda Jozef Nador, Ter. 1, Budapest 5, Hungary.

"New development in small fish meal plants for trawlers and shore installations," article, Norwegian Fishing and Maritime News, vol. 12, no. 1, 1965, pp. 15, 45, printed. Norwegian Fishing and Maritime News, P. O. Box 740, Slottsgt. 3, Bergen, Norway.

FISH OIL:

"Aceite de pescado repunta mundialmente" (Fish oil begins to appear worldwide), article, Pesca, vol. 10, no. 4, April 1965, pp. 18-20, illus., printed in Spanish with English summary, single copy \$1. Pesca, Av. Wilson 911, Oficina 301, Apartado 877, Lima, Peru.

FISH PRODUCTS:

"Research on fish products outlined," by Roger Berglund, article, Feedstuffs, vol. 37, March 27, 1965, pp. 8, 64, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis, Minn. This article covers 3 topics. The first is "Fish meal in turkey feeds." A comparison of the amino-acid composition of turkey rations composed mainly of corn and soybean meal with the amino-acid requirements of the turkey showed that these rations were deficient in certain amino acids, particularly methionine. Supplementing turkey diets with fish meal has several advantages. The fish meal provides (1) a desirable level of energy without fat supplementation; (2) an excellent balance of amino acids without special supplementation; and (3) the available phosphorus required, with a minimum of supplementary dicalcium phosphate. The second of the topics is "Unidentified growth factors in fish products or in fish solubles." From research work the conclusions were: (1) a growth factor did exist, (2) it was not a known vitamin, (3) it was not an essential amino acid, (4) it was not part of the ash, (5) there was more than one form, and (6) it might contain nitrogen. The final topic is "Fish meal in broiler feeds." Broiler body weight and tibia-ash data indicated that phosphorus from fish meal, poultry byproduct meal, and meat and bone meal were equally as available as was phosphorus from feed grade dicalcium phosphate or reagent sodium phosphate.

FISH PROTEIN CONCENTRATE:

"Factors influencing the nutritional value of fish flour. IV--Reaction between 1,2-dichloroethane and protein; V--Toxic material in samples extracted with 1,2-dichloroethane," by A. B. Morrison, M. Licsik, and I. C. Munro, article, Federation Proceedings, vol. 23, no. 4, part 1, 1964, p. 877, printed. Federation Proceedings of American Society for Experimental Bi-

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

ology, 9650 Wisconsin Avenue NW., Washington, D. C. 20014.

FISH PUMP:

"New trend to boat pumps for shoal fish fleet," article, The South African Shipping News and Fishing Industry Review, vol. 20, no. 8, Aug. 1965, pp. 83, 85, 87, illus., printed, single copy 30¢ (about US\$0.45). Thomson Newspapers, South Africa (Pty.) Ltd., 8th Fl., Trust House, Thibault Sq., Box 80, Cape Town, Republic of South Africa.

FISH WASHER:

Fish-Washer Development, Research & Development Bulletin No. 14, 2 pp., illus., processed, Sept. 1965. White Fish Authority, 2/3 Cursitor St., London EC4, England. With the cooperation of a fishing firm, the Industrial Development Unit of the White Fish Authority has developed a fish-washer for use on board trawlers operating from the Port of Granton, England. Those vessels traditionally box the catch at sea, and all gutting and sorting are done in the deck ponds prior to washing. The Granton method requires the deck-sorted fish to be washed and transferred below as units of a single species. The new washer consists of a rectangular tank containing two nylon-covered wire baskets. Down the long sides of the tank are two perforated spray tubes, so arranged that the jets of water play onto the baskets. The cross-section of the tank is such that with the surging of water in the tank, due to ship motion, a sluicing action is given to the mass of water. Spill ports are cut out on the opposite side of the tank to that of the spray pipes; these serve to drain off dirty water and control the level. The method of operation is to tip small baskets of sorted and graded fish into one of the washer baskets and allow the surging and spray action to wash the fish. The baskets are oversized to allow the fish freedom of movement. After washing, the fish are tipped into a second small basket for handling into the fishroom.

FLOUNDER:

Flounders and Their Cousins, Unique Fish, by C. M. C. M. Bearden, Education Release 177, 5 pp., illus., printed. (Reprinted from South Carolina Wildlife, winter 1960.) Division of Information and Education, South Carolina Wildlife Resources Department, Box 360, Columbia, S. C.

"The yellow-finned flounder in the Eastern Bering Sea," by N. S. Fadeev, article, Trudy Vsesoyuznyi Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, vol. 48, 1963, pp. 281-291, printed in Russian. Vsesoyuznyi Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, Moscow, U.S.S.R.

FOOD:

Symposium on Foods: Proteins and Their Reactions (The Third in a series of Symposia on Foods Held at Oregon State University), edited by H. W. Schultz and A. F. Anglemier, 482 pp., illus., printed, 1964, domestic \$3, foreign \$3.50. The Avi Publishing Co., Inc., P. O. Box 388, Westport Conn. Presents papers by 18 food scientists, grouped into five sections. The introductory section contains "Personal perspectives in the practice of protein chemistry," by R. David Cole. The section on structure and properties of proteins

offers: "The structure of proteins," by Richard T. Jones; "Apoliar interactions in polypeptidyl proteins," by R. R. Becker; and "Denaturation: a requiem," by J. Ross Colvin. Next is a section on protein interaction and degradation containing: "Protein-protein interaction: endothermic polymerization and biological processes," by Max A. Lauffer; "Protein-lipid complexes," by D. G. Cornwell and L. A. Horrocks; "Protein-carbohydrate complexes," by F. R. Jevons; and "Some recent advances in techniques for protein degradation," by Joe R. Kimmel. A section on major protein systems and factors affecting them includes: "The nature of interactions in proteins derived from milk," by Sege N. Nimasheff; "Egg proteins," by Robert E. Feeney; "Meat proteins," by J. R. Bendall; "Fish muscle proteins and some effects on them of processing," by J. J. Connell; "Seed proteins," by Aaron M. Altschul; and "Cereal proteins," by J. S. Wall. The final section on biological effects of protein interactions contains: "The evolution of proteins," by Robert E. Feeney; "Some aspects of the nutritive value of proteins," by A. B. Morrison; "Metabolic antagonists," by William Shive; "Food allergens," by Margaret B. Strauss; "Immuno Chemistry," by Frank Perlman; and a summary of the Symposium-panel discussion. Each paper includes a record of discussion and a complete bibliography. An adequate index concludes the book. Although written in technical phraseology, the book will be useful to anyone in food retailing or wholesaling, and institutional feeding, as well as to those studying or researching food chemistry or technology. It is an authoritative up-to-date reference on proteins and their reactions. The chapter on fish proteins discusses deterioration during frozen storage, changes due to processing, effects of freeze-drying, effects of frozen storage, effects of species variation, and effects of storage near 0° C. (32° F.).

FOOD AND AGRICULTURE ORGANIZATION:

Intersession Report (1962-1964) of Technical Committee I Submitted to the 11th Session of the IPFC, Occasional Paper 65/3, 204 pp., illus., processed, 1965. Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Far East, Bangkok, Thailand. The first part is a summary report of the activities in fishery biology, oceanography, and limnology of member countries of the Indo-Pacific Fisheries Council (IPFC), and of the Food and Agriculture Organization of the United Nations (FAO) during the intersession period of 1962-64 as compiled by Technical Committee I. The second part is a report on the responses during the intersession period, 1962-64, to recommendations made by the 10th Session of the IPFC regarding work of Technical Committee I or to subjects within its field. The final part is a report of the FAO for the IPFC intersession period 1962-64 on activities relating to the work program of Technical Committee I, IPFC. Appendices include report on unit fisheries as objects of study in fisheries science, the Australian unit fisheries, unit fisheries of the Philippines, computer programs in use for fishery and oceanography purposes, project summaries for Australia, IPFC proposed format for project summaries, and Pacific Ocean data summary charts.

The following revisions, processed in Spanish, to Directorio de Servicios e Instituciones de Pesca en América Latina (Directory of Fishery Services and Institu-

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tions in Latin America) (vol. 1) are available from the Regional Office for Latin America, Food and Agriculture Organization of the United Nations, Casilla 10095, Santiago, Chile:

Informacion No. 1 para Actualizar el Directorio de Servicios e Instituciones de Pesca en America Latina (Volumen I) (Information No. 1 to Revise the Directory of Fishery Services and Institutions in Latin America, Vol. 1), 10 pp., July 1965.

Informacion No. 2 (Information No. 2), 1 p., Sept. 1965.

Nomina de Instituciones y Servicios Consignados, Servicios Gubernamentales de Administracion Pesquera--Argentina (List of Institutions and Assigned Services, Government Services for Fishery Administration--Argentina), 14 pp., July 1965.

Grupo Coordenar do Desenvolvimento da Pesca--Superintendencia do Desenvolvimento do Nordeste--Sudene--Brazil (Coordinated Group for Development of Fishery--Superintendency of Development of the Northeast--Sudene--Brazil), 4 pp., May 1965.

Instituto de Fomento Pesquero--Chile (Institute for Fishery Development--Chile), 12 pp., Aug. 1965.

Departamento Cientifico y Tecnico del Servicio Oceanografico y de Pesca--Uruguay (Scientific and Technical Department for the Fishery and Oceanography Service--Uruguay), 11 pp., April 1965.

FOOD FOR PEACE:

Food for Peace--1964 Annual Report on Public Law 480, 155 pp., illus., printed, 1965, \$1. U. S. House of Representatives, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Includes a short report on the fishery research programs of the Bureau of Commercial Fisheries using foreign currencies under "Food for Peace" (Public Law 480, 83rd Congress). During calendar year 1964, \$212,753 foreign currencies were obligated for the purpose bringing to \$548,220 the total obligated since the beginning of the program in fiscal year 1962. The bulk of the currencies was for use in India, Israel, and Poland.

FRANCE:

"En 1964 la pêche française a franchi un nouveau seuil en mettant à terre plus de 400,000 t de poisson frais et congelé" (In 1964 the French fishery has jumped to a new record in landing more than 400,000 metric tons of fresh and frozen fish), article, La Peche Maritime, vol. 44, no. 1049, Aug. 1965, pp. 605-611, printed in French, single copy 15 F. (about US\$3.05), Les Editions Maritimes, 190, Blvd. Haussman, Paris, France.

FREEZER TRAWLERS:

"Freezing trawlers for tropical countries," by G. Gianesi, article, Annex 1964-3, Bulletin, International Institute of Refrigeration, pp. 189-193, printed. Institut International du Froid, 177, Blvd. Malesherbes, Paris (17^e), France.

FREEZING ON BOARD:

"Fish freezing at sea," by K. A. Oettle, article, Food Industries of South Africa, vol. 17, no. 5, Sept.-Oct. 1964, pp. 51-53, illus., printed, Odhams Press, 16 Bree St., P. O. Box 4245, Cape Town, Republic of South Africa.

"Vertical plate freezer prepares quick-frozen at sea," by A. Muir, article, Canadian Refrigeration and Air Conditioning Journal, vol. 30, no. 6, June 1964, pp. 22-23, illus., printed, National Business Publications Ltd., Gardenvale, Quebec, Canada.

FRESH FISH:

(White Fish Authority Conference) The Handling and Care of Fish at Sea--Papers and Discussions at a Conference Held at Olympia, London, May 31-June 2, 1965, 88 pp., illus., printed, July 1965. Fishing News Ltd., 110 Fleet St., London EC4, England. Contains articles and pertinent discussions on: "Handling, stowage and discharge of catch," by J. J. Waterman; "Supplementary paper," by W. G. F. Carnie; "The chilling of fish on board fishing vessels," by John H. Merritt; "Chilling methods on board (supplementary paper)," by S. Forbes Pearson; and "Antibiotic ice: the advantages (supplementary paper)," by A. P. Hudson. Remaining articles are on: "Freezing trawlers and their equipment," by S. Forbes Pearson; "Supplementary paper," by M. B. F. Ranken; "Freezing fillets at sea," by N. R. Jones; "Offal processing," by S. W. F. Hanson; "Economic size of mother factoryships and catchers," by C. Birkhoff; and "Freezing fillets," by J. J. Diestel. The final section is devoted to short articles on new gear and vessels, such as a slice-ice plant, stern trawlers, ice making machines, a dielectric heating plant for thawing of sea frozen fish, buoys and floats, fish-processing machinery, synthetic fibers for fishing, and plastic containers.

FROZEN FISH:

"Studies on 'spongy meat' formation of frozen cod and Alaska pollock," by T. Tanaka, article, Refrigeration, vol. 40, no. 447, Jan. 1965, pp. 3-13, illus., printed in Japanese. Nihon Reito Kyokai, No. 3, 1-chome, Ginza Nishi, Chuo-ku, Tokyo, Japan.

FUR SEALS:

"Harvesting the stocks of fur seals," by S. V. Dorofeev, article, Zoologicheskii Zhurnal, vol. 42, no. 7, 1963, pp. 1,111-1,113, printed in Russian. Redaktsiia Zoologicheskogo Zhurnala, Podsosenskii per. d. 21, Moscow B-64, U.S.S.R.

GERMAN FEDERAL REPUBLIC:

Selling in Germany, by Robert E. Day, Jr., OBR 65-64, 20 pp., illus., printed, Aug. 1965, 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.)

GREECE:

Selling in Greece: Government Procurement Procedures, OBR 65-66, 8 pp., printed, Sept. 1965, 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.)

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HAWAII:

Proceedings, Governor's Conference on Science and Technology, State of Hawaii, January 26-30, 1965, 183 pp., processed, May 1965. Department of Planning and Economic Development, State of Hawaii, 426 Queen St., Honolulu 13, Hawaii. Purposes of the Conference were: to describe the national and world developments of science and technology, their future impact, and the consequent need for professional, technical, and industrial skills; to describe the present state of the art and probable future direction of selected scientific areas which might have special significance to Hawaii; to emphasize the critical role which the utilization and expansion of Hawaii's science resources can play in the economic growth of the State; and to suggest an action program, and the role of government, industry, and the University of Hawaii in its achievement. Included among many other articles are: "Frontiers of ocean engineering from an industry viewpoint," by Carl H. Holm; "Oceanographic instrumentation and Hawaiian fisheries," by John C. Marr; "Man in the sea program for Hawaii," by Taylor Pryor; "Man in an alien environment," by William Helvey; and "The art of making money in the ocean," by Willard Bascom.

HERRING:

"Biology of White Sea herring fry," by M. N. Konstantinova, article, Trudy Kandalakshkogo Gosudarstvennogo Zapovednika, vol. 4, 1963, pp. 243-245, printed in Russian. Four Continent Book Corp., 156 Fifth Ave., New York, N. Y. 10010.

"Some peculiarities in the behavior of herring in a uniform electric field of continuous and pulsating current," by G. B. Daniyulite, article, Trudy Akademii Nauk Lit. S.S.R., Ser. B, vol. 3, no. 32, 1963, pp. 181-194, printed in Russian. Four Continent Book Corp., 156 Fifth Ave., New York, N. Y. 10010.

ICELAND:

"Hagnting fiskaflans 1964" (Utilization of the fish catches 1964), article, Aegir, vol. 58, no. 12, July 1, 1965, pp. 211-216, printed in Icelandic. Fiskifelag Islands, Reykjavik, Iceland.

ICHTHYOLOGY:

Station Data Errors for Fishes Collected by the Steamer "Blake", by William N. Eschmeyer, 3 pp., illus., printed. (Reprinted from Copeia, no. 2, June 25, 1965, pp. 236-238.) American Society of Ichthyologists and Herpetologists, 18111 Nordhoff St., Northridge, Calif.

IDAHO:

Available from Idaho Fish and Game Dept., 518 Front St., Boise, Idaho:

Federal Aid to Fish Restoration Annual Progress Report for Investigations Project F-49-R-1 (1962), Salmon and Steelhead Investigations, 100 pp., illus., printed, 1965.

Federal Aid to Fish Restoration Job Completion Report for Project F-32-R-6, Tests for Increasing the Returns of Hatchery Trout, February 1, 1963, to February 1, 1964, by Osborne Casey and others, 33 pp., illus., printed, 1965.

INDUSTRIAL PRODUCTS:

"An improved method of processing fish and fish offal," by D. G. Gillies, article, Food Manufacture, vol. 39, June 1964, p. 35, printed. Grampian Press, Ltd., The Tower, Shepherds Bush Rd., Hammersmith, London W6, England.

INTERIOR DEPARTMENT:

United States Department of the Interior--Organization and Functions, 31 pp., printed, 1965. (Reprinted from the United States Government Organization Manual, 1965-66.) U. S. Department of the Interior, Washington, D. C. 20240.

ITALY:

Selling in Italy, by Fernand Lavallee, OBR 65-68, 12 pp., printed, Oct. 1965, 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.)

JAPAN:

Actual Condition of Low Grade Fishery Products Processing Industry, Studies on Fishery Economy No. 6, 71 pp., illus., printed in Japanese, Aug. 1965. Planning Section, Fisheries Administration Division, Fisheries Agency, Ministry of Agriculture and Forestry, 2-1, Kasumigaseki, Chiyoda-ku, Tokyo, Japan.

Contributions from the Department of Fisheries and the Fishery Research Laboratory, Kyushu University, no. 10, 1964, 245 pp., illus., printed in Japanese and English, July 1965. Department of Fisheries and Fishery Research Laboratory, Kyushu University, Fukuoka, Japan. Some of the articles are: "Studies on the floating seaweeds. IX--The floating seaweeds found on the sea around Japan," by S. Segawa, T. Sawada, and T. Yoshida; and "Studies on the external mucous substance of fishes. IX--Preparation of crystalline N-acetylneuraminic acid from the external mucous substance of loach," by N. Enomoto, H. Nakagawa, and Y. Tomiyasu.

Present State of Maritime Safety, 126 pp., printed in Japanese, May 1965. Maritime Safety Agency, Tokyo, Japan.

Production of Shallow Sea and Inland Water Fish Farming Industries and Inland Water Fisheries in 1964, Bulletin 40-115 (Suito-14), 7 pp., printed in Japanese, Aug. 1965. Statistics Research Division, Ministry of Agriculture and Forestry, 2-1, Kasumigaseki, Chiyoda-ku, Tokyo, Japan.

Available from the Faculty of Fisheries, Hokkaido University, Hokodate, Japan:

Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 15, no. 1, May 1964, 62 pp., illus., printed in Japanese with Japanese summaries. Some of the articles are: "On the analysis of chum salmon scale pattern by use of auto-correlation coefficient," by R. Kawashima and K. Kyushin; "Studies on improvement of salmon gill-nets," by S. Nishiyama and S. Yamamoto; "Studies on the cleaning of air contamination substances from fish processing plants in fishery

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towns. I," by E. Tanikawa, T. Motohiro, and M. Akiba; "Studies on the complete utilization of squid (*Ommastrephes sloani pacificus*). XXI," by E. Tanikawa, M. Akiba, and T. Motohiro; and "Freeze vacuum drying of marine products. IV," by K. Kobayashi and S. Igarashi.

_____, vol. 15, no. 2, Sept. 1965, 84 pp., illus., printed in Japanese with English summaries. A few of the articles are: "Survey of trawl grounds off the north-west coast of Australia with special reference to hydrographical condition on the grounds," by K. Masuda and S. Nakane; "On the oceanographical condition and the distribution of tuna fish in the Coral Sea in December 1962," by T. Sato and others; "Biochemical studies on muscle of sea animals. III," by A. Iida, K. Oishi, and K. Murata; "Likes and dislikes of fish meat. II; III," by K. Oishi, Y. Tamura, and A. Okumura; "Studies on the complete utilization of squid. XXII," by E. Tanikawa, M. Akiba, and T. Motohiro; and "Studies on keeping freshness of raw fish and shellfish. I," by E. Tanikawa, T. Motohiro, and M. Akiba.

_____, vol. 15, no. 3, Nov. 1964, 58 pp., illus., printed in Japanese with English summaries. Some of the articles are: "Studies on the fishery of mackerel by purse seines on the sea off southwest Hokkaido. IV," by H. Nakamura and S. Igarashi; "On the measurements of transfer functions related to the fishing training ship *Hokusei Maru*," by T. Sato and N. Sano; "Studies on the compounds specific for each group of marine algae. III," by K. Yabe, I. Tsujino, and T. Saito; and "Studies on complete utilization of squid (*Ommastrephes sloani pacificus*). XXIII," by E. Tanikawa, M. Akiba, and T. Motohiro.

_____, vol. 15, no. 4, March 1965, 69 pp., illus., printed in Japanese with English summaries. A few of the articles are: "A preliminary note on the effect of hydrostatic pressure on the behavior of some fish," by T. Nishiyama; "On nine warm-current seaweeds new to the northern coast of the Tsugaru Straits," by H. Yamamoto; "Fundamental studies on the phenomena of sticks in gill-netting. I," by K. Nashimoto; and "On some measured examples concerning the form change of salmon drift gill-net during the fishing process in the Okhotsk Sea," by M. Ishida, and others.

Data Record of Oceanographic Observations and Exploratory Fishing, No. 9, March 1965, 349 pp., illus., printed. Presents data gathered during cruises of the *Oshoro Maru*: Cruise 7 to the eastern Indian Ocean from Nov. 1963 to Feb. 1964; Cruise 8 to the south of Cape Erimo in May 1964; Cruise 9 to the northern North Pacific, Bering and Chukchi Sea from June to Aug.; and Cruise 10 to the sea area off Kitami in Sept. Also contains data on cruises by the *Hokusei Maru*: Cruise 15 to the South Pacific Ocean from Oct. 1963 to Jan. 1964; Cruise 16 (1) to the southern Kurile waters in June 1964; Cruise 16 (2) to the southern Kurile waters in June; Cruise 16 (3) to the Okhotsk Sea in July; and Cruise 16 (4) to the Okhotsk Sea in July.

"Early development of several species of Laminariales in Hokkaido," by Hiroshi Yabu, article, Memoirs of the Faculty of Fisheries, Hokkaido University, vol. 12, no. 1, 1964, 145 pp., illus., printed.

KOREA REPUBLIC:

Annual Report of Oceanographic Observations, vol. 12, 1963, 173 pp., illus., processed, 1965. Fisheries Research and Development Agency, Seoul, Republic of Korea.

LABOR LEGISLATION:

Part 800--Equal Pay for Equal Work under the Fair Labor Standards Act, WHPC Publication 1119, 13 pp., printed, 1965, 10 cents. (Reprinted from Federal Register, Sept. 9, 1965.) Wage and Hour and Public Contracts Divisions, U. S. Department of Labor, Washington, D. C. 20210. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.)

LAW OF THE SEA:

"International fisheries and the law of the sea," by Peter A. Larkin, article, The Fishermen's News, vol. 21, first issue, Oct. 1965, pp. 5, 10, 12, printed, single copy 15 cents. The Fishermen's News, Fishermen's Terminal, Seattle, Wash. 98119. The keynote address to the American Fisheries Society in Portland, Sept. 23, 1965, and the first of a series on the subject of law of the sea as it pertains to fisheries. Discusses in detail the problems of studying the biology of high-seas fisheries, the questions of economics involved, the appearance of large numbers of fishery commissions and councils, and the need "to use the correctly ascertained experience of the past to express a considered and unbiased belief on which future action can be based."

LOBSTER:

"Hummerfangst och hummerundersokningar" (Lobster fishery and lobster research), by Bernt I. Dybern, article, Svenska Vastkustfiskaren, vol. 35, no. 17, Sept. 10, 1965, pp. 296-299, illus., printed in Swedish. Svenska Vastkustfiskarnas Centralforbund, Ekonomistskottet Postbox 1015, Goteborg 4, Sweden.

"Leturhumarveidarnar vid Island" (Norway lobster fishing off Iceland), article, Aegir, vol. 58, no. 13, July 15, 1965, pp. 221-229, illus., printed in Icelandic with English summary. Fiskigelag Islands, Reykjavik, Iceland.

MARINE ALGAE:

"The marine algae of Bahia de Jobos, Puerto Rico," by L. R. Almodovar, article, Nova Hedwigia, vol. 7, no. 1/2, 1964, pp. 33-52, printed. Nova Hedwigia, Box 166, Weinheim, Federal Republic of Germany.

Vodorosli Barentseva Morya (Algae of the Barents Sea), by G. Barashkov, 48 pp., illus., printed in Russian, 1962, 6 Kop. (about US\$0.10). Knigoizdat, Murmansk, U.S.S.R.

MEDITERRANEAN:

"Aspectos del crecimiento relativo en peces del Mediterraneo Occidental" (Aspects of the relative growth of fish of the Western Mediterranean), by C. Bas, article, Investigacion Pesquera, vol. 27, Oct. 1964, pp. 13-119, illus., printed in Spanish with English summary. Instituto de Investigaciones Pesqueras, Paseo Nacional, s/n, Barcelona-3, Spain.

NETS:

Comparisons of Two Types of Gillnets Used for Lake Survey Purposes in Minnesota-Ontario Boundary

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

Waters, by Thomas J. H. Bonde, 11 pp., illus., printed, 1965. Section of Research and Planning, Division of Game and Fish, St. Paul, Minn.

NEW ENGLAND:

The New England Fishing Industry: Functional Markets for Finned Food Fish I, by Joseph F. Farrell and Harlan C. Lampe, Economics of Marine Resources 2, Bulletin 379, 28 pp., illus., printed, June 1965. Publications Office, 16 Woodward Hall, University of Rhode Island, Kingston, Rhode Island 02881. The relevant species-group in this investigation were groundfish (haddock, cod, pollock, flounder, and white hake) and ocean perch. In 1962, the New England catch of fish within this group accounted for 76 percent of all food fish landed in the region. The report covers findings related to market levels in the industry, the markets viewed as levels of demand, the landings market, the wholesaler-processor market, the imports market, the cold storage holdings market, the retail market, and the markets in retrospect--summary and framework for a model.

"The New England fishing industry. II--Impact of Government aid," by Frederick W. Bell, article, New England Business Review, Sept. 1965, pp. 2-9, printed. Federal Reserve Bank of Boston, Boston, Mass. Explains how New England fishermen are planning a fleet expansion during the next 5 years. The impetus for this revival stems from the new technology of stern trawling and even more from the Federal 1964 Fishing Fleet Improvement Act. That Act makes available subsidies ranging up to 50 percent of fishing vessel construction costs. The success of the Act in upgrading and expanding the New England fleet will depend on how it affects the region's competitive position in relation to imported fishery products. For New England as a whole, the Act may reverse the decline in the fleet and stabilize the region's share of the market. The new technology of stern trawling will help raise productivity, while providing increased safety for the crew and higher wages. Both the subsidy and the broader use of stern trawlers will offset some of the advantages of foreign competitors.

NORTH ATLANTIC:

"Osnovnye rezul'taty i zadachi promyslovo-okeanograficheskikh issledovaniy v ralone deyatelnosti mezhdunarodnoi komissii po rybolovstvu v Severo-Zapadnoi Atlantike (IKNAF)" (The main results and tasks of the fisheries and oceanographic studies in the realm of the activities of the International Commission for the North Atlantic Fisheries, ICNAF), by M. Adrov, article, Materialy II konferentsii po problemam Vzalnodelstviya atmosfery i gidrosfery v severnoi chasti Atlanticheskogo okeana (Information on the Second Conference on Problems of the Interaction of the Atmosphere and Hydrosphere in the North Atlantic Ocean), pp. 233-243, printed in Russian, 1964. Leningrad University, Leningrad, U.S.S.R.

NORWAY:

"Det var fiskerne som fant utveien" (It was the fisheries that found their way out of difficulty), article, Konkylien, vol. 10, no. 1, Jan. 1965, pp. 4-6, illus., printed in Norwegian. Stord Bartz Industri A. s, Bergen, Norway.

"Garantikassen for lottfiskere betalte i 1964 tilskott på over kr. 5.8 millioner" (Guarantee for fishermen's

shares in 1964 paid a contribution of over 5.8 million kroner), article, Fiskaren, vol. 42, no. 33, August 18, 1965, p. 5, printed in Norwegian. Norges Fiskerlag, Postboks 172, Bergen, Norway.

"Lønnsomheten av fiskefartøyer over 40 fot i 1963, sesongresultater" (Profitability of fishing vessels of over 40 feet in 1963-season's results), article, Fiskets Garg, vol. 51, Sept. 2, 1965, pp. 498-509, printed in Norwegian with English summary. Fiskeridirektoratet, Radstuplass 10, Bergen Norway.

NUTRITION:

An Anthology of Food Science. Volume 2--Milestones in Nutrition, by Samuel A. Goldblith and Maynard A. Joslyn, 812 pp., illus., printed, 1964, \$14.25. The Avi Publishing Co., Inc., P. O. Box 388, Westport, Conn. This volume presents some of the important scientific publications and observations of the past 150 years, and particularly of the past 50 years, relating to the nutritional sciences. Food scientists and technologists now are increasingly concerned with the problem of meeting the present and foreseeable world requirement for food. Nutritional adequacy as well as economic availability are basic to such considerations. Included are chapters on the early history of nutrition, the feeding of purified diets and the discovery of the vitamins, vitamin nomenclature, Vitamin A, Vitamin D, the essential fatty acids, and Vitamin B₁. Other chapters cover Vitamin C, riboflavin, nicotinic acid and pellagra, and the multiple nature of the Vitamin B complex, amino acids and proteins, minerals, and the future of nutrition. Bibliographies are included at the end of most of the chapters. As a summary work on nutrition the book will be useful to students and researchers in nutrition, as well as to workers in institutional food preparation.

OCEANOGRAPHY:

"Alvin reaches 6,000 feet in dive," by Larry L. Booda, article, Under Sea Technology, vol. 6, no. 9, Sept. 1965, pp. 20-22, illus., printed, single copy \$1. Compass Publications Inc., 617 Lynn Bldg., 1111 N. 19th St., Arlington, Va. 22209. Alvin, the Navy's first true deep-diving research submarine (as contrasted to the vertical traveling bathyscaph Trieste) reached its design depth of 6,000 feet on July 20, 1965. It uses a high-strength steel sphere as the pressure hull to contain personnel and scientific instruments. The 7-foot diameter sphere is built of 1.33-inch thick HY 100 steel, used for the first time in an undersea vehicle. The 22-foot long, 8-foot beam submersible displaces 13 tons. Surfaced, it has a draft of 8.5 feet. Top speed is 6-8 knots. Cruising speed is 2.5 knots for a submerged range of 20-25 miles. The operating design depth is 6,000 feet with a safety factor of 1.8. Design of Alvin was a cooperative effort of Woods Hole Oceanographic Institution personnel and the Applied Sciences Division of Litton Industries. Alvin is the first phase of the Navy's deep-sea research vehicle program. It will permit on-site observations by oceanographers; biologists will be able to observe directly concentrations and behavior of marine life in deep water.

A Bibliography of the Oceanography of the Tasman and Coral Seas, 1860-1960, by Betty N. Krebs, ITS Bulletin 156, New Zealand Oceanographic Institute Memoir No. 24, 27 pp., printed, 1964. New Zealand Oceanographic Institute, Wellington, New Zealand.

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

Marine Science in Denmark and Sweden, by Adrian T. Richards, ONRL 81-62, 15 pp., printed, 1962. Office of Naval Research, U. S. Navy, Washington, D. C.

Oceanography--A Study of Inner Space, by Warren E. Yasso, 176 pp., illus., printed, 1965, \$2.50. Holt, Rinehart, and Winston, Inc., 383 Madison Ave., New York, N. Y. 10017. In his introduction, the author defines the limits of the earth's oceans and presents them in a new perspective when he says, "Truly, the oceans are hardly more than a film of salt water on the surface of our planet!" He goes on to explain the recent recognition of the importance of the oceans, the definition of oceanography and fields of this science, early explorers of the sea, beginnings of deep-sea research in the 19th Century, and United States oceanographic research since 1877. There follow chapters on the chemistry of the sea, oceanic circulation, the earth's structure, topography of ocean basins, oceanic sediments and turbidity currents, and research submersibles. A chapter on marine biology explains life in the oceans, marine environments, plankton organisms, nekton or intermediate and abyssal fish, benthos or bottom-dwelling animals, fish population and the food supply, ocean mammals, and the future of marine biology. The book has a short bibliography, detailed glossary of oceanographic terms, and an adequate index. Written interestingly in layman's language, this book will hold the attention of the general reader as well as high school and college students.

Oceans: An Atlas-History of Man's Exploration of the Deep, edited by George Edmund R. Deacon, 297 pp., illus., printed, 1962. Paul Hamlyn, Spring Pl., London NW5, England.

Serial Atlas of the Marine Environment--Zooplankton Indicator Species in the North Sea, by James H. Fraser; The Trace Elements, by Robert Johnston, Folio 8, illus., printed 1965, looseleaf \$4, bound \$6. Serial Atlas of the Marine Environment, American Geographical Society, Broadway at 156th St., New York, N. Y. 10032.

--Meteorology of the North Sea, by Frank E. Lumb, Folio 9, illus., printed, 1965, looseleaf \$4, bound \$6.

"What reflects sound in the ocean?" article, New Scientist, vol. 27, no. 461, Sept. 16, 1965, p. 697, printed, single copy 1s. 3d. (about US\$0.20). Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

OCEAN PERCH:

"Age and growth rate of the Pacific ocean perch of the Bering Sea," by O. F. Gritsenko, article, Trudy Vsesoyuznyi Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, vol. 48, 1963, pp. 313-316, printed in Russian. Vsesoyuznyi Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, Moscow, U.S.S.R.

OYSTERS:

"The accumulation of enteric viruses by the oyster, Crassostrea virginica," by T. G. Metcalf and W. C. Stiles, article, Journal of Infectious Diseases, vol. 115, no. 1, 1965, pp. 68-76, printed. University of Chicago Press, 5750 Ellis Ave., Chicago, Ill.

"Contraction in the opaque part of the adductor muscle of the oyster (Crassostrea angulata)," by B. M. Millman, article, Journal of Physiology, vol. 173, no. 2, 1964, pp. 238-262, illus., printed. Cambridge University Press, 200 Euston Rd., London NW1, England.

"Dynamic merchandising program needed to develop frozen oyster market," by Duane D. Shelton, article, Quick Frozen Foods, vol. 28, no. 2, Sept. 1965, pp. 97-101, illus., printed. E. W. Williams Publications, Inc., 1776 Broadway, New York, N. Y. 10019. The author discusses how United States growers seem ready to convert to freezing oysters but need assistance in creating new products and establishing a vital promotional approach. A new generation of oyster farmers is setting a vigorous pace in rebuilding oyster production. Most favorable aspect of future development is that the profitability in oyster production is second to none in the fishing industry.

The Immigrant Oyster (OSTREA GIGAS), Now Known as the Pacific Oyster, by E. N. Steele, 202 pp., illus., printed, 1964, hard bound \$4.50, paper bound \$3.50, plus postage. Pacific Coast Oyster Growers Association, 66 Marion St., Seattle, Wash. 98104. Documents the introduction and development of Pacific oysters from Japan into Puget Sound. The first chapter tells how the oyster spat were selected in Japan and shipped to Washington by two Japanese, how they were planted in Samish Bay, and how the first planting was successful. Following are chapters describing the early years of cultivation, cultivation of Eastern and Olympia oysters, cultivation of Pacific oysters, experiments in artificial seed setting, formation of the Pacific Oyster Growers Association, and the national depression of the 1930's and the Oyster Code. Other chapters tell of the war with Japan and its effect on the Pacific oyster industry, postwar seed from Japan, the Pacific oyster industry entrance into an era of big business in the late 1940's, statistics on production, reproduction of Pacific oysters in the State of Washington, the official recognition by the industry of the economic value of the Pacific oyster, growth of the industry, and processing oysters by canning, freezing, stewing, and smoking. An appendix reports on the fight for the preservation of the Pacific oyster from water pollution. This is an amusing and informative book, of interest to oyster producers and distributors as well as the general reader.

"Seafood chief reports on status of Alabama's oyster industry," by George W. Allen, article, Alabama Conservationist, vol. 35, no. 4, June-July 1965, pp. 16-19, illus., printed. Alabama Department of Conservation, 64 N. Union St., Montgomery, Ala. 36104.

"A system of oyster culture for West Pakistan Coast," by S. Azhar Hasan, article, Agricultural Pakistan, vol. 14, no. 3, 1963, pp. 310-328, illus., printed. Agricultural Pakistan, Central Publications Branch, Block 44, Karachi, Pakistan.

PACIFIC OCEAN:

Abstracts of Symposium Papers, Tenth Pacific Science Congress, Honolulu, Hawaii, 1961, 490 pp., printed. Pacific Science Association, Bernice P. Bishop Museum, Honolulu, Hawaii 96819. In the section on Symposium on Limnology and Freshwater Fisheries, two of the articles abstracted are: "The status of fish passage in the Pacific Northwest," by K. G. Weber, under

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Symposium on Fishery Protection in Relation to Dams and Water Development Projects; and "The Promotion of productivity in the fish farm," by Nobuyuki Kawamoto, under Symposium on Progress in the Culture of Pond Fishes. In the section on Symposium on Marine Biology and Fisheries, some of the abstracts are: under Symposium on Biological and Physical Aspects of Light in the Sea (a) Underwater Light Measurements for Biological Studies, "Luminescence and vision in marine animals," by J. A. C. Nicol; under Symposium on Endocrinology of Fishes, "Hormonal factors in smolting in salmon," by Madeleine Olivereau and Maurice Fontaine; under Symposium on Factors Affecting the Behavior of Predaceous Marine Fishes, Especially Sharks, "Some aspects of olfactory and visual responses in Pacific salmon," by J. R. Brett and C. Groot, "Visual discrimination in lemon sharks," by Eugenie Clark, "Factors affecting the predaceous behavior of sharks in South Africa," by David H. Davies, "The visual apparatus of sharks and its probable role in predation," by Perry W. Gilbert, "Environmental and behavioral factors which influence the migration of sharks," by A. M. Olsen, "Food of some tropical predaceous fish, including sharks, from net and line fishing records," by A. M. Rapson, "Some environmental factors affecting the feeding behavior of sharks," by Stewart Springer, and "The role of olfaction in shark predation," by Albert L. Tester; under Symposium on immunogenetic concepts in marine population research, "Serology of Atlantic clupeoid fishes," by Carl J. Sindermann, "Studies on the erythrocyte antigens of the skipjack tuna (*Katsuwonus pelamis*)," by Lucian M. Sprague and Leslie I. Nakashima, "On the blood types of yellow-fin and big-eye tuna," by Akimi Suzuki, and "Serological differentiation of sardine subpopulations off California," by Andrew M. Vrooman. Included in the Symposium on Oceanography are abstracted articles under Symposia on Deep Circulation in the Pacific, Equatorial Circulation in the Pacific, North Pacific Circulation, Present and Future Trends in Oceanographic Instrumentation, Radioactive Tracers in Oceanography, and on Tsunamis.

PAKISTAN:

"Marine fisheries of Pakistan. 1--Present status," by N. Alam Khandker, article, *Pakistan Journal of Science*, vol. 15, no. 5, 1963, pp. 214-216, illus., printed, Pakistan Association for the Advancement of Science, Lahore, Pakistan.

PERU:

"Armadores deben 897 millones" (Vessel owners owe 897 million soles), article, *Pesca*, vol. 10, no. 4, April 1965, pp. 12-15, illus., printed in Spanish with English summary, single copy \$1. *Pesca*, Av. Wilson 911, Oficina 301, Apartado 877, Lima, Peru. A survey of anchovy vessel owners show that possibilities of getting out of debt are poor for those with boats of under 100 tons. Apparently only boats of 160 tons and over are profitable. Anchovy populations lately seem to concentrate far from the traditional fishing grounds; thus larger boats with better nets and equipment are needed for profitable operations.

"Peru consolidates fish meal industry," by D. J. McEachran, article, *Foreign Trade*, vol. 124, no. 6, September 18, 1965, pp. 6-9, illus., printed, single copy C\$0.25. Queen's Printer, Government Printing Bureau, Ottawa, Canada. In only 15 years, Peru has

built up on the anchoveta swarming in the cold Humboldt Current the world's biggest fish meal industry. Production of fish meal for animal feed exceeded 1.5 million metric tons in 1964. It has become the country's largest export. Fish meal sales in 1964 accounted for nearly one-quarter of the country's total exports, overshadowing the output of the basic copper, cotton, and sugar industries. Direct investment in the fish meal industry is now estimated at more than \$300 million. Problems that accompanied this rapid expansion are now being corrected, and the future looks promising, asserts the author.

Principal Manufacturing Industries in Peru. Part 1; Part 2; by Richard H. Mullins, OBR 65-58-A; OBR 65-58-B, 20 pp., 24 pp., printed, Aug. 1965, 15 cents each. 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.) Part 1 contains a section on canned fish, frozen fish, fish meal, and fish oil.

PHYSIOLOGY:

"Electrical and mechanical responses in deep abdominal extensor muscles of crayfish (*Orconectes virilis*) and lobster (*Homarus americanus*)," by Bernard C. Abbott and I. Parnas, article, *Journal of General Physiology*, vol. 48, no. 5, pt. 1, 1965, pp. 919-931, illus., printed. Rockefeller Institute of Medical Research, York Ave. and 66th St., New York, N.Y. 10021.

PLANKTON:

Plankton, vol. 1, no. 10, June 1, 1965; vol. 1, no. 11, June 15, 1965, 4 pp. each, illus., processed. Marine Laboratory, Florida State Board of Conservation, Bayboro Harbor, St. Petersburg, Fla.

POLAND:

Basic Data on the Economy of Poland, by Leon Lewins and Oleg Jerschowsky, OBR 65-65, 24 pp., printed, Sept. 1965, 15 cents. Bureau of International Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.)

"La Pologne au troisième rang dans la construction mondiale de navires de pêche" (Poland in third place in world construction of fishing vessels), article, *France Pêche*, no. 98, Sept. 1965, pp. 24, 27, illus., printed in French, single copy 2.5 F. (about US\$0.50). France Peche, Boite Postale 179, Lorient, France.

POLLUTION:

Fish and River Pollution, by J. R. Erichsen Jones, 211 pp., illus., printed, 1964. Butterworth, Inc., 7300 Pearl St., Bethesda, Md.

PORTUGAL:

Estatística das Pescas Marítimas no Continente e Ilhas Adjacentes no Ano de 1963 (Marine Fishery Statistics on the Continent and Adjacent Islands in the Year 1963), 143 pp., printed in Portuguese, 1964. Direcção das Pescarias, Ministério da Marinha, Lisbon, Portugal.

PORTUGUESE WEST AFRICA:

"A pesca na Província de S. Tomé e Príncipe" (The fishery in the Province of Santo Tome and Principe), by Romulo Figueiredo, article, *Boletim da Pesca*, no. 87, June 1965, pp. 11-25, printed in Portuguese. Gabinete de Estudos das Pescas, R.S. Bento, 644, Lisbon, Portugal.

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PRESERVATION:

"Neue wege zur herstellung haltbarer fisch-preserven" (New methods for stable preparation of fish preserves), by W. Ludorff, article, Fette, Seifen, Anstrichmittel, vol. 65, no. 2, 1963, pp. 139-144, printed in German. Industrieverlag von Herhausen K. G., 24 Rodingsmarkt., Hamburg II, Federal Republic of Germany.

QUALITY:

"Fangtechnik und fischqualität" (Fishing technique and fish quality), by A. von Brandt, article, Fette, Seifen, Anstrichmittel, vol. 65, no. 2, 1963, pp. 144-146, printed in German. Industrieverlag von Herhausen K. G., 24 Rodingsmarkt, Hamburg II, Federal Republic of Germany.

RADIATION PRESERVATION:

Application of Radiation-Pasteurization Processes to Pacific Crab and Flounder, Final Summary, Nov. 1963-Oct. 1964, TID-21404, 118 pp., illus., printed, Nov. 1964. Clearinghouse for Federal Scientific and Technical Information, U. S. Department of Commerce, Braddock and Port Royal Rds., Springfield, Va. 22151.

"Radiation and pasteurization of raw and chlortetracycline-treated shrimp," by A. A. Awad, Russell O. Sinnhuber, and A. W. Anderson, article, Food Technology, vol. 19, no. 5, 1965, pp. 182-184, printed, single copy \$1.50. The Garrard Press, 510 N. Hickory St., Champaign, Ill. 61823. Reports on a study of extension of the storage life of raw shrimp with pasteurization levels of ionizing radiations in combination with refrigerated storage at 38° F. and chlortetracycline. Levels of irradiation which do not impart a significant irradiation odor or taste (pasteurization radiation threshold) to raw shrimp were determined. Those levels were 0.5 and 0.75 megarad. The storage life of the shrimp irradiated at 0.5 megarad was extended to 5 weeks, compared with 1 week for the unirradiated samples held at the same temperature. During an 8-10 week storage period, the samples which received doses of 0.5 megarad with CTC and those which received 0.75 megarad with and without CTC remained in good condition.

Radiation Pasteurization of Shrimp and Oysters, Final Summary Report for the Period January-December 1964, by Arthur F. Novak and Joseph A. Liuzzo, ORO-626, 29 pp., processed, Jan. 15, 1965. Division of Technical Information, U. S. Atomic Energy Commission, Washington, D. C. (For sale by the Clearinghouse for Federal Scientific and Technical Information, U. S. Department of Commerce, Braddock and Port Royal Rds., Springfield, Va. 22151.) During this study, it was found that low-dose gamma radiation employing cobalt 60 can be used to extend the storage life of Gulf shrimp and oysters. Many field trials on consumer acceptance of radiation pasteurized shrimp and oysters were successful according to results obtained from organoleptic, chemical, and bacteriological tests of the products. The procedures employed for obtaining the fresh shellfish, the method of handling and storing, and the time of holding prior to irradiation are factors involved in the keeping qualities after irradiation. Only products of high initial quality can be irradiated successfully. This process should provide advantages to the fisherman, processor, distributor, and consumer. Market prices of shellfish, now subject to fluctuations due to overabun-

dance or scarcity, would tend to be stabilized with the widespread use of this process.

REFRIGERATION:

"Apparatus for shipboard storage and refrigeration of freshly caught fish," by M. J. Puretic, Abstracts from Current Scientific and Technical Literature, vol. 17, Oct. 1964, p. 445, Abstract No. 2407, printed, British Food Manufacturing Research Association, Raddalls Rd. Leatherhead, Surrey, England.

Articles from Annex 1964-3, Bulletin, International Institute of Refrigeration, Institut International du Froid, 177, Blvd. Malesherbes, Paris (17^e), France:

"Observations on the possible development of refrigeration application in fish storage and distribution in tropical countries," by J. Gousset and G. Moal, pp. 157-170.

"Refrigeration of fish," by F. Bramsnaes, pp. 143-156.

SALMON:

"Cause of variation in time of maturation of pink salmon spawners in 1962," by V. V. Azbelev and B. V. Istoshin, article, Materialy Rybkhkhozyaistvennykh Issledovaniy Severnogo Basseina, no. 1, 1963, pp. 32-34, printed in Russian. Polarnyi Nauchno-Issledovatel'skii i Proektnyi Institut Morskogo Rybnogo Khozyaistva i Okeanografii, Moscow, U.S.S.R.

"Fecundity of *Oncorhynchus keta* in the Amur River," by T. N. Belyanina, article, Nauchnye Doklady Vysheishkoly, Biologicheskije Nauki, no. 4, 1963, pp. 24-30, printed in Russian. Gosudarstvennoe Izdatel'stvo "Vysshiaia Shkola," Podsosenskii per. 20, Moscow B-62, U.S.S.R.

"Food requirements for salmonids, and the main food used for feeding in artificial culture," by K. A. Faktorovich, article, Izvestiya Gosniorkh, vol. 54, 1963, pp. 64-90, printed in Russian. Gosudarstvennyi Nauchno-Issledovatel'skii Institut Ozer'nogo i Rechnogo Rybnogo Khozyaistva, Moscow, U.S.S.R.

A Microcytic Anemia of Juvenile Chinook Salmon Resulting from Diets Deficient in Vitamin E, by Cecil M. Whitmore, Contribution No. 29, 31 pp., illus., printed, March 1965. Oregon Fish Commission Research Laboratory, Rte. 2, Box 31A, Clackamas, Ore. 97015.

Pituitary Hormones of the Pacific Salmon. I--Response of Gonads in Immature Trout (*SALMO GAIARDNERII*) to Extracts of Pituitary Glands from Adult Pacific Salmon (*ONCORHYNCHUS*), by P. J. Schmidt and others, 10 pp., illus., printed. (Reprinted from General and Comparative Endocrinology, vol. 5, no. 2, April 1965, pp. 197-206.) Academic Press Inc., 111 - 5th Ave., New York 3, N. Y.

"Reproductive ecology of masu (*Oncorhynchus masu*, Brevoort)," by A. I. Smirnov, article, Dokl. Akad. Nauk SSSR Biol. Sect., no. 1543 (1/6), 1962, pp. 334-336, illus., printed in Russian. Akademiia Nauk SSSR, Podsosenski per. 21, Moscow B-64, U.S.S.R.

Articles from Voprosy Ikhtologii, printed in Russian. Akademiia Nauk SSSR, Ikhtologicheskaja Komissai, Moscow, U.S.S.R.:

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

"Growth and structure of the pink salmon scale," by R. I. Enyutina, vol. 3, no. 4, 1963, pp. 751-754.

"Helminths as biological indicators of the local stock of anadromous Amur salmon (*Oncorhynchus*)," by A. Kh. Akhmerov, vol. 3, no. 3, 1963, pp. 536-555.

"Influence of predators on the young of *Oncorhynchus gorbusha* (Walb.) and *Oncorhynchus keta* (Walb.) in the White and Barents Seas," by E. L. Bakshanskii, vol. 4, no. 1, 1964, pp. 136-141.

SARDINES:

"Effektiv sardinproduksjon i Maine" (Efficient sardine production in Maine), article, *Tidsskrift for Hermetikindustri* (Norwegian Cannery Export Journal), vol. 51, no. 8, August 1965, pp. 288-289, illus., printed in Norwegian. De Norske Hermetikfabrikers Landsforening, Stavanger, Norway.

"Nuevas preparaciones de alachas (sardina) en conserva en Túnez" (New canned products of anchovy (sardine) in Tunisia), article, *Informacion Conservera*, vol. 13, no. 136-137, April-May 1965, pp. 148-150, 151-153, illus., printed in Spanish, single copy 30 ptas. (about US\$0.50). *Informacion Conservera*, Garrigues, 21, Valencia-1, Spain.

SAURY:

Japanese Canned Saury, 8 pp., illus., printed in Japanese. Japan Canned Saury Packers Association, No. 18, 2-chome, Marunouchi, Chiyoda-ku, Tokyo, Japan.

SEALS:

"K voprosu o pitanii grenlandskogo tyulenyia" (The feeding habits of the harp seal--*Phoca groenlandica*), by Yu. K. Timoshenko, article, *Sb. Nauch. Issled. Rabot. Sev. Otd. Polyarnogo Nauch. Issled. Proektn. Inst. Morskogo Rybn. Khoz. Okeangr.*, 1962, pp. 48-52, printed in Russian. Institut Morskogo Rybnogo Khoziaistva i Okeanografii im. N. M. Knipovicha, Murmansk, U.S.S.R.

SEA WEED:

Methods for Increasing Production of Edible Seaweeds, by Shunzo Suto, *Fisheries Propagation Series 9*, 36 pp., printed in Japanese, June 1965. Japan Fisheries Conservation Association, 6th Fl., Zenkoku Choson Kaikan, 17-banchi, 1-chome, Nagata-cho, Chiyoda-ku, Tokyo, Japan.

SHAD:

"Susquehanna River shad study," by Frank T. Carlson, article, *Pennsylvania Angler*, vol. 34, no. 10, Oct. 1965, pp. 1-7, illus., printed, single copy 25 cents. Pennsylvania Fish Commission, South Office Bldg., Harrisburg, Pa.

SHRIMP:

"Biology of shrimps in the western Gulf of Alaska," by B. G. Ivanov, article, *Trudy Vsesoyuznyi Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii*, vol. 48, 1963, pp. 207-218, printed in Russian. Vsesoyuznyi Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaistva i Okeanografii, Moscow, U.S.S.R.

"Dans les eaux de Guyane, l'échec d'une aventure crevette" (In the waters off Guiana, the end of a shrimp fishing venture), by Lucien Gourong, article, *France*

Pêche, no. 98, Sept. 1965, pp. 28-32, illus., printed in French, single copy 2.5 F. (about US\$0.50). France Pêche, Boite Postale 179, Lorient, France.

"Effects of injected biological stains on oxygen uptake by shrimp," by Zoula P. Zein-Eldin and Edward F. Klima, article, *Transactions of the American Fisheries Society*, vol. 94, no. 3, 1965, pp. 277-278, printed. American Fisheries Society, 1404 New York Ave. NW., Washington, D. C. 20005.

"Growth and survival of postlarval *Penaeus aztecus* under controlled conditions of temperature and salinity," by Zoula P. Zein-Eldin and David V. Aldrich, article, *Biological Bulletin*, vol. 129, no. 1, 1965, pp. 199-216, printed. The Marine Biological Laboratory, Woods Hole, Mass.

SMALL BUSINESS MANAGEMENT:

Tax Guide for Small Business, 1966, Publication No. 334, 160 pp., illus., printed, 1965, 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 1965 income tax returns, excise tax returns, and other returns for 1966. 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 1966 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 to the man just starting in business in that it affords a quick method for determining for what taxes he may be liable. This edition has been brought up to date and includes explanations of the provisions of the new tax laws, 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.

SPAIN:

"Conservas Espanolas en crisis" (Spanish canned fishery products in crisis), article, *Pesca*, vol. 10, no. 4, April 1965, pp. 32-34, illus., printed in Spanish with English summary, single copy \$1. Pesca, Av. Wilson 911, Oficina 301, Apartado 877, Lima, Peru.

Investigacion Pesquera, vol. 28, April 1965, 246 pp., illus., printed in Spanish with English summaries. Instituto de Investigaciones Pesqueras, Paseo Nacional, s/n, Barcelona-3, Spain. Some of the articles are: "Edad y crecimiento de la merluza (*Merluccius merluccius* L.) del noroeste del Mediterraneo Espanol" (Age and development of the hake of the northwest Spanish Mediterranean), by A. Figueras; "Sobre la dinamica de la pesqueria de arrastre de Castellon" (On the dynamics of the trawl fishery of Castellon), by M. G. Larraneta and P. Suau; "Empleo de metabisulfito potasico en la conservacion y prevencion del ennegrecimiento (melanosis) de los crustaceos" (Use of potassium metabisulfite in the conservation and prevention of blackening of crustaceans), by Rafael Establier; "Composicion quimica estacional de la carne de langostino, *Penaeus kerathurus* (Forsk.) (1775) y consideraciones biologicas" (Seasonal chemical

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composition of the meat of the shrimp, *Penaeus kerathurus* Forskal 1775, and biological considerations), by F. Munoz; and "Estudio del crecimiento del bogavante (*Homarus vulgaris* Milne Edwards) del noroeste Espanol" (Study of the development of the lobster, *Homarus vulgaris* Milne Edwards, of the Spanish northeast), by A. Figueras.

"Pesquerias, produccion y tecnica" (Fisheries, production, and technique), by V. Paz-Andrade; "Panorama actual de la pesca Espanola" (Present view of the Spanish fishery), by D. Ignacio del Cuvillo y Merello; "El crecimiento anual de la flota pesquera espanola" (The annual growth of the Spanish fishing fleet); "La normalizacion de buques en la renovacion de la flota pesquera" (The standardization of vessels in the renewal of the fishing fleet); "Los puertos y la pesca en 1964" (The ports and the fishery in 1964); "Balanza exterior del comercio pesquero Espanol en 1964" (The balance of foreign trade in Spanish fishery products in 1964); "La pesca y la evolucion de la flota" (The fishery and the development of the fleet), by Mariano Lobo Andrada; "Conservas 1964: evolucion favorable" (Canning in 1964: favorable development); and "1964 produccion pesquera maritima Espanola" (1964 Spanish marine fishery production), articles, *Industrias Pesqueras* (Statistics Annual for 1964), vol. 39, nos. 913-914, May 15, 1965, pp. 173, 175, 178-179, 181-182, 183, 185, 187, 188-190, 198-200, 219, 221, 224-225, 227, 240-241, 248-249, 251, 253-255, illus., printed in Spanish. *Industria Pesqueras*, Apartado 35, Vigo, Spain.

"Los rendimientos en la experiencia de la pesca de arrastre" (The annual production in the experimental trawl fishery), by P. Suau, article, *Puntal*, vol. 12, no. 137, Aug. 1965, pp. 10-13, 15, illus., printed in Spanish, single copy 20 ptas. (about US\$0.35). *Puntal*, Apartado de Correos 316, Alicante, Spain.

SPINY LOBSTER:

"INOS chairman describes probe into promising shrimp and prawn stocks"; "Growing market in Europe for live rock lobster"; "How long will Vema rock lobster last?"; articles, *The South African Shipping News and Fishing Industry Review*, vol. 20, no. 6, June 1965, pp. 81-83; 85, 87; 91, 93, illus., printed, single copy 30¢ (about US\$0.45). Thomson Newspapers, South Africa (Pty.) Ltd., 8th Fl., Trust House, Thibault Sq., Box 80, Cape Town, Republic of South Africa. The first article discusses a large new venture operating along the coast of Mozambique, now at the stage where it can catch and process shrimp, spiny lobster, and other fishery products on a satisfactory commercial scale. The second tells how from a difficult start on a small scale only 2 years ago, the export of live spiny lobsters by air to Europe is growing into a flourishing section of the South African fishing industry. Opened in France, the market is now expanding to other European countries and exports are reported to be averaging 30-40 tons a month. The final article poses and answers the question of whether the spiny lobster stocks on the Vema seamount will prove to be a lasting valuable new asset or no more than a transient bonanza to be drained of its stocks in a brief burst of uncontrolled fishing.

Notes on Postlarvae of *PANULIRUS ARCUS*, by Rose-
Witham, Robert M. Ingle, and Harold W. Wims, Jr.,

Contribution No. 83, 98 pp., illus., printed, 1964. Marine Laboratory, Florida State Board of Conservation, Bayboro Harbor, St. Petersburg, Fla.

SPRAT:

"Experimental and commercial preservation of Caspian sprats with sodium pyrosulfite for the production of fish meal," by S. V. Ezerskii, article, *Trudy Instituta Ikhtiologii i Rybnogo Khozyaistva*, vol. 4, 1963, pp. 211-233, printed in Russian. *Akademiia Nauk Kazakh SSSR*, Alma-Ata, Kazakh S.S.R.

STERN TRAWLING:

Stern Trawling Conference, Grimsby, England, 1963, edited by George Ward, 102 pp., illus., printed, 1964. *Fishing News (Books), Ltd.*, Ludgate House, 110 Fleet St., London EC4, England.

STURGEON:

"Food for small sturgeons," by V. V. Bal' and L. S. Korochlina, article, *Izvestiya Vysshikh Uchebnykh Zavedenii, Pishchevaya Tekhnologiya*, no. 6, 1963, pp. 93-94, printed in Russian. *Izdatel'stvo Krasnodarskogo Instituta Tishchevoi Promyshlennosti*, Ul. Kransnaya, 135, Kransnodar, U.S.S.R.

"Growth of Siberian sturgeon, *Acipenser baeri* Brandt, in Lena River," by L. I. Erkalov, article, *Byulleten' Moskovskogo Obschestva Ispytatelei Prirody. Otdel. Biologicheskii*, no. 3 (supplement), 1964, p. 160, printed in Russian. *Moskovskogo Universiteta*, Moscow, U.S.S.R.

Articles from *Trudy Vses. Nauch. Issled. Inst. Morsk. Rybn. Khoz. Okeanogr.*, vol. 52, 1964, printed in Russian. *Four Continent Book Corp.*, 156 Fifth Ave., New York, N. Y. 10010:

"Biologiya i promysel kaspiskoi belugi" (Biology and fishery of the Caspian beluga sturgeon *Huso huso*), by N. Ya. Babushkin, pp. 183-258.

"Osetrovye SSSR i ikh vosproizvodstvo" (Sturgeons of the U.S.S.R. and their production), by N. I. Kozhin, pp. 21-58.

"Osetry severo-zapadnoi chasti Chernogo morya" (Sturgeons of the northwestern Black Sea), by A. I. Ambroz, pp. 287-347.

SWEDEN:

Establishing a Business in Sweden, by Grant Olson, OBR 65-62, 12 pp., printed, Aug. 1965, 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.)

THAWING:

"Dielectric thawing for frozen foods," by Leo Walter, article, *Canner/Packer*, vol. 134, Feb. 1965, pp. 36-37, printed. *Vance Publishing Co.*, 59 E. Monroe St., Chicago, Ill. 60603.

TRADE LISTS:

The U. S. Department of Commerce has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from the Commercial Intelligence Division, Office of International Trade Promotion, Bureau of International Commerce,

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U. S. Department of Commerce, Washington, D. C. 20230, or from Department of Commerce field offices for \$1 each. List names and addresses, size of firms, and types of products (including fish and shellfish) handled by each firm:

Canneries and Frozen Foods--Producers and Exporters--Brazil, 14 pp., Sept. 1965.

Canneries and Frozen Foods--Producers and Exporters--Guatemala, 7 pp., Sept. 1965.

Canneries and Frozen Foods--Producers and Exporters--India, 21 pp., Sept. 1965.

Canneries and Frozen Foods--Producers and Exporters--Mexico, 15 pp., Sept. 1965.

TRAWLERS:

"Insulating foams on trawlers," by J. J. Waterman, article, World Fishing, vol. 14, March 1965, pp. 52-53, printed. Grampian Press Ltd., The Tower, 229-243 Shepherd's Bush Rd., Hammersmith, London W6, England.

TROUT:

"How long are the trout fresh?" article, New Scientist, vol. 27, no. 461, Sept. 16, 1965, p. 688, printed, single copy 1s. 3d. (about US\$0.20). Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

Some Migratory Habits of the Anadromous Dolly Varden, SALVELINUS MALMA (Walbaum) in Southeastern Alaska, by Robert H. Armstrong, Research Report 3, 36 pp., illus., processed, 1965. Department of Fish and Game, Subport Bldg., Juneau, Alaska 99801.

Untersuchungen zur Epidemiologie und Okologie der Forellenseuche (Research on the Epidemiology and Ecology of Trout Diseases), by H. Liebmann and H. H. Reichenbach-Klinke, 20 pp., illus., printed in German with English summary. (Reprinted from Archiv für Fischereiwissenschaft, vol. 15, no. 2, Oct. 1964, pp. 94-113.) Bundesforschungsanstalt für Fischerei, Palmallee 9, Hamburg-Altona 1, Federal Republic of Germany.

TUNA:

"Individual'nyi impul'snyi apparat dlya lova tuntsa" (Individual pulsing apparatus for the capture of tuna), by I. F. Pisarevskii, article, Trudy Baltiskogo Nauch. Issled. Inst. Morsk. Rybn. Khoz. Okeanogr., vol. 9, 1962, pp. 160-161, printed in Russian. Four Continent Book Corp., 156 Fifth Ave., New York, N. Y. 10010.

"Oceanography and the ecology of tunas," by Maurice Blackburn, article, Oceanography and Marine Biology: an Annual Review, vol. 3, pp. 299-322, printed, 1965. George Allen and Unwin, Ltd., 40 Museum St., London WC1, England.

"Pêche et biologie du germon" (The fishery and biology of the albacore tuna), by Edouard Priol, article, France Pêche, no. 98, Sept. 1965, pp. 45-48, illus., printed in French, single copy 2.5 F. (about US\$0.50). France Pêche, Boite Postale 179, Lorient, France.

TURKEY:

Balik ve Balikcilik (Fish and Fishery), vol. 13, no. 8, Aug. 1965, 32 pp., printed in Turkish with English table of contents. Et ve Balik Kurumu G. M., Balikcilik, Mudurlugu, Besiktas, Istanbul, Turkey. Contains articles on: "Most valuable raw material of perfume industry, ambergris," by Emekli Koramiral; and "Technological developments in the field of fish flour (Part V)," by Hikmet Akgunes.

Market Factors in Turkey, by Donald R. Trafton, OBR 65-63, 12 pp., printed, Aug. 1965, 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.)

UNDERWATER PHOTOGRAPHY:

"Attempts to take photographs underwater," by O. F. Khludova, article, Trudy Okeanograficheskoi Komisii, vol. 14, 1962, pp. 30-38, printed in Russian. Akademiia Nauk SSSR, Moscow, U.S.S.R.

UNITED KINGDOM:

Fisheries of Scotland Report for 1964, Cmnd. 2644, 140 pp., printed, July 1965, 9s. 6d. (about US\$1.35). Department of Agriculture and Fisheries for Scotland, Edinburgh, Scotland. (For sale by Sales Section, British Information Services, 845 Third Ave., New York, N. Y. 10022.) Discusses highlights of the Scottish fisheries in 1964, means of capture and persons engaged in the fisheries, herring fishery, white fish fishery, shellfish fishery, industrial products, enforcement of fishery regulations, salmon fisheries, fisheries research, and harbor facilities. Appendices include information on herring distribution and disposal of landings, herring landings by area, herring methods of capture, white fish landings, salmon fisheries seasons and landings, Report of the Director of Fisheries Research, research by the Scottish Marine Biological Association, construction and improvement of harbors, and fisheries administration. Also contains statistical tables showing persons employed in the Scottish fisheries; production of fishery byproducts; landings of herring by British vessels; quantity and average price of demersal fish by species; quantity and value of fish landed by foreign vessels; and other related data.

U.S.S.R.:

"Bibliografiya po probleme 'Teoreticheskie cherty ratsional'nogo ispol'zovaniya, vosproizvodstva i povysheniya rybnikh i nerybnikh resursov Belogo morya i vnutrennykh vodoemov Karelii'" (Bibliography on the problem "Theoretical bases of the rational utilization, production and increase of fish and non-fish resources of the White Sea and Karelian inland waters), by R. A. Niskanen, article, Problemy Ispol'zovania promyslovykh resursov Belogo morya i vnutrennykh vodoemov Karelii (Problems of Exploitation of the Commercial Resources of the White Sea and of Karelian Inland Waters), pp. 104-300, printed in Russian, 1963. Akademiia Nauk SSSR, Leningrad, U.S.S.R.

"Poima srednei Obi i vozmozhnosti uluchsheniya ee rybokhozyaistvennogo ispol'zovaniya" (Floodlands of the middle Ob and possibilities for improved utilization in commercial fishing), by E. G. Iogansen, A. N.

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Petkevich, and Ya. I. Marusenko, article, Izvest. Vses. Nauchn.-Issled. Inst. Ozernogo i Rechnogo Rybn. Khoz., vol. 44, 1958, pp. 29-48, printed in Russian. Akademiia Nauk SSSR, Leningrad, U.S.S.R.

"Rybnoe khoziaistvo Vostochnoi Sibiri" (Eastern Siberian fisheries), article, Tr. Sibirsk. Otd. Gos. Nauch. Issled. Inst. Ozern. Rechn. Rybn. Khoz., vol. 8, 1964, pp. 1-306, printed in Russian. Four Continent Book Corp., 156 Fifth Ave., New York, N. Y. 10010.

Articles from Priroda, 1964, printed in Russian. Akademiya Nauk SSSR, M. Khariton'yevskii per. 4, Moscow, U.S.S.R.:

"Electric fishing," by Yu. A. Shemanskii, p. 119.

"Fur seals," by S. V. Makarov, pp. 57-64.

VESSELS:

"Fløytlinefiske med frysebater" (Floating long-line fishery with freezer boats), by Olav Aasen, article, Fiskets Gang, vol. 51, no. 29, July 22, 1965, pp. 419-424, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

WEST AFRICA:

"Cold storage for West Africa," article, Fishing News International, vol. 4, no. 3, July-Sept. 1965, pp. 308-309, illus., printed, single copy 6s. 6d. (about US\$0.95). Arthur J. Heighway Publications Ltd., Ludgate House, 110 Fleet St., London EC4, England. Tells how, to meet the needs of local and international markets, a chain of refrigeration installations was built along the West African coast. In 1956 an active fisheries center was started in Dakar, Senegal, when the fishing fleets started to organize in all ports capable of providing facilities. From then until 1962 expansion proceeded along progressive lines, following the independence of all the former British or French West African colonies. Other countries also began to take part.

WHALING:

"How the scientist helps the fisherman: unchecked exploitation," by D. E. Gaskin, article, Commercial Fishing, vol. 3, no. 12, Aug. 1965, pp. 25, 27, 29, illus., printed. Trade Publications Ltd., 26 Albert St., Auckland, New Zealand. Discusses the rapid decline of the world whaling industry, underlining the basic and urgent need for rational fisheries to be established in every part of the world.

"Hvalfangst i Antarktis i sesongen 1964/65" (Whaling in the Antarctic in the 1964/65 season), article, Norsk Hvalfangst-Tidende (The Norwegian Whaling Gazette), vol. 54, no. 8, Aug. 1965, pp. 177-178, 181-182, 185-195, printed in Norwegian and English. Hvalfangerforeningen, Sandefjord, Norway.

WHITE SEA:

"Opyt razvedki promyslovykh skoplenii mollyuchov v Onezhskom zalive Belogo Morya" (Data on the search for commercial accumulations of mollusks in the Onega Bay of the White Sea), by L. V. Koval'chuk and Z. G. Palenichko, article, Izvest. Karel'sk. i Kol'sk. Fil. Akad. Nauk SSSR, vol. 2, 1959, pp. 88-92, printed in Russian. Akademiia Nauk SSSR, Leningrad, U.S.S.R.

"Pitanie donnykh ryb v zapadnoi chasti Belogo morya" (The feeding of bottom fishes in the western White Sea), by L. A. Kuderskii and M. N. Rusanova, article, Uch. Zap. Karel'skogo Gos. Pedagog. Inst., vol. 15, 1964, pp. 221-300, printed in Russian. Four Continent Book Corp., 156 Fifth Ave., New York, N.Y. 10010.

YUGOSLAVIA:

Foreign Trade Regulations of Yugoslavia, by Arthur J. Laemmerzahl, OBR 65-49, 8 pp., printed, July 1965, 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.)



SEA ANIMALS SHOW RESISTANCE TO DISEASE

Fish and other creatures of the sea seem to have fewer infections and fewer cancers than land animals.

In a study of how primitive animals manage to cope with infectious diseases, 200 fish are under careful observation for the Variety Children's Research Foundation, a nonprofit organization conducting research in children's diseases.

Fifty sharks and 150 other varieties of fish swim around in large tanks and are readily identified by colored nylon tags, harmlessly attached to the cartilage of their dorsal fins.

The continuing program is being conducted by Dr. Michael Sigel and Dr. L. William Clem, at the Lerner Marine Laboratory near Miami, Fla. (Science News Letter, November 7, 1964.)

ANTARCTIC SEAL "LANGUAGE" STUDIED AND RECORDED IN UNDERWATER CHAMBER

United States scientists have used a unique new observatory--a chamber suspended in frigid Antarctic waters beneath 5 feet of solid ice--in an effort to learn the meaning of the clamor of seal voices that fills the dark ice-covered seas surrounding the south polar continent.

Biologists from the Woods Hole Oceanographic Institution and the New York Zoological Society cooperated in the project, which was funded by a grant from the National Science Foundation as part of the U. S. Antarctic Research Program.

Late in 1964, the biologists took turns over a 2-week period sitting alone in the 6-foot-high and 4-foot-wide steel capsule. Observers entered through a "chimney" extending to the surface, and viewed through six windows encircling the chamber. They listened to sounds piped in from hydrophones in the water outside. The range of the hydrophones was more than 5 miles, and the observers could hear hundreds of seals they could not see. (Floodlights attached to the chamber provided visibility for only a little over 200 feet.)

The chamber hung 7 feet below the ice in a 1,000-foot-deep area of McMurdo Sound.

Observers stated that the noises they heard were most closely described as whistles, buzzes, beeps, and chirps, and often sounded like something unearthly.

The animal responsible for the noises was the Weddell seal, an Antarctic species that grows up to about 11 feet in length and 1,300 pounds in weight.

"I've never heard such an underwater racket before," commented one authority on whale and seal sounds. "The Weddell surpasses all other seals that have been studied in the variety, amount, and power of the sound it produces, and in this ability is equalled among marine mammals only by some toothed whales."

The hydrophone arrangement made it possible to calculate the depth at which each sound was made. The zoologists explained that this is important because Weddells hunt for fish at considerable depths in total darkness, and are likely to use any possible sonar talent there.

Observers in the chamber reported that they saw few fish, but that a strikingly colored jellyfish with an umbrella 4 feet across and tentacles 30 feet long once floated by.

One of the leaders of the project said, "All the sounds we hear undoubtedly serve one or more purposes. Perhaps the Weddells use them for communication and, as with bats and whales, for sonar navigation. Sonar would explain how they find food and breathing holes, especially in the total darkness of the long Antarctic winter night.

"We will carefully analyze this jumble of sounds, together with our field observations, in the laboratory for clues to the 'language.' The sound tracks must be analyzed with instruments for full understanding, because seal voices have many characteristics that humans cannot hear, such as very high frequencies and rapid pulses too close together to distinguish. This process will take several months, and the conclusions must be proven by experiments with captive seals."

He added that the investigators will also try to figure out how the seals make the weird sounds. Weddells keep their mouths and nostrils shut tight underwater.

A SCUBA diving team provided supplementary observations and photographs. The divers could hardly hear the seals during their SCUBA explorations, but while in the chamber learned to associate certain throat and head movements with particular sounds. When diving they could "lip read" the sounds for their notes on behavior.

Antarctica is particularly suited to investigations of seal behavior because of the clarity of the water and the low level of noise from other sources. Facts learned about Antarctic seals may possibly apply to species in other parts of the world. (National Science Foundation, November 30, 1964.)