



RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

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

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

- | Number | Title |
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| CFS-2464 | - Rhode Island Landings, October 1960, 3 pp. |
| CFS-2467 | - New Jersey Landings, November 1960, 3 pp. |
| CFS-2471 | - Fish Meal and Oil, November 1960, 2 pp. |
| CFS-2482 | - Fish Sticks and Portions, 1960 Annual Summary, 3 pp. |
| CFS-2485 | - Massachusetts Landings, October 1960, 6 pp. |
| CFS-2497 | - Frozen Fish Report, January 1961, 8 pp. |
| CFS-2506 | - Maine Landings, December 1960, 3 pp. |
| CFS-2507 | - Louisiana Landings, August 1960, 2 pp. |
| CFS-2508 | - Louisiana Landings, September 1960, 2 pp. |
| CFS-2511 | - Louisiana Landings, October 1960, 2 pp. |
| CFS-2512 | - Texas Landings, November 1960, 3 pp. |
| CFS-2515 | - Massachusetts Landings, November 1960, 6 pp. |
| CFS-2516 | - North Carolina Landings, 1960 Annual Summary, 6 pp. |
| CFS-2518 | - South Carolina Landings, 1960 Annual Summary, 4 pp. |
| CFS-2519 | - Georgia Landings, 1960 Annual Summary, 4 pp. |
| CFS-2521 | - North Carolina Landings, January 1961, 3 pp. |
| CFS-2522 | - Fish Meal and Oil, January 1961, 2 pp. |
| CFS-2523 | - Mississippi Landings, December 1960, 2 pp. |
| CFS-2524 | - Georgia Landings, January 1961, 2 pp. |
| CFS-2525 | - Maryland Landings, January 1961, 3 pp. |
| CFS-2526 | - South Carolina Landings, January 1961, 2 pp. |
| CFS-2529 | - Florida Landings, January 1961, 8 pp. |
| CFS-2537 | - Rhode Island Landings, January 1961, 3 pp. |
| FL-507 | - World Production and Trade in Fish Meal and Oil, by J. Adger Smyth, 94 pp., illus., March 1961. In 1959, the world market for fish meal suffered a decline in prices because of tremendously increased production in a number of countries. In many countries, stocks of fish meal, which could be sold only at a loss, have accumulated. Some reduction plants, even the entire reduction industry, have been forced to close as production costs have been too high for the fish meal to compete in world markets at the |

prevailing low prices. This report shows increases and decreases in production of fish meal and oil, especially during 1953-1959, the principal markets for the products, and the changes in supply sources in principal markets. The reduction industry, fish meal prices and costs, and foreign trade are discussed for each of 30 countries.

- SSR-Fish. No. 363 - A Review of Literature on Menhaden with Special Reference to the Gulf of Mexico Menhaden, by Gordon Gunter and J. Y. Christmas, 35 pp., October 1960.
- SSR-Fish. No. 365 - Study of Food Preference and Rate of Feeding of Japanese Oyster Drill, *Ocenebra japonica* (Dunker), by Kenneth K. Chew, 29 pp., illus., November 1960.
- SSR-Fish. No. 367 - Scallop Resource of the United States Passamaquoddy Area, by Robert L. Dow and Frederick T. Baird, Jr., 13 pp., illus., December 1960. A survey of the scallop fishery in the Passamaquoddy Bay area of Maine was made as part of a larger investigation into the past, present, and future status of fish and shellfish species that might be affected by the construction of a proposed tidal power plant in that region. The past record of commercial production, and the present abundance level and environmental conditions are described, together with deductions as to the effects on the scallop fishery of predicted oceanographic changes.
- SSR-Fish. No. 368 - A Morphometric Study of Silver Hake, by John T. Conover, Raymond L. Fritz, and Manuel Vieira, 15 pp., illus., processed, January 1961. Evidence is presented that the whiting or silver hake population along the Atlantic coast is comprised of two separate groups. One group inhabits the waters off the New England coast and the other is found off the southern New England, New York, and New Jersey coasts. Two characteristics, head length and pelvic fin length, gave consistent differences for separating these groups during two seasons of the year.
- Sep. No. 616 - Experiments Utilizing Electrical Trawl Cables--A Progress Report.
- Sep. No. 617 - Inhibition of Mold on Smoked Mullet.
- Fisheries Loan Fund, Fiscal Year 1957, Fish and Wildlife Circular 103, 21 pp., processed. Reviews the credit facilities available to fishing vessel owners in the United States and gives data on the history,

administration, and status of the Fisheries Loan Fund. Also includes a reprint of the Fish and Wildlife Act of 1956, which also provided for the fisheries loan program; news releases issued when the fund was established; a copy of the order by the Secretary of the Interior establishing the loan procedures; and a copy of the application for loan.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-45	Mexican Fishery Statistics, 1959.
MNL-46	Wholesale Prices for Fishery Products Imported into Liberia.
MNL-47	Salmon Exporters: Denmark and Greenland, 1961.

THE FOLLOWING TECHNICAL LEAFLETS ARE AVAILABLE FROM THE BRANCH OF TECHNOLOGY, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Menhaden Industry, by F. Bruce Sanford and Charles F. Lee, TL 31, 31 pp., illus., processed, January 1961. The purpose of this leaflet is to show the wide scope of the industry and the numerous complex operations involved in the manufacture of menhaden meal, oil, and condensed solubles. Photography is used as the most effective medium for presenting the industry. Also includes statistical tables giving data on availability of amino acids in menhaden meal; proximate composition and chemical content of menhaden meal; menhaden oil and certain constituents of the oil; and unsaturated fatty acids in menhaden oil.

The Relationships of Processing Variables and Chemical Composition to the Nutritive Value of Fish Meals as Determined by Broiler Feeding Tests, by T. D. Runnels and others, TL 21, 37 pp., processed, January 1961. Over 150 samples of fish meals with authentic processing histories were collected and tested to determine possible variations in nutritive value. The authors concluded that "As determined by practical broiler feeding tests in batteries, the nutritive value of commercially-produced samples of fish meal could not be related to species or parts of fish utilized for production, to proximate composition of the resultant meals, or to any variables of commercial processing. That the broiler-feeding test permitted differences to be determined in the nutritive quality of fish meals was demonstrated by the results obtained by feeding an obviously burned fish meal. When incorporated into diets, all meals tested, with the exception of the burned meal, permitted normal growth of broilers at economical rates of feed utilization. Since so few significant differences were obtained in such an extensive study, we can conclude that all fish meals of normal commercial production are a more reliable, more constant source of supplemental animal protein than has been thought previously."

U. S. Fish-Reduction Industry, by F. Bruce Sanford and Charles F. Lee, TL 14, 77 pp., processed, revised December 1960. This report is intended to give a broad view of the fish-reduction industry in the United States. It deals with four topics. The first three are concerned with harvesting the fish, manufacturing them into products, and then distributing

the products to the consumer. The last is concerned with some of the problems encountered in starting a plant for the reduction of fish as a business venture. Included is a supplementary list of references.

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

California Fishery Market News Monthly Summary, Part II--Fishing Information, February 1961, 13 pp., illus. (Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Includes monthly sea-surface temperature charts for the eastern Pacific, and fishing and research information of interest to the West Coast tuna fishing industry and marine scientists. The temperature charts cover that area of the Pacific from the Aleutians in the north to Peru and Chile in the south and offshore to 180° W. longitude. They show for each month the average sea-surface temperature and the deviations from the 30-year average and from the previous year. Research and fishing information indicates that the distribution of tunas and many other commercial species is directly affected by sea-surface temperatures.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, February 1961, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, February 1961, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Tex., from Mexico; and sponge sales; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, February 1961, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

New England Fisheries--Monthly Summary, February 1961, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the principal New England fishery ports, and presents food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connect-

icut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for January 1961, 17 pp. (Market News Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, imports entered at New York City, primary wholesaler prices for frozen products, and marketing trends; for the month indicated.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, February 1961, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Oreg.) wholesale dealers; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

THE FOLLOWING ENGLISH TRANSLATION OF FOREIGN LANGUAGE ARTICLE IS AVAILABLE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, P. O. BOX 3830, HONOLULU, HAWAII.

Underwater Scientific Expeditions on the SEVERYANKA, by V. P. Zaitsev and V. G. Azhazha, 8 pp., processed. (Translated from Rybnoe Khoziaistvo, vol. 35, no. 7, July 1959, pp. 7-16.)

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE NOT FOR GENERAL DISTRIBUTION BUT ARE AVAILABLE FOR REFERENCE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, P. O. BOX 3830, HONOLULU, HAWAII.

Larvae of the Black Marlin (EUMAKAIRA NIGRA Nakamura), by Shoji Ueyanagi and Hiroshi Yabe, 20 pp., processed. (Translated from Report of Nankai Regional Fisheries Research Laboratory, no. 10, 1959, pp. 151-169.)

On the Larvae of Sailfish, ISTIOPHORUS ORIENTALIS, Collected in the Southwestern Sea of Japan (in Waters Southwest of Japan), by Hiroshi Yabe, 13 pp., processed. (Translated from Contributions of the Nankai Regional Fisheries Research Laboratory, vol. 1, 1953.)

Larvae of the Striped Marlin, MAKAIRA MITSUKURII (Jordan et Snyder), by Shoji Ueyanagi, 20 pp., processed. (Translated from Report of Nankai Regional Fisheries Research Laboratory, No. 11, December 1959, pp. 130-146.)

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

Development of Eggs and Larvae of Pacific Mackerel and Distribution and Abundance of Larvae 1952-56, by David Kramer, Fishery Bulletin 174 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 60), 50 pp., illus., printed, 1960, 35 cents.

"Immersion Staining as a Method of Marking Small Salmon," by Loyal G. Bouchard and Chester R.

Mattson, article, The Progressive Fish-Culturist, vol. 23, no. 1, January 1961, pp. 34-40, illus., processed.

"A Staining Method for Marking Large Numbers of Small Fish," by James E. Deacon, article, The Progressive Fish-Culturist, vol. 23, no. 1, January 1961, pp. 41-42, illus., processed.

"The Use of Saponin to Control Predaceous Fishes in Shrimp Ponds," by Yun-An Tang, article, The Progressive Fish-Culturist, vol. 23, no. 1, January 1961, pp. 43-45, processed.

MISCELLANEOUS PUBLICATIONS

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

ADDITIVES:

"Additives and Frozen Seafoods," by H. Magnusson, article, Quick Frozen Foods, vol. 22, April 1960, p. 132, printed. Quick Frozen Foods, E. W. Williams Publishing, Inc., 82 Wall St., New York 5, N. Y.

AIRPLANE SPOTTING:

"Aviatsionnaia Navodka Sudov na Kosiaki sel'dii" (Directing Fishing Vessels to Herring Schools with Aircraft), by V. Maslov, article, Rybnoe Khoziaistvo, vol. 34, no. 4, 1958, pp. 35-37, printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Glosplanie SSSR, Moscow, U.S.S.R.)

ANTIBIOTICS:

Antibiotics in Fish Preservation, by H. L. A. Tarr, 24 pp., illus., printed, 50 cents. Fisheries Research Board of Canada, Ottawa, Canada, 1961.

"Chlorine Affects Antibiotics," by C. H. Castell, article, Canadian Fisherman, vol. 47, no. 2, 1960, pp. 37-39, illus., printed. Canadian Fisherman, National Business Publications Ltd., Gardenvale, Quebec, Canada.

"Effect of Storage in Chlortetracycline (CTC)-Containing Refrigerated Sea Water on Keeping Quality of Mackerel and Determination of CTC Residue in the Fish," by T. Tomiyama and Y. Yone, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 25, no. 4, 1959, pp. 290-293, illus., printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Minato-ku, Tokyo, Japan.

"Influencia de los Antibioticos Adicionados al Hielo en la Digestibilidad del Pescado" (Effect of Antibiotic Ice on the Digestibility of Fish), by A. Pujol and G. Varela, article, Anales de Bromatologia, vol. 11, no. 2, 1959, pp. 245-260, printed in Spanish with English summary. Sociedad Espanola de Bromatologia, Ciudad Universitaria, Madrid, Spain.

"Primenenie Hlortetraciklina Dlja Uvelicenija Prodolzitel'nosti Hranenija Ohlazdenного Rybnogo File"

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(The Application of Chlortetracycline in Extending the Storage Life of Chilled Fish), by F. Babin and T. Saharova, *Kholodil'naia Tekhnika*, vol. 4, 1960, pp. 35-37, illus., printed in Russian with English summary. *Kholodil'naia Tekhnika*, c/o Four Continent Book Corp., 822 Broadway, New York 3, N. Y.

BARENTS SEA:

"Rapport om Tokt med 'G. O. Sars' til Barentshavet i September 1960" (Report on a Survey of the G. O. Sars in the Barents Sea in September 1960), by Steinar Olsen, article, *Fiskets Gang*, vol. 46, no. 49, December 8, 1960, pp. 690-692, illus., printed in Norwegian. *Fiskets Gang*, Postgiro nr. 691 81, Bergen, Norway.

BIOCHEMISTRY:

"Muscle Biochemistry and Fish Flavours," by N. R. Jones, article, *The New Scientist*, vol. 7, no. 176, 1960, pp. 783-785, printed. *The New Scientist*, Cromwell House, Fulwood Place, High Holborn, London WC1, England.

BIVALVES:

The Intertidal Bivalves of British Columbia, by D. B. Quayle, Handbook No. 17, printed, 50 Canadian cents. British Columbia Provincial Museum, Department of Education, Victoria, Canada, 1961.

CANADA:

British Columbia Catch Statistics, 1960 (By Area and Type of Gear), 165 pp., illus., processed. Department of Fisheries of Canada, 1110 W. Georgia St., Vancouver 5, Canada, February 2, 1961. The tenth annual report of fish-catch statistics for British Columbia based on Departmental copies of sales slips that are completed by all commercial fish buyers operating within the Province. The report is divided into three sections: (1) summary of landings by district and total landed value of all fish; (2) highlights of catch statistics--a general review of significant events of salmon fishing in each area and general review for other types of fish; and (3) detailed district and area monthly statistics by type of gear. Certain economic, weather, and conservation factors that have a bearing on the catch are also reviewed.

Journal of the Fisheries Research Board of Canada, vol. 18, no. 1, January 1961, 145 pp., illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada. Includes, among others, these articles: "Contribution to the Biology of Herring (*Clupea harengus* L.) in Newfoundland Waters," by Steinar Olsen; "A Method for Preparing Glycerin-Stored Otoliths for Age Determination," by G. H. Lawler and G. P. McRae; "The Quality of Fish Flour, Liver Meal, and Visceral Meal as Sources of Dietary Protein," by B. A. Larsen and W. W. Hawkins; "The Liquefaction of British Columbia Herring by Ensilage, Proteolytic Enzymes and Acid Hydrolysis," by J. R. McBride, D. R. Idler and R. A. MacLeod; "The Protein Nutritive Value of 'Liquid Herring' Preparations," by B. E. March and others; "Scale to Length Ratio, Age and Growth of Atlantic Salmon in Miramichi Fisheries," by Robert B. Kerr; "Slicing of Fillets as an Aid in Detection and Removal of Cod Worms from Atlantic Cod Fillets," by H. E. Power; "Northward Range Extension of the Flat-

head Chub and Trout-Perch to Aklavik, N. W. T.," by D. E. McAllister; and "Lipid Hydrolysis in Frozen Cod Muscle," by E. G. Bligh.

CLAMS:

The Maryland Soft Shell Clam Industry: Its Potentials and Problems, by J. H. Manning and H. T. Pfitzner, Contribution No. 145, 5 pp., illus., processed. (Reprinted from Proceedings of the National Shellfisheries Association, vol. 48, 1958, pp. 110-114.) Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md.

COD:

"Torskeundersokelsene i Lofoten og i Barentshavet, 1960" (Cod Research in Lofoten and the Barents Sea, 1960), by Arvid Hysten, Lars Midttun, and Gunnar Saetersdal, article, *Fiskets Gang*, vol. 47, no. 5, February 2, 1961, pp. 101-114, illus., printed in Norwegian with English summary. *Fiskets Gang*, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Volatile Substances of Salted Codfish. Bacteriology of Salt Cod," article, Annual Report of the Fisheries Research Board of Canada, 1958-1959, pp. 139-140, printed. Fisheries Research Board of Canada, Ottawa, Canada.

COLD STORAGE:

"Bau und Einrichtung der Neuen Fischkuhlhauser in Polen" (Construction and Arrangement of the Latest Cold Stores for Fish in Poland), by T. Skwarczynski, article, *Kalttechnik*, vol. 11, no. 7, July 1959, pp. 203-210, illus., printed in German. *Kalttechnik*, Verlag C. F. Muller, Karlsruhe, Germany.

COLUMBIA RIVER:

An Economic and Social Glimpse of the Commercial Fisherman, 6 pp., illus., printed. Columbia River Fishermen's Protective Union, 322 10th St., Astoria, Ore.

CRAYFISH:

Maryland Crayfishes, by W. G. Meredith and F. J. Schwartz, Educational Series No. 46, 32 pp., illus., printed. Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md., February 1960.

CRUSTACEANS:

"Salinity Reactions of Some Fresh- and Brackish-Water Crustaceans," by Kari Lagerspetz and Maija Mattila, article, *The Biological Bulletin*, vol. 120, no. 1, February 1961, pp. 44-53, printed. Marine Biological Laboratory, Woods Hole, Mass.

DANISH SEINE:

"Forsoksfiske med Snurrevad pa Helgelandskysten" (Experimental Fishery with a Danish Seine on the Helgeland Coast), by Richard Sandnes, article, *Fiskets Gang*, vol. 47, no. 3, January 19, 1961, pp. 53-55, illus., printed in Norwegian. *Fiskets Gang*, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

DENMARK:

"La Peche au Danemark en 1959" (Fishing in Denmark in 1959), by Arne Schreiber, article, France Peche, vol. 5, no. 46, December 1960, pp. 19-22,

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illus., printed in French with English summary. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France.

DOGFISH:

"Pigghaundersokelsene" (Dogfish Investigations), by Olav Aasen, article, Fiskets Gang, vol. 47, no. 2, January 12, 1961, pp. 36-44, illus., printed in Norwegian with English summary. Fiskets Gang, Postgato nr. 691 81, Bergen, Norway.

DRYING:

"Ultrasonics Seen as Valuable Aid in Drying Heat-Sensitive Foods," article, Chemical Engineering, vol. 66, no. 19, 1959, pp. 151-154, printed. Chemical Engineering, McGraw-Hill Publishing Inc., 330 W. 42nd St., New York 36, N. Y.

FACTORYSHIP:

"A New Type of Mothership on the Fishing Grounds; The Potentialities and Limitations of Aircraft Carriers," by A. C. Hardy, article, Lloyd's List and Shipping Gazette, March 9, 1960, pp. 4-5, printed. The Corporation of Lloyd's, London EC3, England.

FISH MANAGEMENT:

Reservoir Fish Management--Progress and Challenge, by Robert M. Jenkins, 20 pp., illus., printed. Sport Fishing Institute, Bond Bldg., Washington 5, D. C.

FISH MEAL:

Erzeugung und Absatz von Fischmehl in der Welt (World Fish Meal Production and Demand), by G. Meseck, 35 pp., illus., printed in German. (Reprinted from Berichte uber Landwirtschaft, Bd. 38, H. 4, 1960, pp. 666-700.) Berichte uber Landwirtschaft, Verlag Paul Parey, Hamburg 1, Germany.

"Preterito, Presente, y Futuro de las Fabricas Nacionales de Harina de Pescado" (Past, Present, and Future of the National Fish Meal Plants), by Manimo, article, Industria Conservera, vol. 26, no. 258, December 1960, pp. 328-329, printed in Spanish. Industria Conservera, Calle Marques de Valladares, 41, Vigo, Spain.

FISH OIL:

"The Effect of Dietary Marine Fish Oils on the Serum Cholesterol Levels in Hypercholesterolemic Chickens," by J. D. Wood and J. Biely, article, Canadian Journal of Biochemistry and Physiology, vol. 38, no. 1, 1960, pp. 19-24, printed. Canadian Journal of Biochemistry and Physiology, Division of Administration, The National Research Council, Sussex St., Ottawa, Canada.

FISHERY RESEARCH:

Comments on the Need for Critical Fishery Research Planning and Electronic Data Processing, by Romeo Mansueti, Contribution No. 127, 7 pp., printed. (Reprinted from the Southeastern Association of Game and Fish Commissioners Thirteenth Annual Conference, 1959, pp. 107-113.) Maryland Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md.

FISHERY STOCKS:

"Om Beskyttelse av Fiskebestander" (Concerning Protection of Fishery Stocks), by Arvid Hylen, article, Fiskets Gang, vol. 47, no. 6, February 9, 1961,

pp. 127-135, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

FOOD AND AGRICULTURE ORGANIZATION:

"Activities of the FAO," article, Information Bulletin, no. 19, December 1960, pp. 15-16, processed. General Fisheries Council for the Mediterranean, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. The Food and Agriculture Organization Council held its 34th Session in Rome from October 17-28, 1960, and considered in particular (1) the world food and agriculture situation; (2) activities of the Organization; (3) constitutional and legal matters; and (4) administrative and financial matters.

"Activities of the General Fisheries Council for the Mediterranean, I--Sixth Session of the GFCM," article, Information Bulletin, no. 19, December 1960, pp. I-II, processed. General Fisheries Council for the Mediterranean, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. Discusses the activities of the General Fisheries Council for the Mediterranean and its Sixth Session which was held in Rome, September 22-28, 1960. Altogether some 70 participants from 12 countries and 9 international organizations took part in the work of the Sixth Session. Two categories of documents were presented and discussed: technical papers dealing with original contributions to the program of work, and working documents containing information collected as a result of recommendations of the Council or the Executive Committee. A list of the technical papers and working documents is presented.

Catalogue of Publications, 1945-1960, 91 pp., printed. Distribution and Sales Section, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1960. A listing (published every two years in English, French and Spanish) of all priced publications of FAO since 1945. The publications listed are primarily tools for the attainment of the Organization's aim to increase world agricultural production and raise the standard of living. They cover agriculture, economics, fisheries, forestry, and nutrition. Also listed are the official records of the functioning and work of FAO. Includes indexes of authors and of titles.

FOOD MANAGEMENT:

Receiving Food in Food Service Establishments, Food Management Program Leaflet 3, 20 pp., illus., printed. Cooperative Extension Service, University of Massachusetts, 408 Atlantic Ave., Rm. 303, Boston 10, Mass. The purpose of this leaflet is to suggest procedures that will be helpful to food service operators in supervising and controlling receiving practices. In any food service operation, continuous effort should be made to improve receiving practices. Although all the suggestions in this leaflet may not be applicable to all food service establishments, they can, however, serve as a guide for improving the receiving of food by service establishments. They should help the food service operator analyze his own operation and identify his problems.

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FOREIGN TRADE:

"Some Aspects of U. S. Foreign Trade Policy," by Theodore J. Hadraba, article, The Department of State Bulletin, vol. 44, no. 1130, February 20, 1961, pp. 263-271, printed. Office of Public Services, Bureau of Public Affairs, Department of State, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Discusses the objectives of the U. S. economic policy, the role of GATT, and U. S. participation in the tariff negotiating process. Also discusses the European Economic Community, European Free Trade Association, the international economic situation today, removal of obstacles to U. S. exports, and the export expansion program.

FRANCE:

"Le Commerce Extérieur en 1960" (Foreign Trade in 1960--Fishery Products), article, La Pêche Maritime, vol. 40, no. 995, February 1961, pp. 94-98, printed in French. La Pêche Maritime, 190, Boulevard Haussmann, Paris, France.

FREEZE-DRYING:

"Freeze Drying," by H. P. Milleville, article, Food Processing, no. 11, November 1960, p. 28, printed. Food Processing, Putman Publishing Co., 111 E. Delaware Pl., Chicago 11, Ill.

"Freeze Drying Equipment Roundup," by F. L. Bonem, article, Food Processing, vol. 21, no. 11, November 1960, p. 73, printed. Food Processing, Putman Publishing Co., 111 E. Delaware Pl., Chicago 11, Ill.

"Freeze-Drying: The Present Outlook," article, Frosted Food Field, vol. 32, no. 2, February 1961, pp. 37, 39-41, 44-46, illus., printed. Frosted Food Field, Inc., 321 Broadway, New York 7, N. Y.

FREEZING:

"First Liquid Nitrogen Freezer Adapted to Production Line," article, Quick Frozen Foods, vol. 22, no. 11, June 1960, pp. 31, 157-158, illus., printed. Quick Frozen Foods, E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y.

Postępy w Dziedzinie Chłodnictwa i Zamrażalnictwa Ryb i Produktów Rybnych (Advances in the Cooling and Freezing of Fish and Fish-Products), by J. Kukucz. Paper read at the Session of Industrial Refrigeration in the Food Industry, Warsaw, Poland, May 1960, 25 pp., printed in Polish. Commission for Refrigeration, Warsaw, Poland.

FROZEN FISH:

"Storage Changes in Frozen Fish: A Comparison of Objective and Subjective Tests," by Kerstin Andersson and Carl Erik Danielson, article, Food Technology, vol. 15, no. 2, February 1961, pp. 55-56, illus., printed. Food Technology, The Garrard Press, 510 No. Hickory St., Champaign, Ill. Herring fillets, treated by dipping 0.5 percent ascorbic acid and untreated as reference, were frozen and analyzed at monthly intervals using the TBA method accompanied by organoleptic estimations. The chemical changes ascertained by the TBA method exhibit good agreement with the changes in taste. The untreated samples became rancid after 2 months' storage, whereas the treated samples remained palatable for 11 months.

GEAR:

Commercial and Biological Uses of the Maryland Soft Clam Dredge, by J. H. Manning, Contribution No. 131, 7 pp., illus., printed. (Reprinted from Proceedings of the Gulf and Caribbean Fisheries Institute, Twelfth Annual Session, November 1959, pp. 61-67.) Maryland Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md.

GENERAL:

Federal Aid in Fish and Wildlife Restoration, 1960 (Annual Report on Dingell-Johnson and Pittman-Robertson Programs for the Fiscal Year Ending June 30, 1960), 103 pp., illus., printed, 1961. Wildlife Management Institute, Wire Bldg., Washington 5, D. C.

The Sea Around Us, by Rachel L. Carson, Revised Edition, 237 pp., illus., printed, \$5. Oxford University Press, 114 Fifth Ave., New York 11, N. Y., 1961.

HERRING:

The Propagation of Herring (CLUPEA PALLASII) in the Coastal Waters of British Columbia, with a Summary of Spawning Success in 1960, by D. N. Outram, Circular No. 60, 22 pp., illus., processed. Fisheries Research Board of Canada, Biological Station, Nanaimo, Canada, January 1961. The fifth report of a series dealing with the annual success of herring spawning in British Columbia. An evaluation of the amount of spawn deposited in 1960 is preceded by a general review of spawning behavior and other related aspects. Includes statistical tables showing the date, location, and extent of the 1960 herring spawn; herring spawning indices for 1960, and summary of herring spawning success.

"Smalsild- og Feitsildtokt med f/f G. O. Sars i Tiden 28 September til 29 Oktober 1960 (Small Herring and Fat Herring Cruise of the Research Vessel G. O. Sars during the Period September 29-October 29, 1960)", by Olav Dragesund, article, Fiskets Gang, vol. 47, no. 3, January 19, 1961, pp. 59-63, illus., printed. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Smalsildundersøkelsene og Smalsildfisket 1959/60" (Small Herring Investigations and the Small Herring Fishery in 1959/60), by Olav Dragesund and Per Hognestad, article, Fiskets Gang, vol. 46, no. 50, December 15, 1960, pp. 703-714, illus., printed in Norwegian with English summary. Fiskets Gang, Postgiro nr. 691 81, Bergen, Norway.

ICHTHYOLOGY:

How Fast Can a Fish Swim?, by J. H. S. Blaxter and W. Dickson, Scottish Fisheries Bulletin No. 12, pp. 14-18, illus., printed. Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, 1959.

IVORY COAST:

"Aspects et Tendances de l'Industrie de la Pêche Maritime dans la République de Côte d'Ivoire" (Points of View and Tendencies of the Marine Fishing Industry in the Republic of Ivory Coast), by J. M. Besseteaux, article, La Pêche Maritime, vol. 40, no. 995, February 1961, pp. 83-85, illus.,

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

printed in French. *La Peche Maritime*, 190, Boulevard Haussmann, Paris, France.

JAPAN:

Journal of the Tokyo University of Fisheries, vol. 46, nos. 1-2, March 1960, 155 pp., illus., printed. The Tokyo University of Fisheries, Shiba kaigandori 6, Minato-ku, Tokyo, Japan. Includes, among others, these articles: "Haematological Studies of the Culture Fishes in Japan. 2--Seasonal Variation of the Blood Constituents of Rainbow Trout; 3--Changes in Blood Constituents with Growth of Rainbow Trout; and 4--Method for Repeated Drawing of Blood from Cuvierian Duct," by T. Sano; "Studies on Fat Metabolism of Fish Muscles. 4--Effects of the Components in Foods on the Culture of Rainbow Trout," by T. Ono, F. Nagayama, and T. Masuda; "Applicability of Antioxidants to Marine Products," by K. Toyama, K. Saruya, and K. Ando; and "Study on the Disposition of Fish Towards Light. No. 5--The Strength of Illumination Comfortable to Engraulis japonicus; and No. 6--Compare with the Disposition of Engraulis japonicus, Decapterus muroadsi, Traceurus japonicus, and Scomber japonicus," by Y. Imamura and S. Takeuchi.

Journal of the Tokyo University of Fisheries, vol. 47, no. 1, September 1960, 121 pp., illus., printed. The Tokyo University of Fisheries, Shiba kaigandori 6, Minato-ku, Tokyo, Japan. Includes, among others, the following articles: "The Tension Test of the Netting Cord by Impact Force," by Y. Kondo; "Studies on the Sterilization of Clostridium botulinum by Gammaray Irradiation," by Y. Sekine, T. Kozima, and S. Motegi; "Determination of the Time Required for Freezing of Whalemeat," by K. Tanaka and J. Nishimoto; and "On the Net and Rope after Bottom Trawl Fishings," by K. Honda.

LIGHT ATTRACTION:

"Nekotorye Dannye o Reaktsii Sel'di na Elektrosvet" (Certain Data on Reactions of Herring to Electric Illumination), by A. F. Blinov, article, Rybnoe Khoziaistvo, vol. 34, no. 2, 1958, pp. 33-34, printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavni-proekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

"Study on the Disposition of Fish Towards the Light. II--The Strength of Illumination Preferred by Fish," by Y. Imamura, article, Journal of the Tokyo University of Fisheries, vol. 44, nos. 1 and 2, pp. 75-89, illus., printed. Tokyo University of Fisheries, Shiba-kaigandori, 6, Minato-ku, Tokyo, Japan.

LUNGFISH:

"The Lungfish of Africa," by J. Bouillon, article, Natural History, vol. 70, no. 3, March 1961, pp. 62-70, illus., printed. The American Museum of Natural History, Central Park W. at 79th St., New York 24, N. Y.

MARINE ALGAE:

"The Marine Algae," by E. Laurence Palmer, article, education insert 110, Natural History, vol. 70, no. 3, March 1961, pp. 33-43, illus., printed. The American Museum of Natural History, Central Park W. at 79th St., New York 24, N. Y.

MARKETING:

Mechanically Processing Wholesale Frozen Food Orders, by Theodore H. Allegri and Robert K.

Bogardus, AMS-317, 18 pp., illus., processed. U.S. Department of Agriculture, Marketing Research Division, Agricultural Marketing Service, Washington 25, D. C., June 1959. This study is part of a larger research project covering the development of improved methods and equipment to make wholesale frozen food distribution operations more efficient. It does not deal directly with fish, but is of interest to frozen fish wholesalers and processors. Studies covered both wholesale distributors who used automatic accounting equipment and those who used conventional accounting methods.

MEDITERRANEAN SEA:

Aspects de la Recherche et des Travaux Oceanographiques dans le Secteur Nord-Ouest de la Mediterranee Occidentale (Report on the Research and Oceanographic Work in the Northwest Sector of the Western Mediterranean) by F. Doumenge, 17 pp., illus., printed in French. (Reprinted from Bulletin Trimestriel du Centre Regional de la Productivite et des Etudes Economiques de Montpellier, Premier Trimestre 1959.) Castors du Rail 3^e Lot, Pavillon 12, Montpellier (Herault), France.

MIDWATER TRAWLS:

"Eksperimentalnyi Lov Sel'di v Severnoi Atlantike Raznoglubinnym Tralom s Sudov Tipa SRT (Experimental Fishing for Herring with Midwater Trawls in the North Atlantic, by Vessels of the SRT Type), by B. S. Solov'ev and A. A. Degtiarev, article, Rybnoe Khoziaistvo, vol. 34, no. 5, 1958, pp. 21-25, illus., printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavni-proekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

MISCELLANEOUS:

Fisheries as a Profession (A Career Guide for the Field of Fishery Science), 7 pp., illus., printed. American Fisheries Society, P. O. Box 429, McLean, Va.

NAVIGATION:

United States Coast Pilot 2--Atlantic Coast Cape Cod to Sandy Hook, Sixth Edition, 228 pp., printed, \$2.50. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., 1960.

United States Coast Pilot 5--Third Supplement, Gulf Coast, Puerto Rico, and Virgin Islands, Fourth Edition, 17 pp., printed. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1961.

United States Coast Pilot 7--Second Supplement, Pacific Coast, California, Oregon, Washington, and Hawaii, Eighth Edition, 15 pp., printed. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1961.

United States Coast Pilot 8--Ninth Supplement, Southeast Alaska--Dixon Entrance to Yakutat Bay, Tenth Edition, 41 pp., printed. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1961.

United States Coast Pilot 9--Sixth Supplement, Alaska--Cape Spencer to Arctic Ocean, Sixth Edition, 33 pp., printed. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1961.

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

NORTHERN RHODESIA AND NYASALAND:

(Joint Fisheries Research Organisation) Annual Report No. 9, 1959, 71 pp., illus., printed, 7s.6d. (about US\$1.05). Joint Fisheries Organization, P. O. Box 48, Samfya, Northern Rhodesia, 1960. Covers activities of the Organization in Northern Rhodesia such as development of Lake Bangweulu and its swamp fisheries, investigations of Lake Kariba, and investigation of the fishery potential of southern Lake Tanganyika. Also describes activities of the Organization in Nyasaland such as investigation of Engraulicypris sardella, plankton studies, hydrology research, and gill-net experiment on Labeo mesops (Gunther). Includes two papers on fisheries of the region and a list of publications by members of the Organization.

NORWAY:

"Fiskefartoyers Lonnsomhet i 1958" (Fishing Vessel Profits in 1958--Annual Results), by A. Holm, articles, Fiskets Gang, vol. 46, no. 51, December 22, 1960, pp. 727-736; no. 52, December 1960, pp. 748-755; vol. 47, no. 1, January 5, 1961, pp. 7-12, illus., printed in Norwegian. Fiskets Gang, Postgiro nr. 691 81, Bergen, Norway.

"Lofotfiskets Lonnsomhet 1960" (Returns from the Lofot Fishery 1960), by Georg Oppedal, article, Fiskets Gang, vol. 47, no. 4, January 26, 1961, pp. 79-89, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Norges Fiskerier, 1960" (Norway's Fisheries, 1960), article, Fiskets Gang, vol. 46, no. 52, December 29, 1960, pp. 744-747, printed in Norwegian. Fiskets Gang, Postgiro 691 81, Bergen, Norway.

"Oversikt og Toktprogram 1961 Fiskeridirektoratets Havforskningsinstitutt" (Survey and Cruise Programs--Directorate of Fisheries, Ocean Research Institute), article, Fiskets Gang, vol. 47, no. 4, January 26, 1961, pp. 76-78, printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Smatralernes Fiske i 1959" (The Small Trawler Fishery in 1959), by Sverre Mollestad, article, Fiskets Gang, vol. 47, no. 2, January 12, 1961, pp. 29-35, illus., printed in Norwegian. Fiskets Gang, Postgiro nr. 691 81, Bergen, Norway.

OCEANOGRAPHY:

An International Directory of Oceanographers (3rd Edition), compiled by K. O. Emery and Mary Sears, printed. National Academy of Sciences-National Research Council, 2101 Constitution Ave. NW, Washington, D. C., 1960.

O.E.C.D.:

"The Organization for Economic Cooperation and Development," by Dean Rusk, article, The Department of State Bulletin, vol. 44, no. 1132, March 6, 1961, pp. 323-326; "Administration Urges Ratification of OECD Convention," by George W. Ball, *ibid*, pp. 326-332, printed, single copy 25 cents. Office of Public Services, Bureau of Public Affairs, Department of State, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Covers the

day-to-day aspects of foreign policy; goals and functions of the OECD; history of the OEEC; economic interdependence between the United States and Europe; how the Convention will operate; the substitution of OECD for OEEC; a new era of partnership; coordinating international economic policies; and economic growth in less developed countries.

OKLAHOMA:

"Why Commercial Fishing?" by Leonard B. Jones, article, Oklahoma Wildlife, vol. 17, no. 1, January 1961, pp. 14-15, illus., printed. Oklahoma Department of Wildlife Conservation, Rm. 118, State Capitol, Oklahoma City, Okla. Commercial fishing in Oklahoma's one-half million acres of lakes and streams not only offers a means of controlling fish populations undesirable for sports fishing but also serves to harvest a renewable resource.

OYSTERS:

Studies on Stored Oysters (Crassostrea virginica), by J. C. Medcof, FRB No. 579, 16 pp., illus., printed. (Reprinted from Proceedings of the National Shellfisheries Association, 1958, no. 49, pp. 13-28.) Queen's Printer and Controller of Stationery, Ottawa, Canada, 1959.

PACIFIC OCEAN:

Relationships of Some Marine Organisms of the Northeast Pacific to Water Temperatures, Particularly During 1957 Through 1959, by John Radovich, Fish Bulletin 112, 62 pp., illus., printed. California State Fisheries Laboratory, Terminal Island, Calif., 1961. According to the author, "After 9 consecutive years of subnormal temperatures, the ocean off the Pacific Coast of North America warmed up in 1957, heralding the beginning of a warm period which continued at least through 1959. Concurrently, many southern marine species wandered north of their usual range and some warm-water forms spawned successfully off southern California. An analysis of past records showed similar intrusions of southern species during previous warm-water years. In addition to fish moving northward during 1957, 1958, and 1959, some rare species were caught which showed no latitudinal movement, and some were collected south of their usual ranges. However, even some of these may have resulted from oceanic changes taking place during this period. Other vertebrates, including whales and birds, many invertebrates, and some marine plants were affected in one way or another by the change. The northward distribution of some invertebrates seemed more closely related to the development of the countercurrent than to the increase in temperature."

PAKISTAN:

Pakistan's Fisheries, by M. Rahimullah Qureshi, 73 pp., illus., printed. Central Fisheries Department, Karachi, Pakistan, 1961. Discusses Pakistan's fishery resources, geology and hydrology of the surrounding seas, fauna, fishing craft, gear and tackle, and fishermen and fishermen's cooperatives. Also covers the principal fisheries of Pakistan, production and utilization, fishery statistics, and fishery research.

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

Castellon Sardine Fishery, 1958 Data), by F. G. Larraneta, J. Lopez, and P. Suau.

IV Reunion Sobre Productividad y Pesquerias (Fourth Meeting on Production and Fisheries), 144 pp., processed in Spanish. Instituto de Investigaciones Pesqueras, Patronato "Juan de la Cierva" de Investigacion Tecnica, Barcelona, Spain.

"Panorama de la Produccion Pesquera Espanola en 1960" (Summary of Spanish Fishery Production in 1960), article, Industrias Pesqueras, vol. 35, no. 809, January 1, 1961, pp. 8-9, printed in Spanish. Industrias Pesqueras, Policarpo Sanz, 21-2, Vigo, Spain.

ST. PIERRE AND MIQUELON:

"L'Importance des Iles Saint-Pierre et Miquelon pour les Pecheries Europeennes" (The Importance of the Islands of St. Pierre and Miquelon to the European Fisheries), by Georges Landry, article, La Peche Maritime, vol. 40, no. 995, February 1961, pp. 70-71, illus., printed in French. La Peche Maritime, 190, Boulevard Haussmann, Paris, France.

STURGEON:

"The Sturgeon in Pennsylvania," by C. Robert Glover, article, Pennsylvania Angler; part 1, vol. 30, no. 1, January 1961, pp. 1-3; part 2, vol. 30, no. 2, February 1961, pp. 3-5; illus., printed. Pennsylvania Fish Commission, South Office Bldg., Harrisburg, Pa.

TARIFF AND TRADE:

Forty-Fourth Annual Report of the United States Tariff Commission (Fiscal Year Ended June 30, 1960), House Document No. 26, 73 pp., printed. United States Tariff Commission, Washington, D.C.; 1961. For the purposes of this report, the current work of the Tariff Commission--described in parts I, II, III, and IV--has been classified under the following headings: Public investigations; special reports and activities; furnishing technical information and assistance; and other activities. Part V of the report deals with the membership and staff of the Commission, and its finances and appropriations. As required by law, summaries of all reports made by the Commission during 1960 appear under the appropriate headings in parts I and II of this report. Among others, discusses the investigation by the Commission to determine whether shrimp was being imported into the United States in such increased quantities as to cause or threaten serious injury to the domestic shrimp industry.

TRANSPORTATION:

"Temperature in Frozen Fish Shipped by Road in Refrigerated Trailers," by C. P. Lentz and E. A. Rooke, article, Canadian Fisherman, vol. 47, no. 2, 1960, pp. 27-30, illus., printed. Canadian Fisherman, National Business Publications Ltd., Gardenvale, Canada.

"Transportation of Frozen Fish Lagging," by O. Young, article, Western Fisheries, vol. 60, May 1960, p. 66, printed. Western Fisheries, Roy Wrigley Publications Ltd., 1104 Hornby St., Vancouver 1, Canada.

TRAWLERS:

"Holland's First Stern Trawler," article, World Fishing, vol. 10, no. 3, March 1961, p. 31, illus.,

printed. World Fishing, John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London, NW1, England.

"Navire de Type Nouveau: 'l'Ocean'" (New Type of Ship: "The Ocean"), by Michel Jollant, article, France Peche, vol. 5, no. 46, December 1960, pp. 28-29, printed in French with English abstract. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France. Built according to the latest principles of stern trawling.

"Virginia Trawlers Roam the Atlantic," by James Wharton, article, The Commonwealth, vol. 28, no. 1, January 1961, pp. 9-11, illus., printed. Virginia State Chamber of Commerce, 611 E. Franklin St., Richmond 19, Va. Discusses the rich Virginia trawler fisheries, providing about 90 percent of the food fish landed at Hampton Roads. New beds of scallops have recently begun to be exploited. Trawlers now land about 20 million pounds of fish and shellfish a year.

TRAWLING:

"Le Chalutage 'aux Boeufs' en Espagne" (Pair Trawling in Spain), article, France Peche, vol. 6, no. 47, January 1961, pp. 19-20, illus., printed in French. France Peche, Tour Sud-Est, Rue de Guemene, Lorient, France.

TROPICAL FISH:

Examples of Mimicry and Protective Resemblance in Tropical Marine Fishes, by John E. Randall and Helen A. Randall, Contribution No. 289, 37 pp., illus., printed. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 10, no. 4, December 1960, pp. 444-480.) The Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

TROUT:

Insect Emergence from a Small Trout Loch and Its Bearing on the Food Supply of Fish, by N. C. Morgan and A. B. Waddell, Freshwater and Salmon Fisheries Research 25, 39 pp., illus., printed, 12s.6d. (about US\$1.75). Department of Agriculture and Fisheries for Scotland, Edinburgh, Scotland, 1961. (For sale by Her Majesty's Stationery Office, 13A Castle St., Edinburgh 2, Scotland.)

TUNA:

"Determination of Time Required for Freezing Skipjack, Katsuwonus pelamis," by K. Tanaka and J. Nishimoto, article, Journal of the Tokyo University of Fisheries, vol. 45, no. 2, 1959, pp. 205-225, illus., printed in Japanese. Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

"Las Grandes Posibilidades de la Pesca de Tunidos" (The Great Possibilities in the Tuna Fishery), by Pierre de Latil, article, Industrias Pesqueras, vol. 35, no. 810, January 15, 1961, pp. 20-22, printed in Spanish. Industrias Pesqueras, Policarpo Sanz, 21-2, Vigo, Spain.

TURTLES:

"To Save the Green Turtle," by J. David Bowen, article, Americas, December 1960, pp. 14-17, illus., printed. Pan American Union, 19th St. and Constitution Ave., NW., Washington, D. C.

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

PERCH:

The Perches, by Frank J. Schwartz, Education Series No. 44, 4 pp., illus., printed. Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md.

PERU:

L'Ascension Vertigineuse d'une Nation Pecheuse: Le Perou (The Dizzy Rise of a Fishing Nation: Peru), by Robert Lenier, article, *France Peche*, vol. 6, no. 47, January 1961, pp. 13-15, 17-18, 44, illus., printed in French. *France Peche*, Tour Sud-Est, Rue de Guemene, Lorient, France.

PICKEREL:

The Pickerels, by Frank J. Schwartz, Education Series No. 47, 4 pp., illus., printed. Maryland Department of Research and Education, Chesapeake Biological Laboratory, Solomons, Md.

RADIATION:

A Selected List of References on Marine and Aquatic Radiobiology, compiled by A. W. Klement, Jr., and I. E. Wallen, TID-3903, 42 pp., processed, \$1. Office of Technical Information, U. S. Atomic Energy Commission, Washington 25, D. C., May 20, 1960. (Office of Technical Services, Department of Commerce, Washington 25, D. C.)

"Microbiological Investigations--Radiation Preservation," article, *Food Investigation* 1958, pp. 13-16, printed. Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, 1959.

RADIOACTIVE WASTES:

Sedimentation of Radioactive Wastes in the Sea, by Michael Waldichuk, Circular No. 59, 43 pp., illus., processed. Fisheries Research Board of Canada, Biological Station, Nanaimo, Canada, January 1961.

RESEARCH VESSEL:

"Un Grand 'Petit' Bateau" (A Great 'Little' Boat), article, *France Peche*, vol. 6, no. 47, January 1961, pp. 21-23, illus., printed in French. *France Peche*, Tour Sud-Est, Rue de Guemene, Lorient, France. Discusses the work of the U. S. Bureau of Commercial Fisheries' exploratory fishing vessel John N. Cobb since its maiden voyage in 1950.

SALMON:

"Salmon and Steelhead Management", by Monte Richards, article, *Idaho Wildlife Review*, vol. 13, no. 4, January-February 1961, pp. 3-5, illus., printed. Idaho Fish and Game Department, 518 Front St., Boise, Idaho. Salmon and steelhead management has developed in importance in Idaho in the past decade, when fishing pressures on these species have increased greatly. Basically, management is dependent on the gathering and analysis of data pertaining to several phases of the runs entering the State.

SARDINES:

Essais Francais de Pre-Conservation de la Sardine sur les Bateaux de Peche, par Refrigeration en Eau de Mer a -1°C. (French Tests on the Pre-Storage of Sardine on Board Fishing Boats, by Cooling in Sea-Water at -1°C.), article, *Revue de la Conserve*, vol. 15, no. 3, May-June 1960, pp. 130-131, printed in French. *Revue de la Conserve*, 1 Rue de la Reale, Paris 1, France.

SCALLOPS:

"Florida Find Puts Scallop Fleet Back in Business," article, *Business Week*, no. 1643, February 25, 1961, pp. 142-144, 146, illus., printed. *Business Week*, McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N. Y. Discusses the discovery of an immense bed of calico scallops off Cape Canaveral, Fla., by the U. S. Bureau of Commercial Fisheries' experimental trawler Silver Bay, and the possibilities of its commercial development. This bed has a potential production of 500,000 gallons of scallops a year and is located close to shore. With shucking machines, this fishery could become a very productive one within a few years.

SEAWEEDES:

A Existencia de Algas Agarofitas em Angola (The Existence of Agar-Bearing Seaweeds in Angola), by F. Palminha, *Notas Mimeografadas do Centro de Biologia Piscatoria* No. 16, 16 pp., illus., processed. Junta de Investigacoes do Ultramar, Lisbon, Portugal, 1961.

SHRIMP:

Industriell Udnyttelse af den Rode Dybhavsreje (Commercial Utilization of the Deep-Sea Red Shrimp, *Pandalus borealis*), by Poul Hansen, 18 pp., illus., printed in Danish with English summaries. Fiskeriministeriets Forsogslaboratorium, Copenhagen, Denmark, December 1960.

Notes on Postlarvae of Commercial Shrimp (PENAEUS) in South Carolina, by Charles M. Bearden, Contribution No. 33, 6 pp., illus., printed. Bears Bluff Laboratories, Wadmalaw Island, S. C., February 1961.

SMOKED FISH:

"Scientists' Advice on Care of Smoked Fish," article, *Fish Selling*, no. 66, 1959, p. 4, printed. *Fish Selling*, A. J. Heighway Publications Ltd., 110 Fleet St., London EC4, England.

SOUTH CAROLINA:

Annual Report, 1959-1960, Contribution No. 32, 11 pp., illus., printed. (Reprinted from Report of South Carolina Wildlife Resources Department, Fiscal Year July 1, 1959-June 30, 1960.) Bears Bluff Laboratories, Wadmalaw Island, S. C., January 1961. A detailed description of the activities of Bears Bluff Laboratories for the period under review, covering the study of oysters, shrimp, blue crabs, finfish, and pond cultivation.

SPAIN:

Investigacion Pesquera, no. 16, July 1960, 160 pp., illus., printed in Spanish. Instituto de Investigaciones Pesqueras, Universidad de Barcelona, Barcelona, Spain. Includes, among others, the following articles: "Consideraciones Acerca del Crecimiento de la Caballa (Scomber scombrus L.) en el Mediterraneo Espanol" (Information on the Growth of the Horse Mackerel (*Scomber scombrus* L.) in the Spanish Waters of the Mediterranean), by C. Bas; "Nota Sobre Algunas Especies de Algas de la Costa Occidental Africana--Sur de Cabo Blanco" (Note on Some Species of Algae on the West African Coast--South of Cabo Blanco), by J. Seoane-Camba; and "Dinamica de la Pesqueria de Sardina de Castellon. Datos de 1958" (Dynamics of the

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

UNDERWATER OBSERVATIONS:

Seven Miles Down: The Story of the Bathyscaph "Trieste," by Jacques Piccard and Robert S. Dietz, 249 pp., illus., printed, \$5. G. P. Putnam's Sons, 210 Madison Ave., New York 22, N. Y., 1961. Story of the development of the bathyscaph and its 65 underwater explorations, told by the man who piloted it and the oceanographer associated with its history since 1955.

U.S.S.R.:

"Food in Russia: Russian Fish Research," by C. L. Cutting, article, Food Manufacture, vol. 35, no. 1, 1960, pp. 18, 22, illus., printed. Food Manufacture, Leonard Hill Ltd., 9 Eden St., London NW1, England.

WHALING:

"Australia's 1960 Whaling Season," by D. J. Gates, article, Fisheries Newsletter, vol. 20, no. 2, February 1961, pp. 13, 15, illus., printed. Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia. A summary of the volume and value of the baleen and sperm whale catch; number of catcher vessels operating from shore stations; oil and byproducts yield; length, sex, and maturity of whales caught; and the Antarctic catch. Includes statistical tables and graphs showing landings of humpback and sperm whales, 1951-1960; production of oil and byproducts per whale; and Australian humpback whales, 1956-1960.

International Whaling Statistics, XLII, 53 pp., printed, kr. 2.00 (about 28 U. S. cents). The Committee for Whaling Statistics, Oslo, Norway, 1959. Presents the results of the Antarctic whaling during the sea-

son 1957/58. Six countries--Norway, United Kingdom, Japan, Netherlands, U.S.S.R., and Argentina--participated with 20 floating factories, 2 shore stations, and 257 catchers. These countries under the International Whaling Convention agreed to maintain the maximum quota of 14,500 blue-whale units for the season 1957/58.

YELLOWTAIL:

A Study of the Yellowtail SERIOLA DORSALIS (Gill), by John L. Baxter, Fish Bulletin No. 110, 96 pp., illus., printed. California State Fisheries Laboratory, Terminal Island, Calif., 1960. The present economic range of yellowtail is from Los Angeles County, Calif., to Cape San Lucas, Baja, California. The principal objectives of the present study were to determine the geographic origin of the yellowtail appearing each year in the areas fished by California-based anglers; the effects of fishing on the population; and life history information on which to base wise management practices. The material for life history studies was obtained throughout the year from three principal sources--fish sampled at the canneries, specimens saved in conjunction with tagging operations, and catches made by anglers on party fishing vessels.

YUGOSLAVIA:

Stocarstvo i Ribarstvo, 1959 (Stock Breeding and Fisheries, 1959), Statistical Bulletin 182, 36 pp., illus., printed in Serbo-Croatian with 22-page English supplement. Section on fisheries covers salt- and fresh-water fisheries, total catch of fish, landings of salt-water fish by fishing enterprises and cooperatives, landings of salt- and fresh-water fish by species and by months, and other data.



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AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES TRANSLATION PROGRAM

The American Institute of Biological Sciences (AIBS) is currently translating and publishing seven Russian research journals in biology. These journals are translated with support from the National Science Foundation, which is eager that such information be more widely distributed to biologists throughout the world. It is hoped that this material will aid biologists in research, prevent duplication of work, give some idea of the work being done by Soviet scientists in the field of biology, and also bring about a better international understanding among scientists.

Because of the support of the National Science Foundation, the AIBS can offer these translations at a fraction of their publication cost, with even further price reduction to AIBS members and to academic and non-profit libraries. This reduction, the AIBS feels, places the translation within the reach of all biologists.

The journals currently being translated are: Doklady: Biological Sciences Section; Doklady: Botanical Sciences Section; Doklady: Biochemistry Section; Plant Physiology; Microbiology; Soviet Soil Science; and Entomological Review.

In addition to its program of Russian Biological Journal translations, the AIBS has instituted a separate program of translation and publication of selected Russian monographs in biology.

It was felt that the program of Journal translations was not sufficient to cover all of the significant work being done in all fields of biology by Russian Scientists. With the aid of competent authorities, the AIBS has translated and published six Russian monographs and one monograph is in the process of being published. In addition, several prominent monographs in various biological areas are being considered by the AIBS and the National Science Foundation for translation and publication. The monographs that have been published are: "Origins of Angiospermous Plants," by A. L. Takhtajan; "Problems in the Classification of Antagonists of Actinomycetes," by G. F. Gauze; "Marine Biology," Trudi Institute of Oceanology, Vol. XX, edited by B. N. Nikitin; "Arachnoidea," by A. A. Zakhvatkin, and "Arachnida" by B. I. Pomerantzev. The manuscript for "Plants and X-rays," by L. P. Breaslavets is in the final stages of preparation and should be published early in 1960.

Additional information pertaining to this program may be obtained by writing to the American Institute of Biological Sciences, 2000 P Street, NW., Washington 6, D. C.

FREEZE-DRYING OF FOODS

Chicken and mushrooms are now being freeze-dried--first frozen, then dehydrated--and put into soup mixes. Some freeze-dried foods, after reconstitution with water, are said to be more tender and less shrunken than foods prepared by conventional drying techniques. Freeze-drying is not a new process, and it is a relatively expensive technique. It is of considerable interest to the food industry, however, because it offers the possibility of dehydrating products which can then be stored at or near room temperature, so that costs of refrigerated storage and transportation could be substantially reduced.

As the first step in freeze-drying, foods are either fast frozen or slow frozen. Slow freezing induces the growth of large ice crystals which rupture fibers or cell walls, and in some cases the reconstituted product will tend to be tough. In other cases very fast freezing is chosen deliberately as a method of tenderizing. Still other foods may be either fast frozen or slow frozen with no perceptible difference in final product characteristics. As the second step, the frozen food is put into a vacuum chamber and heated. Under the circumstances, the ice sublimates--i.e., vaporizes without passing through the melting stage. The final product is a sponge-like but rigid mass; when water is added, it will reconstitute to near the original texture, flavor, and color. Reconstitution takes 5 to 15 minutes or longer. For most economical operation, food products must be heated as rapidly as the food will stand, but emitted vapors must be removed as fast as they are driven out; otherwise, localized melting will occur, and the final product may include tough or otherwise damaged spots. Thus, the vacuum system must be matched with the heating system. But the heating process is gradual; the most important limitation on present-day freeze-drying techniques is that they take too long.

One current method is to lay out frozen foods on shelves that are continuously heated by circulating liquids during the drying stage, or electrical heating coils or infrared lamps can be used. Another system involves placing the foodstuffs to be dried on aluminum plates that are placed between, but not touching, blackened radiant heating shelves. In either case, the rate of drying is determined by the nature and thickness of the food itself, and the rate of heat transfer into it. The rate of heat transfer into the dried food, however, is reduced as its outer surface loses its ice content through sublimation. It may take 10 to 12 hours for thorough freeze-drying of a half-inch-thick food sample.

Considerable developmental effort has therefore been devoted to ways of speeding up the drying process while still retaining control of both heating and product quality. Heating trays can be provided with spikes, for example, to achieve more rapid heat distribution through the food. Heating with microwaves has also been tried. Still, drying times are long, and freeze-drying remains uneconomical for relatively low-cost foods. Most of the research work conducted so far has been stimulated by the Quartermaster Food and Container Institute, for military rations. A number of completely precooked, dehydrated meals have already been made available; 10 to 15 minutes after addition of hot water, they are ready to eat. These complete meals, are combinations of freeze-dried and conventionally-dried components; their cost is justified in terms of the logistics of using them.

A number of pharmaceuticals have been freeze-dried for some years, but in this case, processing expenses are a small part of the total cost. The same criterion holds for freeze-drying foods; if processing costs are small in relation to the total cost, the process could be justified. Yet, process economics have to be worked out for each new product; the first ones to appear on the market may be "instant" or "convenience" foods, or delicatessen products. Probably more important in the near future will be the development of new concepts of convenience foods; for this and other reasons, freeze-drying continues to hold the interest of the food industry. (Industrial Bulletin, Arthur D. Little, Inc., January 1961.)