



# RECENT FISHERY PUBLICATIONS

## FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE 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.  
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.  
SSR. - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number	Title
CFS-2767	- Massachusetts Landings, September 1961, 5 pp.
CFS-2773	- Alabama Landings, August 1961, 3 pp.
CFS-2780	- Mississippi Landings, October 1961, 2 pp.
CFS-2781	- Frozen Fish Report, December 1961, 8 pp.
CFS-2783	- Rhode Island Landings, October 1961, 3 pp.
CFS-2785	- Alabama Landings, September 1961, 3 pp.
CFS-2786	- Michigan Landings, November 1961, 2 pp.
CFS-2787	- California Landings, September 1961, 4 pp.
CFS-2788	- Ohio Landings, November 1961, 2 pp.
CFS-2789	- Maine Landings, November 1961, 4 pp.
CFS-2790	- California Landings, October 1961, 4 pp.
CFS-2791	- Minnesota Landings, November 1961, 2 pp.
CFS-2792	- Louisiana Landings, September 1961, 2 pp.
CFS-2793	- Alabama Landings, October 1961, 3 pp.
CFS-2794	- New York Landings, November 1961, 5 pp.
CFS-2795	- Pacific Coast States Fisheries, 1960, Annual Summary, 6 pp.
CFS-2797	- Rhode Island Landings, November 1961, 3 pp.
CFS-2798	- Ohio Landings, December 1961, 2 pp.
CFS-2799	- Mississippi Landings, November 1961, 2 pp.
CFS-2801	- Fisheries of the United States, 1960, Annual Summary, 18 pp.
CFS-2802	- Mississippi River Fisheries, 1960, Annual Summary, 9 pp.
CFS-2803	- New Jersey Landings, December 1961, 4 pp.
CFS-2804	- Maryland Landings, December 1961, 3 pp.
CFS-2805	- Louisiana Landings, October 1961, 2 pp.
CFS-2807	- Alabama Landings, November 1961, 3 pp.
CFS-2809	- South Carolina Landings, December 1961, 2 pp.
CFS-2812	- Texas Landings, November 1961, 3 pp.
CFS-2817	- Wisconsin Landings, December 1961, 2 pp.
FL-523	- Spiny Lobsters, by Lola T. Dees, 7 pp., illus., September 1961. Discusses the commercially valuable species of spiny lobster, their physical characteristics, sexual differences and behavior, food and feeding, habits, molting and growth, reproduction, and the young. Also discusses migrations, enemies and protection against them, methods of capture, utilization of the catch, and efforts at culture.

FL-525 - The Mosquitofish, *Gambusia affinis*, by Lola T. Dees, 5 pp., illus., September 1961.

FL-527 - Brine Shrimp, by Lola T. Dees, 5 pp., illus., September 1961. Discusses the species and occurrence of brine shrimp, its life history, and commercial utilization. Also discusses the collection, processing, hatching, and rearing of brine shrimp. A list of suppliers located in the United States of brine shrimp eggs is included.

FL-532 - Advance Report on the Fisheries of the United States, 1961, by E. A. Power, 25 pp., January 1962.

SSR-Fish. No. 394 - Annual Fish Passage Report--Rock Island Dam, Columbia River, Washington, 1959, by Paul D. Zimmer, Clifton C. Davidson, and Floyd S. Anders, 16 pp., illus., August 1961.

Sep. No. 642 - Blue Crab Trawl Fishery of Georgia.

Sep. No. 643 - Comparison of pH, Trimethylamine Content, and Picric Acid Turbidity as Indices of Iced Shrimp Quality.

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-65	- The Inshore Fishing Industry of South Africa, and South West Africa: Its Structure, Resources, Economy, etc., 10 pp.

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

Coastal Wind Currents and the Theory of Ekman, by K. N. Fedorov, 7 pp., illus., processed, December 1961. (Translated from Russian, *Izvestiia of the Academy of Sciences of the USSR*, Geophysical Series, No. 8, 1959.)

The Pycnocline in Variable Currents, by K. N. Fedorov, 7 pp., illus., processed, December 1961. (Translated from Russian, *Academy of Sciences of the USSR, Oceanology*, vol. 1, no. 1, 1961, pp. 25-29.)

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

Geographical Zones in the Pelagial of the Central Pacific Ocean (From Material from the 26th Cruise of the *Vitiaz*), by V. G. Bogorov, 11 pp., processed, December 1961. (Translated from Russian, *Academy*

of Sciences of the USSR. Works of the Institute of Oceanology, vol. 41, 1960, pp. 8-16.)

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS AVAILABLE ONLY FROM THE U. S. BUREAU OF COMMERCIAL FISHERIES, 101 SEASIDE AVE., TERMINAL ISLAND, CALIF.

Report of Research Vessel SHOYO MARU--1960, Translation Series No. 4, 13 pp., illus., processed. (Translated from Japanese, Marine Investigations Made in Atlantic Ocean off the West and Northwest Coast of Africa; Land Investigations Made at Ports of Call and Cruise Report, pp. 16-22, 34-39.)

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

Alaska Seafood Recipes, by Charlotte D. Speegle and Marjorie Bassett, 79 pp., illus., processed. (U. S. Fish and Wildlife Service, Fishery Products Laboratory, Box 647, Ketchikan, Alaska, 1951.) Contains brief explanations of how to purchase fish. Also shows the amount of fishery products needed to feed 50 persons. Includes recipes for preparing cod, flounder or sole, herring roe, halibut, rockfish, sablefish, salmon, smelt or eulachon, trout, clams, crabs, oysters, scallops, and shrimp. Also contains recipes for preparing fish outdoors, using kelp to prepare pickles and relish, and for making sauces and stuffing for fish. Most of the recipes are for serving six.

(Baltimore) Monthly Summary--Fishery Products, December 1961, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the month indicated.

California Fishery Market News Monthly Summary, Part I--Fishery Products Production and Market Data, December 1961, 18 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, sardines, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II--Fishing Information, December 1961, 15 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, December 1961 (Review of Chicago Wholesale Fishery Trade in 1961) and January 1962, 22 pp. and 14 pp. respectively. (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 weekly wholesale prices for fresh and frozen fishery products; for the months indicated.

Fluke Tagging, Scup (Porgy) Tagging, Tagging Bulletin, December 14, 1961, 6 pp., processed. (U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, Biological Laboratory, Woods Hole, Mass.) A description of recent fluke and scup (porgy) tagging programs conducted by the Woods Hole Biological Laboratory and by the State of New Jersey Department of Conservation and Economic Development. Included is brief preliminary information on the principal area where the tagged fish were caught, as well as the range of area over which they were caught.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, January 1962, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) 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 York City's Wholesale Fishery Trade--Monthly Summary--October and November 1961, 24 pp. each. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the months indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, January 1962, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle 4, Wash.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl receipts 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.

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"Grading Large Numbers of Live Shrimp for Marking Experiments," by Donald M. Allen and T. J. Costello, article, *Progressive Fish-Culturist*, vol. 24, no. 1, January 1962, pp. 46-48, illus., processed, single copy 25 cents.

Resources for Tomorrow--1961 Annual Report of the Secretary of the Interior (For the Fiscal Year Ended

June 30, 1961), 473 pp., illus., printed, \$1.75. U. S. Department of the Interior, Washington 25, D. C. The first part of this report discusses the Department of the Interior's prime function of planning for the future of America and working to conserve the natural resources which sustain its life. The activities of the Department's bureaus and offices, including the United States Fish and Wildlife Service, are summarized in the second part. Among others, the accomplishments of the Bureau of Commercial Fisheries are described. Activities discussed in detail are research in salmon, tuna, biological oceanography, Great Lakes fisheries, application of atomic energy to fishery products, pesticides, fish protein and oils, fish meal, exploratory fishing, gear studies, and economic studies. Also contains information on research grants and fellowships; construction of laboratories and a new oceanographic-fishery research vessel; marketing services--standards development and inspection, market promotion, movies and demonstrations, statistical studies, and Market News reports; financial assistance--loan fund and mortgage insurance programs; foreign trade activities--tariff negotiations and fish meal promotion; Columbia River fishery program; and the fur-seal resource. A summary of the various activities of the Bureau of Sport Fisheries and Wildlife is also included.

"Separation of the Sexes of *Tilapia nilotica* with a Mechanical Grader," by Y. Pruginin and E. W. Shell, article, Progressive Fish-Culturist, vol. 24, no. 1, - January 1962, pp. 27-40, illus., processed, single copy 25 cents.

## 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. PRICES, IF READILY AVAILABLE, ARE SHOWN.

### ALGAE:

"Chemical Studies on Marine Algae. XIV--On a New Amino Acid, 'Chondrine,' Isolated from the Red Alga *Chondria crassicaulis*," by Mitsuo Kuriyama, Mitsuzo Takagi, and Kiichi Murata, article, Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 11, August 1960, pp. 58-66, printed. Hokkaido University, Kameda-Machi, Hakodate, Japan.

"Oligosaccharides from Alginic Acid," by D. I. Vincent, article, Chemistry and Industry, no. 35, 1960, pp. 1109-1110, printed. Society of the Chemical Industry, 14 Belgrave Sq., London SW1, England.

Overgrazing of Algae by Herbivorous Marine Fishes, by John E. Randall, 1 pp., printed. (Reprinted from Ecology, vol. 42, no. 4, Autumn 1961, p. 812.) Ecological Society of America, Duke University Press, Box 6697, College Station, Durham, N. C.

### ALUMINUM CANS:

"Double-Bonus Can Lowers Costs, Ups Sales Appeal," article, Food Engineering, vol. 32, no. 11, 1960, pp. 46, 49, 50, illus., printed. Food Engineering, Chilton Co., Chestnut and 56th Sts., Philadelphia 39, Pa.

### AUSTRALIA:

"Fish, Crustacean Legal Lengths," article, Fisheries Newsletter, vol. 21, no. 1, January 1962, pp. 15-

17, printed. Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia. A table showing comparative minimum legal lengths of fish and crustaceans in all 6 Australian states, and the Commonwealth minimum wherever the Commonwealth has taken action at the request of a state or states. Also includes fish for which there is a minimum legal length in only one state, and thus provides the commercial fishermen of Australia with a comprehensive record of minimum lengths now in force in Australian waters.

### BACTERIOLOGY:

Marine Microbiology (Deep Water), by A. E. Kriss, printed. Academy of Sciences, Moscow, U.S.S.R., 1959.

### BIOCHEMISTRY:

"Report on Trimethylamine in Fish," by W. J. Dyer, article, Journal of the Association of Official Agricultural Chemists, vol. 42, May 1959, pp. 292-294, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C.

"Tryptophan Content of Fish Meat," by Shoji Konosu and Fumio Matsuura, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, October 1960, pp. 1040-1049, printed in Japanese. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

### BRAZIL:

Sudene, Boletim de Estudos de Pesca, vol. 1, no. 2, November 1961, 14 pp., illus., processed. Departamento de Estudos Especiais, Setor Pesca, Superintendencia do Desenvolvimento do Nordeste, Edifício Juscelino Kubitschek, 12º Andar, Recife, Brazil. Contains, among others, the following articles: "Fomento a Industria da Pesca (Development of the Fisheries Industry); "Estudo sobre a Biologia de Lagostas Comercializadas em Recife" (Study of the Biology of Commercial Spiny Lobsters in Recife); and "Observacoes sobre Recente Pesca de Lagosteiros Franceses no Nordeste" (Observations on Recent Cruises of the French Spiny Lobster Vessels in the Northeast).

### BYPRODUCTS:

"The Digestibility of Certain Menhaden Fish By-Products," by C. F. Bassett and R. G. Warner, article, National Fur News, vol. 33, no. 12, January 1962, pp. 9, 33, printed. National Fur News, Broyles, Allebaugh & Davis, Inc., 200 Clayton St., Denver 6, Colo. Discusses the relative digestibility and nutritional value of four test diets fed to groups of mink. Covers the procedure followed in running a digestibility test, difficulties in conducting digestibility tests, results of the first four digestibility tests, and interpretation of the results. It was found that the protein digestibility of other diets was approximately 1½ percent greater than for the diet containing fish, but the latter was adequate for growth.

### CALIFORNIA:

California Fish and Game, vol. 48, no. 1, January 1962, 86 pp., illus., printed, single copy 75 cents. Department of Fish and Game, 987 Jedsmith Dr., Sacramento 19, Calif. Includes, among others, the following articles: "The Names of Certain Marine Fishes of California," by Phil M. Roedel; "The Pismo Clam in 1960," by John L. Baxter; "Age Determination of the Pacific Albacore of the California Coast," by Robert R. Bell; "Water Velocities Tolerated by Spawning

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Kokanee Salmon," by Glenn E. Delisle; and "Purse Seining for Pacific Albacore," by John A. Shaver.

#### CANADA:

Annual Report of the Department of Natural Resources, Province of Saskatchewan, for the Fiscal Year Ended March 31, 1961, 160 pp., illus., printed. Department of Natural Resources, Regina, Saskatchewan, Canada, March 31, 1961. A compilation of reports of the branches of the Department of Natural Resources, including a 20-page report of the Fisheries Branch. The section on fisheries covers activities in management, research, fish culture, and information on enforcement. Statistical data are also given on fish production and value.

Canadian Fisheries Reports, no. 1, 58 pp., illus., printed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada, September 1961. A new periodical published to disseminate specialized information of interest to the fishing industry, from the catching to the end product. Articles may deal with conservation, inspection, development, economics, and related subjects. This issue contains the following articles: "A Study of the Influence of Freezing and Frozen Storage on Bacterial Survival in Fish Fillets," by N. Neufeld and R. Garm; "The Effect of Freezing and Subsequent Frozen Storage on the Survival of Bacteria Found on Freshwater Fish Fillets," by G. R. Douglas and J. A. Clarke; "Abnormally Coloured Groundfish Fillets," by J. P. Hennessey; "Distinguishing Canned Brisling from Canned Sild Sardines," by J. H. Mann; "Some Observations Concerning Experimental Application of Objective Quality Tests to West Coast Fish," by H. L. A. Tarr; "Observations on Bacterial Counts and Conformance to C. G. S. B. Tolerances for Defects," by J. P. Hennessey and A. R. Johnston; and "Progress Report on Salt Codfish Block Project."

#### CANS:

"Mass Produced Aluminum Cans from Precoated Foil," article, Food Processing, vol. 21, no. 12, 1960, pp. 26-28, illus., printed. Food Processing, Putman Publishing Co., 111 E. Delaware Pl., Chicago 11, Ill.

#### CATFISH:

The Fresh-Water Catfishes of Texas and How to Know Them, by William H. Brown, Bulletin No. 39, 9 pp., illus., printed. Texas Game and Fish Commission, Austin, Texas, June 1961. Presents an accurate means for identifying the various catfish native to the inland waters of Texas. Of interest to both fishermen and students of fishery biology. Contains a key outlining the distinguishing features of each species of catfish and a detailed description of each including common and scientific names, physical characteristics, distribution, and methods of capture. Also includes a diagram showing the differing external structures of the various species.

#### CAVIAR:

"Factors Affecting Quality of Processed Caviar (Sturgeon Roe) on Storage," by Yu. I. Raninskaya, article, Chemical Abstracts, vol. 55, 9713i, May 15, 1961.

#### CHILE:

Explotacion Pesquera y Aprovechamiento de los Productos de la Pesca en Chile (Fishery Development and Utilization of Fishery Products in Chile),

Primer Congreso Chileno de Ingenieria Quimica, vol. III, 307 pp., printed in Spanish. Instituto de Ingenieros Quimicos de Chile, Concepcion, Chile, August 1959. Contains articles by engineers, nutritionists, biologists, and others on Chile's fishery problem, fishery biology, fishery products in human nutrition, marine plants, fish meal for animal consumption, frozen fishery products, fishing ports and docks, fishing vessels, fishery economics in relation to processed fishery products, fishery statistics, commercial development of the fisheries, and fishery politics and legislation.

#### CLAMS:

Problems Involved in the Development of Clam Farms, by Harry J. Turner, Jr., Publication 4451, 12 pp., illus., printed. (Reprinted from The Smithsonian Report for 1960, pp. 465-472; also reprinted from Oceanus, vol. 7, no. 1, September 1960.) Smithsonian Institution, Washington 25, D. C., 1961. Discusses the history of the soft-shell clam fishery, efforts at conservation and development, stocking a clam farm, predators, settlement of clams, geological factors involved in clam settlement, and need for further study.

#### COD:

"The Expressible Fluid of Fish Fillets. X--Sodium and Potassium Content in Frozen and Iced Fish," by R. M. Love, and "XI--Ice Crystal Formation and Cell Damage in Cod Muscle Frozen Before Rigor Mortis," by R. M. Love and S. B. Haraldsson, articles, Journal of Science of Food and Agriculture, vol. 12, June 1961, pp. 439-449, printed. Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

#### COMMISSIONS:

Gulf States Marine Fisheries Commission Twelfth Annual Report 1960-1961 (to the Congress of the United States and to the Governors and Legislators of Alabama, Florida, Louisiana, Mississippi, and Texas), 42 pp., printed. Gulf States Marine Fisheries Commission, 312 Audubon Bldg., New Orleans 16, La. Outlines the Commission's activities for the period October 1960-October 1961, with a summary of some of the points of general interest in the Compact among the 5 Gulf States. Describes briefly the activities of each of those States during the period. Short discussions of U. S. Fish and Wildlife Service activities in navigation projects, flood control, hurricane protection projects, navigation permits, industrial fish explorations, gear research, scallop and clam explorations, exploratory snapper trawling, shrimp explorations, biological and technological laboratories, and the Gulf fishery statistical and Market News programs are included. Also contains a financial report of the Commission.

#### DEHYDRATION:

"Novyi Sposob Sushki" (New Drying Method), by A. I. Iuditskaia, V. I. Tresheva, and V. V. Kolchev, article, Trudy, Tekhnologia Rybnykh Produktov, vol. 60, 1959, pp. 94-97, printed in Russian. Trudy, Tekhnologia Rybnykh Produktov, VNIRO Glavni-proekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

#### DOLPHINS:

"On the Species of Dolphins Found on the Coast of Northern Norway and in Adjacent Waters," by Aeg

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Jonsgard, article, Norsk Hvalfangst-Tidende (The Norwegian Whaling Gazette), vol. 51, no. 1, January 1962, pp. 1-13, illus., printed in Norwegian and English. Hvalfangerforeningen, Sandefjord, Norway.

"Vocal Exchanges between Dolphins," by John C. Lilly and Alice M. Miller, article, Science, vol. 134, no. 3493, December 8, 1961, pp. 1873-1876, illus., printed, single copy 35 cents. Science, 1515 Massachusetts Ave., NW, Washington 5, D. C.

#### DRIED FISH:

"Experimental Preservation of Fish Dried by the Sublimation Method," by K. V. Martem'yanova, article, Chemical Abstracts, vol. 54, 19999a, October 10, 1960.

#### EXPLORATORY FISHING:

"Seefischerei. Die Dritte Suchreise 1959, eine Winterreise nach Gronland" (Sea Fisheries. The Third 1959 Voyage in Search of New Grounds - a Winter Voyage to Greenland), by A. S. Meyer, article, Hansa, vol. 97, nos. 23/24, 1960, pp. 1212-1215, illus., printed in German. Hansa, C. Schroedter und Co., 10 Stubbenhuk, Hamburg 11, Germany.

#### FACTORYSHIP:

"Die Projectierung de Kaltetechnischen Einrichtung eines Fishfabrikschiffes" (Designing the Refrigerating Plant of a Fish Factoryship), by E. Zimmerman, article, Schiffbautechnik, vol. 10, 1960, pp. 379-389, illus., printed in German. Schiffbautechnik, C. Schroedter und Co., Stubbenhuk 10, Hamburg 11, Germany.

#### FAT CONTENT:

"Dynamics of the Fat Content of the Fish," by G. E. Shul'man (Kerch'), article, Russian Review of Biology, vol. 49, no. 2, 1960, pp. 209-222, printed. Russian Review of Biology, Oliver and Boyd Ltd., 38A Welbeck St., London W1, England.

#### FILLETING MACHINE:

"Cuts Problem Down to Size," by David N. Lewin, article, Food Engineering, vol. 33, August 1961, p. 36, printed. Describes a Swedish compact fish-filleting machine. Requires only two operators to feed raw fish into it, has a capacity of 150 fish (ranging in size from 1 to 15 fish per pound) per minute, and occupies 60 square feet of floor space. Food Engineering, Chilton Company, Chestnut and 56th Sts., Philadelphia 39, Pa.

#### FISH BEHAVIOR:

"An Experimental Study of Competition for Food in Fish," by Craig MacPhee, article, Ecology, vol. 42, no. 4, Autumn 1961, pp. 666-681, illus., printed. Ecological Society of America, Duke University Press, Box 6697, College Station, Durham, N.C.

#### FISH CULTURE:

"Utilization of Saline Mud Flats for Fish Culture - An Experiment in Marine Fish Farming," by P. R. S. Tampi, article, Indian Journal of Fisheries, vol. 7, no. 1, April 1960, pp. 137-146, illus., printed. Indian Journal of Fisheries, Ministry of Food and Agriculture, New Delhi, India.

#### FISH DETECTION:

"Ekkolodd Fiskesoking og Undervannsfotografering" (Fish Detection by Echo Sounder and Underwater

Photography), by G. Saetersdal, article, Konkylien, vol. 5, no. 1, 1960, pp. 28-31, illus., printed in Norwegian with English summary. Konkylien, Stord Marin Industry A. S., Bergen, Norway.

#### FISH FLOUR:

Studies of the Nutritional Value of Fish Flesh Proteins, by A. B. Morrison and others, Paper No. C/III (FAO International Conference on Fish in Nutrition, Washington, D. C., September 19-27, 1961), 11 pp., printed. Food and Agriculture Organization of the United Nations, Rome, Italy.

#### FISHING EFFORT:

"The Relationship of Fishing Effort by Gill Nets to the Interval between Lifts," by W. A. Kennedy, article, Journal of the Fisheries Research Board of Canada, vol. 8, no. 4, October 1951, pp. 264-274, printed. Fisheries Research Board of Canada, West Block, Ottawa, Canada.

#### FISHING WITH LIGHTS:

"Use of Bunches of Lamps in Fishing for Sprats with Fish Pumps," by I. V. Nikonorov, article, Rybnoe Khoziaistvo, vol. 35, 1959, pp. 42-47, printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

#### FISH-LIVER OIL:

"Hydrocarbons in Pollack Liver Oil," by Isami Tsujino, article, Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 11, February 1961, pp. 222-224, printed. Hokkaido University, Kameda-Machi, Hakodate, Japan.

#### FISH MEAL:

Fish and Fishery Products in Poultry Rations, by J. Baelum, Paper No. R/IV/5 (FAO International Conference on Fish in Nutrition, Washington, D. C., September 19-27, 1961), 14 pp., printed. Food and Agriculture Organization of the United Nations, Rome, Italy, 1961.

Nutritional and Chemical Changes in the Lipid Fraction of Stored Antioxidant-Treated and Untreated Herring Meals, by B. E. March and others, Circular No. 25, 13 pp., illus., processed. Fisheries Research Board of Canada, Technological Station, Vancouver, B. C., Canada, December 1961.

"Production et Vente de Farine de Poisson" (Production and Sale of Fish Meal), by G. Meseck, article, France Peche, vol. 6, no. 57, December 1961, pp. 23-26, illus., printed in French. France Peche, Service Abonnement, Boite Postale 179, Lorient (Morbihan), France.

Quality of Fish Meal in Relation to Its Value as a Supplement to Corn-Soybean Meal Chick Diets, by H. M. Scott and others, Paper No. C/IV/4 (FAO International Conference on Fish in Nutrition, Washington, D. C., September 19-27, 1961), 3 pp., printed. Food and Agriculture Organization of the United Nations, Rome, Italy, 1961.

#### FISH OIL:

"Chemical Properties of Oils in Gamma-Radiated Fish Meat and Products. Part I," by Takashi Kaneda, Hisae Sakai and Seinosuke Ishii, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 11, 1959, pp. 909-912, printed in Japanese with Eng-

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lish summary. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kai-gandori 6-chome, Tokyo, Japan.

"Separation of Fatty Acids from Oxidized Fish Oils," by Jack J. Bulloff, article, Chemical Abstracts, vol. 55, 11887d, June 12, 1961.

#### FRANCE:

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#### INTERNATIONAL TRADE FAIRS:

America's Showcase Abroad, 12 pp., illus., printed. Office of International Trade Fairs, U. S. Department of Commerce, Washington 25, D. C., 1961. Discusses United States participation in international trade fairs, facilities and services offered, how to join the Trade Fairs Program, display space, all-American exhibitions, how taking part means an opportunity for public service, requirements of exhibitors, benefits from participation, and animated displays.

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"Processing by Irradiation. II--Application to Food Preservation," by F. L. Ley and J. R. Hickman, article, Research, vol. 13, no. 5, 1960, pp. 193-197, printed. Research, Butterworths Scientific Publications, 88 Kingsway, London WC2, England.

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Pennsylvania Fishes, by Albert S. Hazzard, 24 pp., illus., printed, 25 cents. (Reprinted from Pennsylvania Angler, April 1956-February 1957.) Pennsylvania Fish Commission, South Office Bldg., Harrisburg, Pa. Contains drawings and brief descriptions of 51 fish found in Pennsylvania waters. Describes for each fish its range, characteristics, habits, food, and lures to be used. Should be help-

ful to fishermen and others interested in knowing something about most of the common fish of Pennsylvania and the lures and methods used in taking them. One reason for the large number of fish is that Pennsylvania lies within three major watersheds. There are 33 major families of fish found within its boundaries. Some have been introduced successfully, such as the carp and brown trout. Others have been introduced with no permanent success, such as the grayling, Atlantic salmon, and at least one species of the Pacific salmon. Important transplants to certain waters within the State may also be noted, for example the smallmouth bass and the walleye or yellow pike were not native to the Delaware or to the Susquehanna rivers, although originally found in the Ohio and in St. Lawrence drainages.

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Amino Acids in Meat Extracts of Pacific Saury," by Shigeru Umemoto, article, Chemical Abstracts, vol. 55, 8690d, May 1, 1961.

#### OTLAND:

Scottish Fisheries Bulletin, no. 16, December 1961, 18 pp., illus., printed. Her Majesty's Stationery Office, 13A Castle St., Edinburgh 2, Scotland. Includes, among others, these articles: "Camera Aids Research," by R. E. Craig and R. Priestly; "The State of the North Sea Haddock Stock and Immediate Prospects for the Fishery," by Rodney Jones; "A Note on Recent Whiting Landings from the North Sea," by Ray Gambell; "I.C.N.A.F. Mesh Regulations," by C. E. Lucas; "The Catching and Marketing of Eels," by W. M. Shearer; and "Spotlight on the Salmon Bagnet," by W. M. Shearer and R. G. Lawrie.

#### A PORT:

United States Seaports, Alaska, Pacific Coast, and Hawaii, Port Series, Part 1, 176 pp., illus., processed, \$1. Maritime Administration, U. S. Department of Commerce, Washington, D. C., June 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Presents data on port administration; Federal functions and services; terminal services, rates, and charges; labor contracts, rules, benefits, wage rates, and related data; foreign and domestic trade; port development; policy and legal actions taken by the government affecting the port industry.

#### A URCHIN:

The Edible Sea Urchin, *Tripneustes esculentus*, Leske in Barbados," by J. B. Lewis, article, West Indies Fisheries Bulletin, no. 5, September/October 1961, pp. 1-3, processed, 17 B.W.I. cents (about 10 U. S. cents). The Federal Fisheries Adviser, Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad. Discusses the commercial importance of sea urchin, its occurrence, breeding, growth, reaction to light, and feeding habits.

#### A WEED:

Chemical Studies on Volatile Constituents of Seaweed. XVI--Their Phylogenetic and Biochemical Significance," by Teruhisa Katayama, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, January 1961, pp. 75-84, printed in Japanese. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

Needs from Seaweed or Mosses," by Georges E. A. Delarche, article, Chemical Abstracts, 7926b, vol. 54, April 25, 1960.

#### A WEED MEAL:

Seaweed Meal for Human Consumption," by Algea Produkter A/S, article, Chemical Abstracts, vol. 55, 17949b, September 4, 1961.

#### R RANIDS:

Materials for a Revision of SERRANUS and Related Fish Genera, by C. Richard Robins and Walter A. Starck, II, 56 pp., illus., printed. (Reprinted from Proceedings of the Academy of Natural Sciences of Philadelphia, vol. 113, no. 11, December 29, 1961,

pp. 259-314). Academy of Natural Sciences of Philadelphia, 19th St. and the Parkway, Philadelphia 3, Pa.

#### SMALL BUSINESS MANAGEMENT:

Are You Using Your Space Effectively?, by Edward L. Anthony, Technical Aids for Small Manufacturers No. 77, 4 pp., processed. Small Business Administration, Washington 25, D. C., November-December 1961. Increased profits, less confusion, and better morale can result from using available space more effectively. Many small plants have benefited from rearrangement. This leaflet shows some practical ways of looking at the problem of space utilization. The use of office space also deserves attention. Worthwhile rearrangements can often be made with the knowledge of a few basic layout principles.

Managing Women Employees in Small Business, by Eleanor Casebier, Small Marketers Aids No. 75, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1962. A leaflet offering suggestions for managing women employees in small business. Stress is laid on the fact that women want democratic leadership. Practices that help to promote efficiency are discussed with suggestions that small firm owner-managers can use when examining their own policies and procedures. There is also a list of 22 suggestions a manager can use to encourage women employees to work efficiently.

#### SMALL BUSINESS ADMINISTRATION:

U. S. Government Purchasing, Specifications and Sales Directory (A Guide for Selling or Buying in the Government Market), 124 pp., printed, 60 cents. Office of Procurement and Technical Assistance, Small Business Administration, Washington, D. C., July 1960. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Provides information on selling to the Government and to Government contractors; lists products and services bought by the major military purchasing offices and indicates, by means of code numbers following the products or services, the purchasing offices that buy them; and discusses local purchasing by military installations and gives a State-by-State listing of installations that are possible sources of business for small concerns. Also lists products and services purchased by the major Federal civilian agency purchasing offices and indicates, again by means of code numbers following the products and services, the purchasing offices that buy them; provides a guide to Government specifications--what they are, how they are used, and where they may be obtained or reviewed by prospective bidders.

#### SOUTH CAROLINA:

Annual Report, 1960-1961, Contribution No. 35, 9 pp., illustrated, printed. (Reprinted from Report of South Carolina Wildlife Resources Department, Fiscal Year July 1, 1960-June 30, 1961.) Bears Bluff Laboratories, Wadmalaw Island, S. C., January 1962. 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.

#### SPINY LOBSTERS:

"Protection de la Langosta" (Protection of the Spiny Lobster), by L. Faure, article, Puntal, vol. 8, no.

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93, December 1961, pp. 4-6, illus., printed in Spanish. Puntal, 21 San Fernando, Alicante, Spain.

Segunda Pesca Exploratoria y Datos Biologicos de la Langosta (PANULIRUS ARGUS) en Cuba (Second Exploratory Fisheries Expedition and Biological Data on the Spiny Lobster (Panulirus argus) in Cuba), by R. J. Buesa Mas, Contribution No. 12, 69 pp., illus., printed in Spanish. Centro de Investigaciones Pesqueras del Departamento de Pesca del Instituto Nacional de Reforma Agraria, Havana, Cuba, May 1961.

"Sobre a Biologia e a Pesca das Lagostas em Pernambuco (Brasil)" (On the Biology of and Fishery for Spiny Lobsters in Pernambuco, Brazil), by Melquiades Pinto Paiva, article, Boletim da Pesca, vol. 13, no. 73, December 1961, pp. 11-21, illus., printed in Portuguese with English summary. Boletim de Pesca, R. S. Bento, 644, 4<sup>o</sup> -Esq., Lisbon, Portugal.

#### SPRATS:

"Sardiny iz Kaspijskoj Kilki" (Sardine-Like Packs with Sprats from the Caspian Sea), by M. V. Kalantarova, M. V. Maksimova, and J. K. Rogova, article, Trudy, Tekhnologia Rybnykh Produktov, vol. 60, 1959, pp. 81-93, illus., printed in Russian. Trudy, Tekhnologia Rybnykh Produktov, VNIRO, Vsesoiuzny Nauchno-Issledovatel'ski Institut, Moscow, U.S.S.R.

#### SQUID:

"Chemical Composition of Ikashiokara, Salted Guts and Meat of Squid," by Hiroshi Takeya and Yukio Okuda, article, Chemical Abstracts, vol. 55, 7694a, April 17, 1961.

#### STORAGE:

"Storage of Dehydrated Cod. I.," by N. A. Matheson, article, Food Processing and Packaging, vol. 30, no. 354, 1961, pp. 87-91, 98; "Storage of Dehydrated Cod. II.," no. 355, 1961, pp. 123-127, illus., printed. Food Processing and Packaging, Tothill Press Ltd., 33 Tothill St., Westminster, London SW1, England.

#### STRIPED BASS:

"Further Returns of Striped Bass, Roccus saxatilis, Tagged from Deep Water During Winter in Chesapeake Bay, Maryland," by Romeo J. Mansueti and George J. Murphy, article, Chesapeake Science, vol. 2, nos. 3-4, September-December 1961, pp. 209-212, illus., printed, single copy 75 cents. Natural Resources Institute, University of Maryland, Chesapeake Biological Laboratory, Solomons, Md.

#### SUBMARINES FOR FISHERY RESEARCH:

"Exploring Under Sea by Towvane," article, Fisheries Newsletter, vol. 20, August 1961, p. 15, printed. Commonwealth Fisheries Office, Department of Primary Industry, Canberra, Australia. Describes a new device for underwater observation which can be operated by one who is not a diver. The towvane is a heavily-constructed pressure-tight steel vessel which can be towed under water, dive toward the bottom, and then level off along the sea bottom. The towvane has no power unit, buoyancy tanks, or batteries. No special skill is needed to operate the towvane, which is itself buoyant and must be moving in order to submerge. Diving in

the towvane is said to be a safe operation because of the slow towing speed, heavy construction of the towvane, and the constant attention from the people in the boat that are towing the device. If it should become necessary, however, the diver can get out by himself. To do this he would commence breathing from his emergency aqualung, flood the towvane (by opening a gate valve) to equalize pressure, and then open a hatch and swim to the surface.

#### SUNFISH:

Hybridization Between Three Species of Sunfish (LEPOMIS), by William F. Childers and George W. Bennett, Biological Notes No. 46, 12 pp., illus., printed. Natural History Survey Division, Department of Registration and Education, Urbana, Ill., November 1961.

#### TAIWAN:

Taiwan Fisheries Yearbook 1960 Edition, 185 pp., illus., printed in Chinese and English. Department of Agriculture and Forestry, Provincial Government of Taiwan, Taipei, Taiwan, August 1960. Contains statistical tables showing fishermen's organizations and membership, fishermen, status of fishing vessels, status of ice making and cold storage industries, fisheries production, and quantity of supply and sale of fishery products and their average value at principal fish markets. Also includes data on processed marine products, fish culture area, production of fish fries, number of casualties of fishermen, losses and damage to fishing vessels and gear, fishing activity at principal fishing harbors by type of craft, foreign trade in fishery products, and related information. Most data are for 1959.

#### TARIFFS:

Forty-Fifth Annual Report of the United States Tariff Commission (Fiscal Year Ended June 30, 1961), House Document No. 276, 82 pp., printed. United States Tariff Commission, Washington 25, D. C., 1962. Includes, among others, a section which discusses the investigation conducted on the domestic shrimp industry.

#### TERRITORIAL WATERS:

"La Mer Territoriale et les Zones de Peche Reserve" (Territorial Waters and the Restricted Fishery Zones), by R. Lagarde, article, La Peche Maritime, vol. 40, no. 1005, December 1961, pp. 875-882, illus., printed in French, single copy 22.50 NF (about US\$4.55). La Peche Maritime, 190, Boulevard Haussmann, Paris 8<sup>o</sup>, France.

#### TRADE LISTS:

The Bureau of International Business Operations, U.S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at \$1 a copy.

Canneries and Frozen Foods--Producers and Exporters--Algeria, 6 pp. (December 1961). Lists the names and addresses and types of products handled by each firm. Includes fish canneries and exporters.

Canneries and Frozen Foods--Producers and Exporters--Morocco, 6 pp. (December 1961). Lists the names and addresses, size of firms, and types of

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products handled by each firm. Includes fish canneries, freezers, and exporters.

#### TRAWLER-FREEZER:

"Pererabotka Ulovov Sardiny i Drugikh Ryb na BMRT v Uslovishk Tropikov (The Processing of Sardines and other Fish on Board Bmrt, a Large Size Trawler-Freezer, in Tropical Conditions)," by Iu. A. Zorznova, article, Rybnoe Khoziaistvo, vol. 36, no. 4, 1960, pp. 64-68, illus., printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta pri Gosplanie SSSR, Moscow, U.S.S.R.

#### TRAWLERS:

"A 151-Ft. Norwegian-Built Stern Trawler," article, Motor Ship, vol. 41, no. 484, 1960, pp. 374-375, illus., printed. Motor Ship, Temple Press Ltd., Bowling Green Lane, London EC4, England.

#### TRAWLING:

"Novvie Tralovye Deski 'Akula-2'" (New Otter Boards 'Akula-2'), by E. Iu. Ianson and S. A. Minovich, article, Rybnoe Khoziaistvo, vol. 36, no. 4, 1960, pp. 25-33, illus., printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta pri Gosplanie SSSR, Moscow, U.S.S.R.

"Premiers Resultats des Essais de Modeles de Charluts" (First Test Results with Trawl Models), by C. Nedelec, article, Science et Peche, no. 92, April 1961, 5 pp., illus., printed in French. Institut Scientifique et Technique des Peches Maritimes, 59 Ave. Raymond-Poincare, Paris XVI, France.

"Sobre el Encogimiento de las Mallas de Canamo del Copo de las Redes de Arrastre (On the Shrinkage of Hemp Meshes in the Bottom of Trawl Nets), by Alfonso Rojo Lucio, Boletin del Instituto Espanol de Oceanografia, no. 104, April 1961, 22 pp., illus., printed in Spanish. Instituto Espanol de Oceanografia, Alcala, 27, Madrid, Spain.

"Ob Usloviakh Obespechivaiushchikh Ustoichivoe Dvizhenie Pelagicheskogo Trala v Tolshche Vody" (On Conditions Providing Stable Motion of Pelagic Trawl in Midwater), by I. R. Matrosov, article, Rybnoe Khoziaistvo, vol. 36, no. 3, 1960, pp. 30-44, illus., printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta pri Gosplanie SSSR, Moscow, U.S.S.R.

"Een Verbeterd Hangerblok" (An Improved Trawl Block), by J. Reuter and P. Ouwehand, article, Visserij-Nieuws, vol. 10, no. 7, 1960, pp. 102-105, illus., printed in Dutch. Directie der Vissereyen, 1 van den Boschstraat 4, The Hague, Netherlands.

#### TUNA:

"An Observation on the Development of Tuna-like Fishes Trolling by Motorized Vessels (Indonesia), by M. Unar, Occasional Paper 61/6, 6 pp., printed. Indo-Pacific Fisheries Council, Food and Agriculture Organization of the United Nations, Bangkok, Thailand, 1961.

#### UNDERWATER PHOTOGRAPHY:

"Photography of the Ocean Floor," by A. S. Laughton, Publication 4441, 17 pp., illus., printed. (Reprinted from The Smithsonian Report for 1960, pp. 319-326;

also reprinted from Endeavour, vol. 18, no. 72, October 1959.) Smithsonian Institution, Washington 25, D. C., 1961.

#### VENEZUELA:

El Mercadeo del Pescado Fresco de Mar con Referencia Especial al Abastecimiento en Caracas (The Market for Fresh Sea Fish with Special Reference to the Supply in Caracas), by John B. Schneider and Alejandro de Leon, 136 pp., illus., printed in Spanish. Division de Economia Agricola, Ministerio de Agricultura y Cria, Caracas, Venezuela.

#### WHALING:

"Catch Material in the Season 1961/62," article, Norsk Hvalfangst-Tidende (The Norwegian Whaling Gazette), vol. 51, no. 1, January 1962, pp. 16-27, printed in Norwegian and English. Hvalfangerforeningen, Sandefjord, Norway. Presents details on number of factoryships, catcher boats, gross tonnage of the vessels, and other information on the fleets engaged in 1961/62 whaling operations.

"22 Fleets Hunt Antarctic Whales," article, Fisheries Newsletter, vol. 21, no. 1, January 1962, p. 18, printed. Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia.

#### WHITE PERCH:

"Movements, Reproduction, and Mortality of the White Perch, Roccus americanus, in the Patuxent Estuary, Maryland," by Romeo J. Mansueti, article, Chesapeake Science, vol. 2, nos. 3-4, September-December 1961, pp. 142-205, illus., printed, single copy 75 cents. Natural Resources Institute, University of Maryland, Chesapeake Biological Laboratory, Solomons, Md.

#### WORLD TRADE:

The following World Trade Information Service Reports, published by the Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Investment Law of the Ivory Coast, Economic Report No. 61-72, WTIS Part 1, 12 pp., 15 cents, November 1961.

Licensing and Exchange Controls--Turkey, Operations Report No. 61-73, WTIS Part 2, 4 pp., 10 cents, November 1961.

Import Tariff System of Trinidad and Tobago, Operations Report No. 61-78, WTIS Part 2, 2 pp., 10 cents, November 1961.

Import Tariff System of Indonesia, Operations Report No. 61-81, WTIS Part 2, 2 pp., 10 cents, November 1961.

Import Tariff System of Jamaica, Operations Report No. 61-83, WTIS Part 2, 2 pp., 10 cents, November 1961.

Import Tariff System of Ecuador, Operations Report No. 61-84, WTIS Part 2, 2 pp., 10 cents, November 1961.

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Licensing and Exchange Controls--Belgium-Luxembourg, Operations Report No. 61-89, WTIS Part 2, 4 pp., 10 cents, November 1961.

Food Regulations of Chile, Operations Report No. 61-90, WTIS Part 2, 4 pp., 10 cents, November 1961.

Marking and Labeling Requirements of Canada, Operations Report No. 61-91, WTIS Part 2, 16 pp., 10 cents, November 1961.

Marking and Labeling Requirements of Austria, Operations Report No. 61-92, WTIS Part 2, 8 pp., 10 cents, December 1961.



#### DISCOVERY OF FISH REMAINS MAY SUPPORT 50-YEAR-OLD ANTARCTIC ICE SHELF THEORY

McMurdo Sound, Antarctica--Partially decomposed remains of fish and invertebrates that may prove to be many hundreds of years old have been discovered on the surface of the frozen ice shelf near here, the National Science Foundation reported on December 7, 1960.

Well over 50 of the remains were found scattered through a small area about a mile and a half from the front of the Ross Ice Shelf near the easternmost end of the Dailey Island group by a research party from the University of Michigan.

The presence of these fish and invertebrates in that particular area suggests the occurrence of large fish in the sea beneath the ice and provides evidence for a long-standing hypothesis regarding the formation of the ice shelf itself.

The largest intact fish measured 65 inches in length, whereas some detached heads appeared to have come from still larger fish. The fish were thus the largest yet found in the waters of McMurdo Sound and the Ross Sea, and indicate that a well-developed fauna exists under the permanent ice shelf.

How the fish and invertebrates got to the surface of the ice that far from open water recalls a hypothesis put forth by Frank Debenham, a geologist with Captain Robert Scott's British (Terra Nova) Antarctic expedition of 1910 to 1913. Debenham reported finding the headless remains of a somewhat smaller fish and some perfectly preserved sponges and corals in the small general area of the ice shelf. He suggested that they might have been trapped in the ice by freezing when the bottom of the ice shelf touched the seafloor, and that they were slowly brought to the top by the progressive melting of the upper surface while new ice formed on the bottom surface.

On the basis of the evidence available to him, Debenham concluded that the ice shelf was nourished by the freezing of sea water on its bottom surface and that the main body of the Ross Ice Shelf (196,000 square miles, or about the size of Spain) might be nourished in a similar manner.

While Dr. Swithinbank, a glaciologist who has spent many seasons in the Antarctic, believes the main body of the Ross Ice Shelf is nourished principally by the accumulation of snow on its upper surface, he agrees that the discovery of these fish apparently preserved for some hundreds of years in the ice, may support Debenham's hypothesis with respect to the McMurdo Ice Shelf--that it shows definite evidence of surface melting.

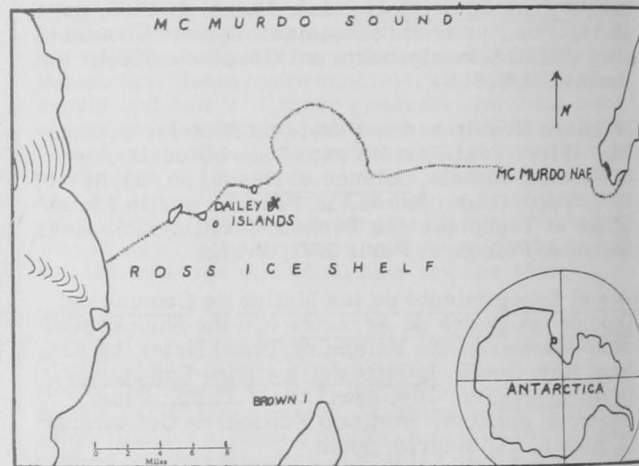
This method of nourishment of a permanent floating ice sheet of considerable area and thickness, he believes would be unique, the only known parallel being the small ice shelf off the north coast of Ellesmere Island in the Arctic.

The ice where the fish were found is probably more than 100 feet thick and the surface is at least 10 to 15 feet above sea level. Because the fish, and especially the relatively immobile invertebrate species, could scarcely have reached the surface alive--the only possible access to the sea being the intermittent tidal cracks in the ice bordering the nearby island--the finding would lend credence to Debenham's hypothesis.

Numerous deep-water invertebrates including pelecypods (bivalves or clams), gastropods (univalves or snails), brachiopods (lamp shells), siliceous sponges, and anthozoan corals were also encountered at or near the ice surface. Some of them were extremely fragile and, in the case of several of the glass sponges, were still attached to rocks that came with them from the sea floor.

In order to identify exactly the species of the discovered fish and to determine their approximate age, an Associate Professor of Biology at Stanford University, at McMurdo under a National Science Foundation grant, made a helicopter flight to the site of the discovery and collected several specimens. He said the fish appear to be members of at least two genera of nototheniidae, the most common group of Antarctic fishes. He is sending preserved specimens back to the United States for identification, and bone samples to New Zealand for carbon-14 dating.

Should the fish prove to be very old, Debenham's hypothesis will have received strong support. On the other hand, if the fish are found to have died only recently, some other explanation must be found for their presence on the ice surface so far from the open sea. Depending on what the true ice thickness is near the Dailey Islands and the rate of surface melting, Swithinbank speculates that it might have taken anywhere from 100 to 2,000 years for the fish to reach the surface. How long the fish have been on the surface is difficult to determine. In some cases even the fish meat was especially well preserved.



Location of discovery shown.