

## 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.  
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
CFS-2808	- Frozen Fish, 1961, Annual Summary, 14 pp.
CFS-2829	- South Carolina Landings, 1961, Annual Summary, 5 pp.
CFS-2830	- Massachusetts Landings, November 1961, 5 pp.
CFS-2831	- Virginia Landings, 1961, Annual Summary, 10 pp.
CFS-2832	- North Carolina Landings, 1961, Annual Summary, 8 pp.
CFS-2833	- Maine Landings, January 1962, 4 pp.
CFS-2837	- Michigan Landings, January 1962, 2 pp.
CFS-2838	- South Carolina Landings, January 1962, 2 pp.
CFS-2839	- Frozen Fish Report, February 1962, 8 pp.
CFS-2846	- Alabama Landings, January 1962, 2 pp.
CFS-2849	- New Jersey Landings, January 1962, 3 pp.
CFS-2851	- New York Landings, January 1962, 4 pp.
CFS-2852	- Mississippi Landings, January 1962, 2 pp.
CFS-2853	- Virginia Landings, January 1962, 3 pp.
CFS-2854	- Georgia Landings, February 1962, 2 pp.
CFS-2858	- Georgia Landings, 1961, Annual Summary, 8 pp.
CFS-2859	- South Carolina Landings, February 1962, 2 pp.
CFS-2861	- Packaged Fishery Products, 1961, Annual Summary, 5 pp.
CFS-2863	- Industrial Fishery Products, 1961, Annual Summary, 9 pp.
CFS-2865	- Fish Meal and Oil, February 1962, 2 pp.

Sep. No. 647 - Fish Protein Concentrate--A High Quality Animal Protein.

Sep. No. 648 - Rat-Feeding Studies To Determine Presence of Antimetabolites, Water-Soluble Vitamins, and Essential Minerals in Raw Menhaden as Compared with Raw Haddock and Beef.

Sep. No. 649 - Equipment Note No. 12--A New Scallop Trawl for North Carolina.

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

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market

Data, February 1962, 14 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, January, February, March 1962, 10 pp. each, 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 months indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, March 1962, 14 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 weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, March 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 England Fisheries--Monthly Summary, March 1962, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary

wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, March 1962, 6 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.

## 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.

### ALGAE:

"Algae Feeding in Humans," by R. C. Powell, E. M. Nevels, and M. E. McDowell, article, Journal of Nutrition, vol. 75, September 1961, pp. 7-12, printed, Journal of Nutrition, American Institute of Nutrition, 36th Street at Spruce, Philadelphia 4, Pa.

"Nutritional Value as Protein of Some of the Nitrogenous Constituents of Two Marine Algae, Chondrus crispus and Laminaria digitata," by B. A. Larsen and W. W. Hawkins, article, Journal of the Science of Food and Agriculture, vol. 12, July 1961, pp. 523-529, printed, Journal of the Science of Food and Agriculture, Society of Chemical Industry, 14 Belgrave Square, London, SW1, England.

"Paper-Chromatographic Separation of Chlorophylls and Carotenoids from Marine Algae," by S. W. Jeffrey, article, Biochemical Journal, vol. 80, August 1961, pp. 336-342, printed, Biochemical Journal, Cambridge University Press, Bentley House, 200 Euston Rd., London NW1, England.

"A Study on a New Acidic Compound Isolated from Volatile Portion of a Green Alga, Ulva pertusa," by Teruhisa Katayama and Tetuo Tomiyama, article, Journal of the Faculty of Agriculture, Kyushu University, vol. 9, January 31, 1950, pp. 271-274, printed, Faculty of Agriculture, Kyushu University, Fukuoka, Japan.

### ALGINIC ACID:

"Alginic Acid, Its Compounds, Their Properties and Possibilities of Usage," by H. Maass, Chemical Abstracts, vol. 55, August 7, 1961, 15835f, printed, American Chemical Society, 1155 16th St. NW., Washington, D. C.

### AQUATIC ORGANISMS:

A Bibliography: Effects of External Forces on Aquatic Organisms, by Frank J. Schwartz, Contribution No. 168, 85 pp., printed, Chesapeake Biological Laboratory, Solomons, Md., January 1961.

### AUSTRALIA:

Fishing and Whaling, Australia, Statistical Bulletin No. 7, 21 pp., illus., processed. Commonwealth Bureau of Census and Statistics, Canberra, Australia. This is the seventh of a series of annual statistical bulletins dealing with the fishing and whaling industry. Statistics relate to the year 1960-61 for general fisheries, to the 1960 season for pearl-shell and trochus-shell fisheries, and to the 1961 season for whaling, with comparative data for the previous four years. The bulletin is divided into four parts. Part I deals with general fisheries including those for fish, crustaceans, and molluscs (edible products). Part II includes fisheries for pearl shell and trochus shell (inedible products). Part III covers the operation of the whaling industry in Australia and Norfolk Island. Part IV shows particulars of overseas trade in the products of fishing and whaling.

The Implications of the Introduction of European Carp into Victorian Waters, 119 pp., processed. Fisheries and Wildlife Department, Victoria, Australia, February 1, 1962. This review was prepared as Departmental evidence to be presented before the State Development Committee which was requested by the Government of Victoria, to inquire into matters associated with the introduction of European carp into Victorian waters. It covers the influence of carp on fresh-water fisheries, including competition for space and influence of feeding by carp on the environment and on other fish; and the influence of European carp on wildlife. It discusses the propagation of European carp and whether or not it should be discouraged or completely prohibited, and whether or not all European carp, wherever occurring in Victoria, should be destroyed. Draft is included of the legislation which would meet the situation if the necessity for the destruction of European carp is accepted. Other questions concerning the introduction of European carp into Victorian waters are also discussed.

### AUSTRIA:

Seenschutz (Lake Protection), by Georg Beurle and others, 96 pp., printed in German. (Reprinted from Osterreichischen Wasserwirtschaftsverbandes, vol. 43.) Springer-Verlag, Wien, Austria.

### BACTERIOLOGY:

Bacteriological Studies of Commercial Shellfish Operations on the Gulf Coast, by M. W. Presnell and C. B. Kelly, Technical Report F61-9, 55 pp., illus., printed. Robert A. Taft Sanitary Engineering Center, Public Health Service, Cincinnati, Ohio, 1961. Describes the results of bacteriological examinations of water, oyster, and bottom-deposit samples collected simultaneously in four representative commercial shellfish-producing areas on the Gulf Coast. The general objectives were to determine: (1) oyster/water coliform relationships in natural environments; (2) degree to which Gulf Coast shellfish and shellfish waters complied with current recommended bacteriological criteria; and (3) potential of bottom deposits as contributors to the coliform content of water and oysters.

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#### BIOCHEMICAL ANALYSIS:

"Comparative Biochemical Data for Some Fresh-Water Invertebrates and Fish," by A. V. Ananichev, article, Biokhimiia (Biochemistry), vol. 26, July-August 1961, pp. 16-26, printed. Biokhimiia (Biochemistry), Izdatelstvo Akademii Nauk SSSR, Moscow, U.S.S.R.

#### BIOCHEMISTRY:

"Biochemical Studies on the Growth and Maturation of Fish. XI--Content of Molybdenum and Nickel in the Liver of Tuna and Marlin," by Tadao Morio and Akimi Suzuki, Chemical Abstracts, vol. 55, May 15, 1961, 9703g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Biochemical Studies on the Liquefaction of Fish Body. I--On Basic Conditions for the Liquefaction; II--On the Effectiveness of 'Solubilized Fish' to the Growth of a Plant, Lemna paucicostata Hegelm," by Tetuo Tomiyama and others, article, Science Bulletin, vol. 13, November 1951, pp. 297-312, printed in Japanese with English summary. Science Bulletin, Faculty of Agriculture, Kyushu University, Fukuoka, Japan.

"Comparative Biochemical Studies on Cytochromes and Related Substances of Invertebrates. I--Cytochrome Components and Electron Transfer in Fresh-Water Mussels," by Kiyozo Kawai, article, Journal of Biochemistry, vol. 29, May 1961, p. 427, printed. Journal of Biochemistry, Dept. of Biochemistry, Faculty of Medicine, Tokyo University, Bunkyo-ku, Tokyo, Japan.

#### BYPRODUCTS:

"The Recovery of Fish By-Products in the Interior," by E. Kraack, article, Fischereiforschung, vol. 3, no. 7, 1960, p. 24, printed. Institut für Hochseefischerei und Fischverarbeitung, Rostock-Marienehe, E. Germany.

#### CALIFORNIA:

The Marine Fish Catch of California (For the Year 1960), Fish Bulletin No. 117, 47 pp., illus., printed. California State Fisheries Laboratory, Terminal Island, Calif., 1961. A summary of the 1960 landings of fish, mollusks, and crustaceans in California by commercial fishing vessels or shipped into the State for processing. Statistical data cover annual landings and shipments, 1916-1960; landings and shipments of leading species by pounds and value; licensed commercial fishermen; number of fishing vessels by length; origin of shipments; origin of commercial fish landings; and monthly landings and shipments, statewide and by areas. Also included are data on value and quantity of annual landings by areas; value of landings by ports and areas; sport catch, 1951-1960; and live bait catch. It also contains a listing of common and scientific names of fish, crustaceans, and mollusks in the 1960 commercial catch.

#### CANNING:

"Canning of Frozen Sea Perch," by A. L. Petelina, S. A. Artjuhova, and K. I. Volkova, article, Rybnoe Khoziaistvo, no. 10, 1960, pp. 64-66, printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, Russia.

#### CHEMICAL CHANGES:

"Changes in the Recalcification and Fibrinolysis Times in Atherosclerotic and Normal Subjects After Single Ingestion of Saturated and Unsaturated Animal Fats," by Jerzy Gajewski, Chemical Abstracts, vol. 55, July 10, 1961, 13619d, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

#### CHEMISTRY:

"Alterations in Glycogen, Glucose, and Lactate in Rainbow and Kamloops Trout, Salmo gairdneri, Following Muscular Activity," by E. C. Black and others, article, Journal of the Fisheries Research Board of Canada, vol. 17, July 1960, pp. 487-500, printed. Fisheries Research Board of Canada, West Block, Ottawa, Canada.

"Glycogen Content in the Flesh of Fish, Crustaceans, and Mollusks," by P. V. Kizeveter, Chemical Abstracts, vol. 55, May 15, 1961, 9704g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Studies on the Physiological Chemistry of Phosphorus Compounds in Fish Muscle. IV--On the Seasonal Variation of Phosphorus Compounds Content; V--Quantitative Differences of Phosphorus Compounds in Muscle of Fish Reared in Different Water Temperatures," by Tomoo Nakano, articles, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, February 1961, pp. 147-149, and vol. 27, April 1961, pp. 357-363, respectively, printed. Japanese Society of Scientific Fisheries, 6-chome, Shibakaidori, Minato-ku, Tokyo, Japan.

#### COD:

"Nucleotide Degradation in Frozen Cod (Gadus calarias)," by N. R. Jones and J. Murray, article, Biochemical Journal, vol. 80, August 1961, pp. 26P-27P, printed. Biochemical Journal, Cambridge University Press, Bentley House, 200 Euston Rd., London NW1, England.

#### COLD STORAGE:

"Storage of Frozen Fish Glazed by the Addition of Antioxidants," by R. R. Perepletchik and E. I. Novikova, article, Technology of Fish Processing (Israel Program of Scientific Translations, 1960, pp. 135-141). (Translated from the Russian Trudy VNIRO, vol. 35, 1958, pp. 152-158.) Trudy VNIRO, Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

#### CONSUMPTION:

Method of Preparing Fish for Consumption, by L. K. Anderson, P. E. Jann, and E. H. Carruthers, U. S. Patent 2,954,298, September 27, 1960. U. S. Patent Office, Washington 25, D. C.

#### CONTAINERS:

"Polybags and Plastic 'See-Through' Containers Used By More Fish and Seafood Packers," article, Quick Frozen Foods, vol. 24, September 1961, pp. 111-114, printed. Quick Frozen Foods, E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y.

#### CRUSTACEANS:

"Humane Killing of Crustaceans," article, Science, vol. 135, no. 3503, February 16, 1962, pp. 587-593,

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printed. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington 5, D. C. A number of letters are published here which comment, both pro and con, on a recent article in which the author advocates the humane killing of crabs in the home and on a commercial basis.

#### DECOMPOSITION:

"Chemical Indexes of Decomposition in Ocean Perch," by Fred Hillig, L. R. Shelton, Jr., and J. H. Loughrey, article, Journal of the Association of Official Agricultural Chemists, vol. 44, August 1961, pp. 488-493, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C.

"Chemical Indexes of Decomposition in Pollock and Whiting," by Fred Hillig and others, article, Journal of the Association of Official Agricultural Chemists, vol. 44, August 1961, pp. 499-507, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C.

#### DENMARK:

Fiskeriaarbogen, 1962 (The Fisheries Yearbook, 1962), vol. 69, December 1961, 797 pp., illus., printed in Danish, 12 kroner (US\$1.74). Iver C. Weillbach & Co., Amaliegade 30, Copenhagen, Denmark. A comprehensive collection of information on navigation, fishery rules and regulations, inspection, etc., primarily for Danish fishermen. It is issued annually by the Ministry of Fisheries about the first of the year, and should not be confused with the Ministry's annual Fisheries Report. The major sections of the Yearbook cover tables for navigation, courses, and distances; regulations for sailing, lights, harbors, radio, etc.; laws and regulations on the fisheries; register of fishing vessels; laws and regulations on vessel inspection, construction, equipment, etc.; vessel inspection and quarantine regulations; accident insurance, etc.; loans to fishing vessels and the industry; hunting regulations; instructions regarding shipwrecks and accidents; fishery organizations--names and addresses; miscellaneous data on fish names, market sizes, conversion tables of length, area, weight, etc.; and problems of current interest: "Fish and Fishing Conditions in Greenland Waters" & "Requirements for Fishing in Greenland."

#### EXPORTS:

Preparing Shipments to Mexico, WTIS Part 2, Operations Report No. 61-88, 12 pp., printed, single copy 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., revised February 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A report giving information on the preparation of shipments for export to Mexico. It covers the preparation of shipping documents, information on labeling and marking, customs procedures, and related subjects.

#### FACTORYSHIP:

"A Floating Fish Cannery," by S. S. Vershinin, article, National Lending Library Translations Bulletin, vol. 4, no. 2, February 1962, pp. 153-162, printed, 4s. (about 56 U. S. cents). (Translated

from the Russian, Rybnoe Khoziaistvo, vol. 7, 1961, pp. 17-22.) NLL Translations Bulletin, Her Majesty's Stationery Office, P. O. Box 569, London S.E.1, England. Discusses the need for floating fish canneries in U.S.S.R. in view of the development of the fisheries, and the construction of a series of these vessels under the seven-year plan. Describes in detail the functions of the first vessel of the series Andrei Zahkarov which was built in 1960. The cannery is divided into the following sections by functions: receipt and storage of fish, sorting, washing and packing, closing and sealing, the autoclave section, and the section for preparing the canned goods for sale. The waste from production is treated in a special byproducts plant.

#### FATTY ACIDS:

"Egg Lipids of a Carp, Cyprinus carpio. I--Fatty Oil from Carp Egg; II--Lecithin from Carp Eggs," by Hisanao Igarashi, Koichi Zama, and Muneo Katada, articles, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, March 1960, pp. 326-329, vol. 26, November 1960, pp. 1128-1130, respectively, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

"Studies on the Action of Fish Components. III-The Antibiotic Action of Methyl Esters of Unsaturated Fatty Acids," by Yukio Tomiyasu and Masamichi Toyomizu, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 18, no. 12, 1953, pp. 683-686, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

#### FISHERIES RESEARCH:

Experts Engaged in Fisheries Research in the Council's Area (Appendix to Report of the 49th Meeting of the International Council for the Exploration of the Sea, Copenhagen, October 1961), 14 pp., printed. International Council for the Exploration of the Sea, Charlottenlund Slot, Charlottenlund, Denmark, March 1962. A list of experts engaged in fisheries research in the Council's area by name, title, address, and subject under Belgium, Denmark, Finland, France, Germany, Ireland, Iceland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, United Kingdom, and U.S.S.R.

#### FISHERY OCCUPATIONS:

Training Programs for Fishery Occupations, OE-84025, 61 pp., printed, single copy 20 cents. U. S. Department of Health, Education, and Welfare, Washington, D. C., 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This publication provides information for the organization and operation of a training program for fishery occupations. Included is material to aid the vocational educator in establishing contact with agencies concerned with manpower development for the industry. Increased emphasis on training for the fishing industry stems from the challenge of international competition for the market, as well as utilization of new equipment, new processes, and new techniques in the location of fish, in ship-board refrigeration and preservation, in processing on shore and afloat, and in packaging for distribution. Legislation in the interest of the fishing in-

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dustry provides for vocational education in the trade and industrial and the distributive occupations of the fishing industry. Although this publication does not make suggestions relating specifically to distributive education, some of the basic information and procedures could apply to this field of training as well.

#### FISH FLOUR:

Fish Flour Technological Developments in South Africa, by G. M. Dreosti, R. P. Van der Merwe, and J. J. Dreyer, Paper No. R/V.2/3, printed. (Paper presented at the FAO International Conference on Fish in Nutrition, Washington, D. C., September 19-27, 1961.) Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

#### FISH MANAGEMENT:

North of Scotland Hydro-Electric Board (Annual Report and Accounts, 1961), 83 pp., illus., printed, 5s. 6d. (76 U. S. cents). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, February 1962. A complete report of the activities of the North of Scotland Hydro-Electric Board during 1961. The section on Development and Research includes information on new fish devices designed by the Board's Research Laboratory, and the Appendix contains statistics on fish movements at various dam sites.

#### FISH MEAL:

The Effect of Fish Meal on the Hatchability of Hens' Eggs (Thesis submitted to the University of Reading for the degree of Master of Science, 1959-60), by R. S. Martin, Registrar, University of Reading, Berks, United Kingdom.

"Effect of Supplementing with Methionine, Cysteine and Derivatives of Thiazolidine-4-Carboxylic Acid on the Nutritive Value of Herring Meal Protein," by L. R. Njaa, article, Journal of the Science of Food and Agriculture, vol. 12, 1961, p. 757, printed. The Society of Chemical Industry, 14 Belgrave Square, London SW1, England.

"Nutritive Quality of Fish Meal To-day," by R. Berglund, article, Feedstuffs, vol. 33, April 1, 1961, p. 14, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

"Trials With Rancid Herring Meal Fat," by B. Laksessvela, article, Meldinger SSF, p. 7, January 1961, printed. Sildolie og Sildmelindustriens Forsknings-Institut, Damsgard, Bergen, Norway.

"Value of Menhaden Fish Meal as a Protein Supplement to Practical Swine Diets. I," by R. R. Kifer and E. P. Young, article, Journal of Animal Science, vol. 20, 1961, p. 938, printed. American Society of Animal Production, Colorado State University, Fort Collins, Colo.

#### FISH OIL:

"Dietary Marine Fish Oils and Cholesterol Metabolism. III--The Comparative Hypocholesterolemic Activities of Fish Oil and Vitamin A," by J. D. Wood and J. Topliff, article, Journal of the Fisheries Research Board of Canada, vol. 18, 1961, p. 377, printed.

ed. Fisheries Research Board of Canada, West Block, Ottawa, Canada.

"Effect of Various Oils and Fats on Serum Cholesterol in Experimental Hypercholesterolemic Rats," by R. Nicholayson and R. Ragard, article, Journal of Nutrition, vol. 73, 1961, p. 299, printed. American Institute of Nutrition, 36th Street at Spruce, Philadelphia 4, Pa.

"Effects of Ethyl Arachidonate, Cod-Liver Oil, and Corn Oil on the Plasma-Cholesterol Level. A Comparison in Normal Volunteers," by K. J. Kingsbury and others, article, Lancet, vol. 1, 1961, p. 739, printed. Lancet, Ltd., #7 Adam St., Adelphi, London, W.C. 2, England.

"Pilot Plant Unit for the Continuous Methanolysis of Glyceride Oils," by P. M. Jangaard and F. A. Vandenneuvel, article, Canadian Journal of Chemical Engineering, vol. 39, August 1961, pp. 172-174, printed. Canadian Journal of Chemical Engineering, The Chemical Institute of Canada, 18 Rideau St., Ottawa 2, Ontario, Canada.

"Studies on Antimicrobial Action of Oxidized Fish Oil. IV--On the Mode of Antimicrobial Action of Oxidized Fish Oil and the Reversal Substances; V--Copolymer Formation from Oxidized Fish Oil and Protein," by Masamichi Toyomizu, articles, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, February 1961, pp. 182-187, and vol. 27, April 1961, pp. 323-326, respectively, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

#### FISH POPULATIONS:

Fitting a von Bertalanffy Growth Curve by Least Squares (Including Tables of Polynomials), by Patrick K. Tomlinson & Norman J. Abramson, Fish Bulletin No. 116, 70 pp., illus., printed. California Department of Fish and Game, 987 Jedsmith Dr., Sacramento 19, Calif., 1961. Data presented in the report is useful in studies of fish population dynamics and for the practical assessment of the status of exploited stocks and the effects of fisheries regulations.

#### FISH SKINNING:

Fish Skinning Apparatus, by L. Saville, British Patent 875,452. British Food Manufacturing Industries Research Association Abstracts, vol. 14, Abstract 1672, p. 433, October 1961.

#### FISH TRAPS:

La Nasa Antillana (The West-Indian Fish Trap), by Rene J. Buesa Mas, Contribution No. 15, 26 pp., printed in Spanish. Centro de Investigaciones Pesqueras, Departamento de Pesca, Instituto Nacional de Reforma Agraria, Playa Habana, Bauta, Cuba, January 1962.

#### FISH WASTE:

"Studies of the Preservation of Animal Offals. III--Chemical Preservation of Fodder Fish and Fish Offal with Potassium Metabisulphite," by K. Nehring and I. Schroder, article, Fischereiforschung, vol. 3, no. 7, 1960, p. 17, printed. Institut für Hochseefischerei und Fischverarbeitung, Rostock-Marienehe, E. Germany.

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#### FOOD AND AGRICULTURE ORGANIZATION:

Costs and Earnings Investigations of Primary Fishing Enterprises (A Study of Concepts and Definitions), by A. E. Ovenden, FAO Fisheries Study no. 10, 73 pp., printed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961. This study is concerned with the principal concepts of the elements of primary fishing economies, with the definition of terms commonly used in costs and earnings studies, and with the application of those definitions to practical work. It covers the concept of the fishery enterprise; concept of a fisherman; assessment or evaluation of gross earnings; cost of supplies and services; remuneration of the crew; rent; depreciation; provision and servicing of capital; need for supplementary statistics; methodology in the conduct of enquiries; and an analysis and presentation of data.

#### FREEZE-DRYING:

"Freeze-Dry Process Offers New Field for Refrigeration," by M. Scott Cassel, article, Industrial Refrigeration, February 1961, pp. 14-15, 25, printed. Industrial Refrigeration, Nickerson & Collins Co., N. Waller Ave., Chicago 44, Ill.

"Industrial Freeze-Drying of Foods," by E. Ettrup Petersen, article, Kulde, vol. 15, no. 3, pp. 30-32 and no. 4, pp. 43-44, 1961, printed in Danish. Kulde, Udgivet af Dansk Koleforening, 3 Baldesgade, Copenhagen-K, Denmark.

"Symposium on Freeze-Drying of Foodstuffs (Borough Polytechnic, London, 19th and 20th October 1961), article, Bulletin de l'Institut International du Froid, vol. 41, no. 6, 1961, pp. 1596-1599, printed in English and French. Institut International du Froid, 177 Boulevard Malesherbes, Paris 17<sup>e</sup>, France.

Traite de Lyophilisation (Handbook of Freeze-Drying), by L. Rey and others, 1960, 416 pp., illus., printed in French. Hermann, 115 Boulevard Saint-Germain, Paris 6<sup>e</sup>, France.

#### FREEZING:

"The Freezing of Sea-Products in France," by A. Benezit, article, Revue Generale du Froid, vol. 38, no. 1, January 1961, pp. 25-30, printed in French. Association Francaise du Froid, 29 Boulevard, Saint-Germain, Paris 6<sup>e</sup>, France.

"Quick-Freezing on Board Fishing-Boats," by G. Gianesi, article, Freddo, vol. 15, no. 1, January-February 1961, pp. 1-10, illus., printed in Italian. Il Freddo, Associazione Frigorifera Italiana, Via Donatello 8, Milano, Italy.

"Rigor and Freezing Changes in Fresh-Water Fish in Relationship to Post-Mortem Time," by W. Partmann, article, Archiv fur Fischereiwissenschaft, vol. 11, no. 2, 1960, pp. 81-105, illus., printed in German. Archiv fur Fischereiwissenschaft, Gustav Wenzel & Sohn, Braunschweig, Germany.

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the Japanese Society of Scientific Fisheries, vol. 16, no. 12, 1951, pp. 17-21, printed. Japanese Society of Scientific Fisheries, 6 chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

#### FROZEN FISH:

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"Freezing and Storage of Clup in an Alginate Jelly," by G. C. Konokotin and L. I. Zujkova, article, Rybnoe Khoziaistvo, no. 10, 1960, pp. 67-70, Rybnoe Khoziaistvo, VNIRO, Glavniproekta, pri Gosplanie SSSR, Moscow, Russia.

#### HAWAII:

Annual Report Fiscal Year 1960-1961 of the Division of Fish and Game, 24 pp., illus., printed. (Reprinted from Report of the Department of Agriculture and Conservation, State of Hawaii. Department of Agriculture and Conservation, Division of Fish and Game, Honolulu, Hawaii. The program of the Division of Fish and Game is aimed toward the development and management of the State's fish and wildlife resources to accrue maximum sustained benefits to the public. This publication discusses the notable advances which were made in the exotic game bird, game mammal and fish introduction programs as well as in the fish and wildlife research programs during the reporting period. Included are statistical tables presenting data on fish landings, fish catches by species, fishing and game licenses, permits and sales, fish and game violations, arrests, etc.

#### INTERNATIONAL COMMISSIONS:

(North Pacific Fur Seal Commission) Proceedings of the Fourth Annual Meeting, January 30-February 4, 1961, Tokyo, Japan, 39 pp., processed. Secretary, North Pacific Fur Seal Commission, Department of the Interior, Washington 25, D. C., January 1962. The North Pacific Fur Seal Commission was established in January 1958, during a meeting held in Washington, D. C. The Commission was organized pursuant to the Interim Convention on Conservation of North Pacific Fur Seals, signed in Washington, D. C., on February 9, 1957, by the Governments of Canada, Japan, the U.S.S.R., and the United States. The Convention came into force on October 14, 1957. This report contains a summary of the proceedings of the Fourth Annual Meeting, a report of the Standing Scientific Committee, a list of participants attending the meeting, administrative report of the Secretary to the Fourth Meeting, and summaries of fur-seal investigations during 1960 and plans for fur-seal investigations during 1961.

#### ISRAEL:

Fishermen's Bulletin, vol. 3, no. 10 (30), December 1961, 48 pp., illus., printed in Hebrew. Fishermen's Bulletin, P.O.B. 699, Haifa, Israel. This bulletin contains, among others, the following articles: "Fishing with Lights During the Year 1961," by A. Ben-Tuvia; "Factors Affecting the Size of Demersal Fish

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

Stocks in the Eastern Mediterranean," by E. Gilat; "The Maiden Voyage of the Fishing Vessel Daguile II," by Z. Fried; "The Largest German Stern-Trawler Burgermeister Smidt," by J. Bejerano; "Experimental Long-Line Fishing Off the Israeli Coast," by R. Paldi; and "Experimental Trawl Fishing in the Eastern Mediterranean," by A. Tzur.

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"California's Marine Plant Resources--Kelp," by John L. Baxter, article, California Ocean Fisheries Resources to the Year 1960, pp. 5-7, printed. California Department of Fish and Game, 722 Capitol Ave., Sacramento, Calif., 1961.

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Annual Report on the Operation of the Department of Agriculture and Commerce, Fiscal Year 1960-1961, by Stephen Tolbert, 67 pp., processed. Department of Agriculture and Commerce, Monrovia, Liberia. Contains a summarization of progress within the three main Divisions of the Department (Agriculture, Commerce, and Labor) and presents the reflection of the problems, the nature of their thinking in respect to the solution of these problems, and the extent to which planned solutions are being implemented. Information and statistics on the fisheries of Liberia are included in the section on the Division of Agriculture. These data cover fish production for the years 1956-1960, classification of fisheries, licenses issued, and total fish landed during the year.

#### LIVER OIL:

"Lowering of Serum Cholesterol Level in Rats by Intraperitoneal Cod-Liver Oil," by Fredrik C. Gran and Ragnar Nicolaysen. Chemical Abstracts, vol. 55, October 30, 1961, 22617g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

#### MARINE AIDS:

List of Lights and Other Marine Aids, vol. I--Atlantic Coast, St. Croix River, Me., to Little River, S. C., CG-158, 593 pp., illus., printed, \$3.50; vol. II--Atlantic and Gulf Coast, Little River, S. C., to Rio Grande, Texas, and the Antilles, CG-160, 507 pp., illus., printed, \$3. Superintendent of Documents, Government Printing Office, Washington 25, D. C., 1962. These volumes list the lights and other marine aids to navigation maintained by or under authority of the U. S. Coast Guard on the Atlantic and Gulf Coasts of the United States, including the United States West Indies. The first volume covers the First, Third, and Fifth Coast Guard districts, and the second volume covers the Seventh and Eighth Coast Guard districts. These lists are intended to furnish more complete information concerning aids to navigation than can be conveniently shown on charts. They are not intended to be used in navigation in the place of charts and coast pilots.

#### MARINE BIOLOGY:

The Biological Bulletin, vol. 122, no. 1, February 1962, 184 pp., illus., printed. Marine Biological Laboratory, Woods Hole, Mass. The bulletin contains, among others, the following articles: "Survival and Growth of Larvae of the European Oyster, O. edulis, at Lowered Salinities," by Harry C.

Davis and Alan D. Ansell; "Freezing Resistance in Some Northern Fishes," by Malcolm S. Gordon, Ben H. Amdur, and P. F. Scholander; "Gametogenesis and Spawning of the European Oyster, O. edulis, in Waters of Maine," by V. L. Loosanoff; and "The Polychaete Ceratonereis tridentata as a Pest of the Scallop Aequipecten gibbus," by Harry W. Wells and Mary Jane Wells.

"Proposed Marine Biological Laboratory," by James E. Rice, article, Alabama Conservation, vol. 32, no. 7, December-January, 1961-62, pp. 14-15, illus., printed. Alabama Department of Conservation, 64 No. Union St., Montgomery 4, Ala. Discusses the need of a Marine Biological Laboratory in Alabama in order to increase the present limited and erratic production of shrimp and oysters and to train skilled personnel in this field of science.

#### MARKETING:

Marketing of Fish in India, 1961, 3rd edition, 228 pp., illus., printed, 7Rs. or 11s. (about US\$1.50). Directorate of Marketing & Inspection, Ministry of Food & Agriculture, Nagpur, India. Contains detailed information on production, utilization, cost of marketing, and prices of fish in India for the period 1951 to 1957. Also gives data on marine fish catches, and imports and exports for 1958 and 1959. The report also furnishes information about the measures being taken by the Government of India to improve the economic conditions of the fishermen, increase fish production, and organize fish trade along proper lines.

"The Marketing of Quick-Frozen Fish," by A. Kiener, article, Revue Generale du Froid, vol. 38, no. 1, January 1961, pp. 37-41, printed in French. Association Francaise du Froid, 29 Boulevard, Saint-Germain, Paris 6<sup>e</sup>, France.

#### MASS MORTALITY OF FISH:

"Poisoned Fish," article, New Scientist, vol. 11, August 24, 1961, p. 467, printed. New Scientist, Harrison, Raison and Co., Ltd., Cromwell House, Fulwood Place, High Holborn, London WC1, England.

#### MINK RATIONS:

"The Need for Supplementary Dietary Fat by Breeding Mink Fed Rations Containing Codfish Products," by D. W. Friend and E. W. Crampton, article, Journal of Nutrition, vol. 34, August 1961, pp. 397-400, printed. Journal of Nutrition, American Institute of Nutrition, 36th Street at Spruce, Philadelphia 4, Pa.

#### NAVIGATION:

United States Coast Pilot 5--Gulf Coast, Puerto Rico, and Virgin Islands (Fourth Supplement), 23 pp., printed. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1962. Changes reported to C&GS from date of edition through Notice to Mariners 1 of January 6, 1962.

#### NET-HAULING MACHINE:

"Mechanization of Hauling Danish Seine," by V. M. Kirillov, article, Rybnoe Khoziaistvo, vol. 35, 1959, pp. 62-64, printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

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## NETS:

"The Measurement of Shapes of One-Boat Trawl Nets Operated in Midwater Layer and the Catch Results with the Aid of the Depth Telemeter Trially Manufactured," by C. Hamuro and K. Ishi, article, Technical Report of Fishing Boat No. 14, pp. 57-206, printed. Fishing Boat Laboratory, Fisheries Agency, Chiyoda-ku, Tokyo, Japan, 1960.

## NORWAY:

"The Fecundity of Plaice from the Coasts of Norway," by T. B. Bagenal, article, Journal of the Marine Biological Association of the United Kingdom, vol. 42, no. 1, February 1962, pp. 105-112, printed, 28s. (US\$4.75). Journal of the Marine Biological Association of the United Kingdom, The Syndics of the Cambridge University Press, Bentley House, 200 Euston Rd., London, NW1, England.

"Lodda og Loddefisket" (Capelin and the Capelin Fishery), by Dag Moller and Steinar Olsen, article, Fiskets Gang, vol. 48, no. 3, January 18, 1962, pp. 27-36, illus., printed in Norwegian. Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

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"Fish Hydrolyzates in the Nutrition of Young Chicks," by P. Carda Aparici and C. Barros Santos. Chemical Abstracts, vol. 55, October 30, 1961, 22514c, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

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"Use of Aviation Parachutes for Deep Sea Current Measurements," by D. N. Filippov and others, article, Meteorologiya i Gidrologiya, vol. 5, 1961, pp. 42-43, printed in Russian. (Translation available on loan only to approved borrowers from Reeper, Science Museum Library, London, SW7, England.) Meteorologiya i Gidrologiya, Moscow, U.S.S.R.

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## OXIDATION:

Oxidation of Fish Lipids, by H. S. Olcott, Paper No. R/II.3/2, 9 pp., printed. (Paper presented at the FAO International Conference on Fish in Nutrition, Washington, D. C., September 19-27, 1961.) Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

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"La Conservacion del Pescado con Antibioticos y por Irradiacion" (The Preservation of Fish with Antibiotics and by Irradiation), article, Industrias Pesqueras, vol. 36, no. 836, February 15, 1962, p. 59, printed in Spanish. Industrias Pesqueras, Policarpo Sanz, 21-2<sup>o</sup>, Vigo, Spain.

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"Simple Chemical-Color Test on Seafoods Determines Product Quality Condition," article, Quick Frozen Foods, vol. 24, August 1961, pp. 105-106, printed. Quick Frozen Foods, E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y.

## RADIATION PRESERVATION:

A Literature Survey on the Effects of Ionizing Radiations on Sea Foods with Respect to Wholesomeness Aspects, by S. A. Miller and others, TID-11610, 39 pp., processed, 75 cents. Department of Nutrition, Food Science and Technology, Massachusetts Institute of Technology, Cambridge 39, Mass. (Available from the Office of Technical Services, Department of Commerce, Washington 25, D. C.)

Outline of Projects to Determine the Feasibility of Radiation Preservation of Marine Products, by J. T. R. Nickerson and others, TID-6700, 88 pp., processed, \$2. Department of Food Technology, Massachusetts Institute of Technology, Cambridge 39, Mass. (Available from the Office of Technical Services, Department of Commerce, Washington 25, D. C.)

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"Some Toxic Fish of the Red Sea," by B. Flaschen-trager and Mahmoud M. Abdalla. Chemical Abstracts, vol. 55, June 26, 1961, 12672a, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

## REFRIGERATION:

"Liquid Nitrogen Boomed as In-Transit Refrigerant," by Jack L. Mischou, article, Food Engineering, vol. 33, August 1961, pp. 67-69, printed. Food Engineering, Chilton Company, Chestnut and 56th Sts., Philadelphia 39, Pa.

Refrigeration Engineering (A Source Book of Soviet Literature 1923-1955), by D. N. Prilutskii, 294 pp., printed (translated from Russian), single copy \$3.00. State Publishing House for Books on Trade, Moscow, U.S.S.R., 1956. (For sale by the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.). This is a "Source-book" for the Soviet journal Kholodil'naya Tekhnika (Refrigeration Engineering) which is U.S.S.R.'s principal periodical publication dealing with problems of technical production and use of refrigeration in the U.S.S.R. This is the only bibliographical work in the field of Soviet refrigeration and should, therefore, be of great benefit to scientific and engineering technical workers in this field. The "Source-book" indicates articles on the problems of the technique of production, the use of cold, and the design and technical operation of refrigerating plants that have been published in various journals. Divided into these three parts (each includes an independent index of authors): Technical operation and design of refrigerating plants; refrigeration industry, refrigerated transport of food products, and the use of refrigeration in various branches of the national economy; and the technique of refrigeration, and air conditioning.

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"New Methods of Measuring the Rigor Mortis," by G. Nemitz, W. Partmann, and D. Scharra, article, Zeitschrift für Lebensmittel-Untersuchung und Forschung, vol. 112, 1960, pp. 261-272, printed in German. Zeitschrift für Lebensmittel-Untersuchung und Forschung, J. F. Bergmann, Leopoldstrasse, 175, Munich 23, Germany.

## SARDINES:

"Experiments on Preservation of Oil Sardines (Sardinella longiceps) by Quick Freezing," by A. G. Vasavan, P. Gangadharan, and V. Padmanabhan, article, Food Science, vol. 10, no. 4, April 1961, p. 114, printed. Food Science, Central Food Technological Research Institute, Mysore, India.

## SEAWEED:

"Chemical Studies on Volatile Constituents of Sea Weed. I--The Fractionation of the Volatile Constituents of Ulva pertusa K," by Teruhisa Katayama and Tetuo Tomiyama, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 17, 1952, pp. 122-127, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

"Decomposition of Alginic Acid by Micro-Organisms. IV--On the Vibrio-Type Bacteria, Newly Isolated from the Decaying Laminaria," and "V--On the Alginase of Vibrio sp. SO-20 Strain," by Yoskiaki Ando and Katsuhiro Inoue, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, April 1961, pp. 339-341, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

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"Shark Meat Flour," by S. A. Haq and S. Mahdihassan, article, Pakistan Journal of Scientific & Industrial Research, vol. 3, no. 4, 1960, p. 213, printed. Pakistan Council of Scientific & Industrial Research, 3/4/D/VI, Nazimabad, Karachi, Pakistan.

## SHRIMP:

"Shrimp Research in Louisiana," by Lyle St. Amant, article, Louisiana Conservationist, vol. 14, no. 3, March 1962, pp. 2-4, illus., printed. Louisiana Wild Life and Fisheries Commission, Wild Life and Fisheries Bldg., 400 Royal St., New Orleans 16, La. The economy of the shrimp industry is closely geared to the annual production and, therefore low production years result in drastically poor economic conditions in the industry resulting in heavy financial burdens throughout the shrimp and allied industries. Since present knowledge of shrimp biology and ecology is such that expert management is not possible, the next best approach is a system of predicting annual shrimp production in time for the industry to gear itself to bad years. This article discusses the intensified shrimp research program that is now being maintained at a high level in Louisiana and the necessity for its expansion as funds, personnel, and equipment become available.

## SMALL BUSINESS MANAGEMENT:

Getting Money for Long-Term Growth, by Neil H. Jacoby, Management Aid for Small Manufacturers No. 138, 4 pp., processed. Small Business Administration, Washington 25, D. C., March 1962. A leaflet offering pointers on getting money for long-term growth. Getting capital for long-term growth is one of the problems of an expanding company. Small businessmen in increasing numbers are solving this problem by getting equity capital from small business investment companies. The leaflet points out that there are more than 500 small business investment corporations in the United States and small businessmen are urged to select one that best suits their needs. It then suggests steps that should help owner-managers in their negotiations with the small business investment corporations.

## SPOILAGE:

"Spoilage of Un-Iced Prawns and its Assessment by Objective Standards," by N. K. Velankar and others, article, Journal of Scientific and Industrial Research, vol. 20 D, no. 5, May 1961, pp. 189-191, printed. Council of Scientific and Industrial Research, Old Mill Rd., New Delhi 2, India.

## STEELHEAD TROUT:

An Evaluation of the Status of the Columbia River Summer Steelhead Run, 39 pp., illus., printed. Fish Commission, Portland, Oreg., January 16, 1962.

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#### TAIWAN:

Fisheries of Taiwan, 21 pp., processed. Taiwan Fisheries Bureau, Taipei, Taiwan, July 1961. Contains sections on classifications of fisheries of Taiwan; fisheries production and value; fishing craft; fishing population and fishermen associations; fish species; fish markets; ice making, cold storage and freezing; processing; education and research; and trade. Also includes statistical tables on annual fisheries production, status of fishing crafts, and fishing population during the period 1940-1960; fisheries production by species for 1960; and fishery trade from 1950-1960.

#### TOXINS:

"Marine Biotoxins. I--Ciguatera Poison: Some Biological and Chemical Aspects," by Donald W. Hessel, Bruce W. Halstead, and Norman H. Peckham. Chemical Abstracts, vol. 55, September 4, 1961, 17917g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Observations on Ciguatera-Type Toxin in Fish," by A. H. Banner and others. Chemical Abstracts, vol. 55, September 4, 1961, 17917f, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

#### TRANSPORTATION:

Reducing Transportation Costs, by Arthur E. Gogol, Management Aids for Small Manufacturers No. 139, 4 pp., printed. Small Business Administration, Washington 25, D. C., April 1962. In summary, the author states that "Some small businessmen pay too much for transportation because, in many cases, they are not always aware of what is involved in this expense item. Often they fail to realize the impact that various aspects of their operations have on the cost of inbound and outbound shipping." This report provides a checklist which owner-managers may find useful in analyzing their transportation expenses and the impact which operations, such as purchasing, receiving, storing, packaging, warehousing, and customer service, have on this cost item. It suggests that a system or a continuing program be used for cutting transportation costs. Such a system should give owner-managers (1) a continuing awareness of transportation costs, (2) personal control over these costs, and (3) the ability to plan and compute transportation costs.

#### TRAWLING:

"Chalut de Fond ou Pélagique à Volonté tel est Le Chalut 'Grouselle'" (Bottom or Mid-Water Trawling at Will with the "Grouselle" Trawl), article, France-Pêche, no. 56, November 1961, pp. 125-126, illus.,

printed in French. France Pêche, Service Abonnement, Boite Postale 179, Lorient (Morbihan), France. Describes the newly perfected "Grouselle" trawl, a net with a very large opening capable of operating on the bottom or in midwater. The special characteristic of the gear is that a trawler operating it on the bottom can, at will, and with no alterations raise it to any required depth and just as easily return it to the bottom; stability and very-wide net opening are maintained by the simple adjustment of the warps.

#### TROUT FARMING:

"Commercial Trout Farming in U.S.A.," by John W. DeWitt, article, U. S. Trout News, vol. 6, July-August 1961, pp. 4-5, printed. U. S. Trout News, U. S. Trout Farmers Association, 110 Social Hall Ave., Salt Lake City 11, Utah.

#### TUNA:

"Novos e Graves Problemas Para a Indústria Algarvia de Conservas de Atum" (New and Grave Problems in the Algarve Tuna Canning Industry), article, Conservas de Peixe, vol. 16, no. 191, February 1962, pp. 7-8, printed in Portuguese. Conservas de Peixe, Sociedade Astoria, LDA., Requeirao dos Anjos, 68, Lisbon, Portugal.

#### TURTLES:

Turtles, by Lois and Louis Darling, 64 pp., illus., printed. \$2.75. William Morrow & Co., 425 Fourth Ave., New York 16, N. Y. A book for children.

#### UNDERWATER TV:

"Underwater Television," article, Shipbuilding Equipment, vol. 3, 1960, pp. 8-9 printed. Shipbuilding Equipment, Edward Hulton Ltd., 30 St. Bride St., London EC4, England.

#### VITAMIN A:

"Studies on the Mechanism of Consumption and Accumulation of Vitamin A in Fish," by Yarokuro Yamamura, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, May 1960, pp. 496-499, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

#### WHALES:

"The Biological Value of Whale Meat," by W. Kieckbusch, E. Krug, and K. Land. Chemical Abstracts, vol. 55, October 16, 1961, 12413a, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

#### YUGOSLAVIA:

Stocarstvo I Ribarstvo, 1960 (Stockbreeding and Fisheries, 1960), Statistical Bulletin No. 222, 43 pp., printed in Yugoslav and English. Stocarstvo I Ribarstvo, Savezni Zavod za Statistiku, Federativna Narodna Republika Jugoslavija, Belgrade, Yugoslavia.



## PREVENTATIVE MAINTENANCE HELPS ASSURE PROPER OPERATION OF OUTBOARD MOTOR

Fitting out your outboard motor for the spring will give you a trouble-free season if you check out a few basic points before your first launching. Follow the instructions in the owner's manual to insure that the motor is ready to perform at its best from the start of the season.

With the motor either on a boat or a stand, check the lower unit first. Following the instructions in the owner's manual, remove the propeller nut, drive pin, and propeller.

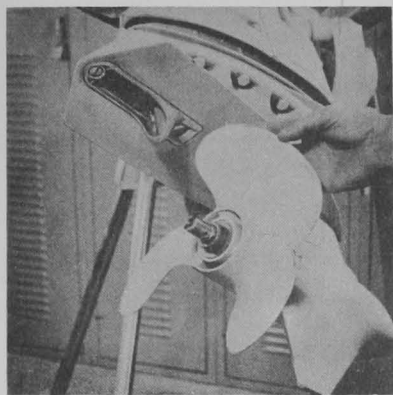


Fig. 1 - Propellers should be checked for nicks or bent blades. A slightly off-pitch propeller can seldom be detected by casual observation, but can seriously affect the performance of an outboard motor. Suspected prop damage should be checked with marine dealers.

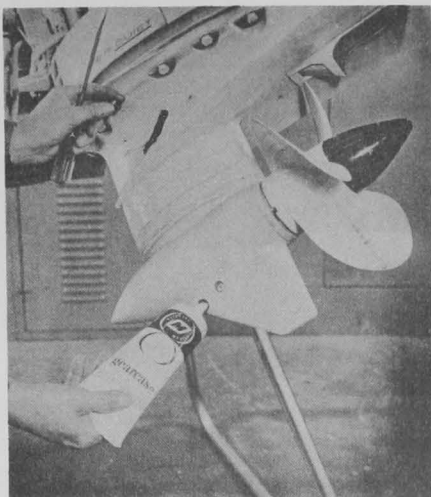


Fig. 2 - Spring fitting out of outboard motors should include the draining and refilling of the gearcase with the proper lubricant according to the manufacturer's specifications. Use of the incorrect lubricant may cause serious damage to the motor.

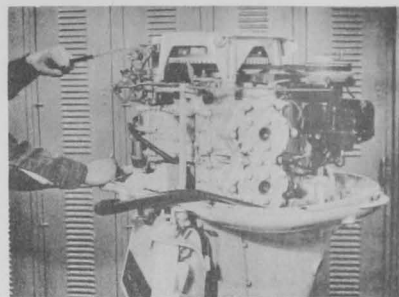


Fig. 3 - After a winter of storage, a general cleaning of the outboard motor's powerhead is desirable. After the spark plugs are removed, the flywheel should be rotated by hand. This removes excess cylinder oil and coats the cylinder walls.



Fig. 4 - Check the spark plugs carefully. If they are clean and the porcelain around the center electrode is a light brown color, the plugs are all right. It's a good idea to keep an extra set of spark plugs in the boat and check for proper gap before installation.

Check the propeller for nicks or bent blades. If the nicks are minor they can easily be repaired at home or by having your marine dealer check the pitch and blade area on a pitch block. A slightly off-pitch propeller can rarely be detected by casual observation, but will affect the performance of your motor. Next place a light coat of grease on the propeller shaft before replacing the propeller. Replace the drive pin and install a new cotter pin.

Then drain and refill the gearcase with the proper lubricant according to the manufacturer's recommendations.



Fig. 5 - Proper torque of spark plugs is essential when fitting the outboard motor for a season of use. Most marine dealers are equipped to properly tighten spark plugs.

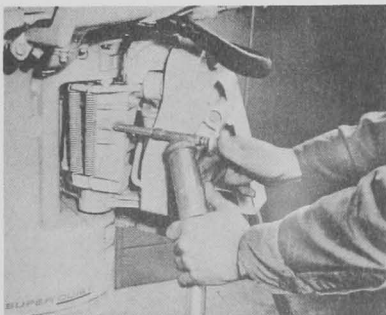


Fig. 6 - One of the most important functions in the spring fitting out of a motor is applying the proper lubricant to all recommended grease fittings. Use of the lubricant specified by the engine manufacturer is essential to the proper operation of the motor.

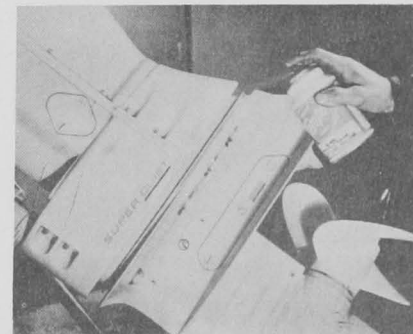


Fig. 7 - Final preparation in the fitting out of the engine for a season of service is cleaning the motor and touching up scratched areas with matching paint.

The powerhead will require a little servicing if the motor was prepared properly for off-season storage. A general cleaning of the powerhead, however, is desirable. After removing the spark plugs, slowly rotate the flywheel by hand. This not only removes any excess oil from the cylinders, but coats the cylinder walls properly.

Check the spark plugs carefully. If they are clean and the porcelain around the center electrode is a light brown color, the plugs are all right.

It's usually a good idea to keep an extra set of new spark plugs. Make sure they are specified for use in your motor by the engine manufacturer and check for proper spark-plug gap before installing.

Proper torque for spark plugs is as important as the proper tightening of screws, bolts, nuts, and studs throughout the entire motor. The manufacturer's specifications should be fully complied with.

One of the most important functions, and one many owners neglect, is applying the proper lubricant to all recommended grease fittings. If the correct grease is not used, serious damage to the motor can result.

The final preparation is cleaning the motor and touching up scratched areas with matching paint.

Boat owners unfortunate enough not to run out of gas as the nose of their boat touched dock for the previous season should forget about using old gas for a new season.

The outboard motor fuel tank should be cleaned inside and out, and all gum, varnish, and residue should be removed. Gasoline left in the tank for a long period of time (several weeks) will cause difficult starting and can lead to spark plug failure.

Should any questions of difficulties arise about the condition of the motor during fitting out, take the motor to the dealer.

--Ernst Ott, Outboard Marine International, S. A.  
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