

some optical examples, the obvious relation of Fourier transforms to diffraction is nearly ignored. In spite of the book's elementary nature, I do not recommend it to those without some previous knowledge of Fourier transforms. The fundamental theorems are not proven but merely stated. The quality of the teaching is often poor. To those with some background, however, it is interesting, especially in showing the relations between some simple Fourier mates, and it is also stimulating in bringing together the useful fundamental properties of Fourier transforms.

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## Experimental Technique

**Carbon-14 Compounds**, John R. Catch. Butterworth, Washington, D.C., 1961. viii + 128 pp. Illus. \$5.50.

John Catch's *Carbon-14 Compounds* is a welcome addition to the literature. Coming a dozen years after Calvin's pioneering, and now classic, *Isotope Carbon*, it takes careful measure of the intervening growth of what is still an art—the art of putting carbon-14 into complex organic compounds, applying these in tracer experiments, and assaying the results. The form of the book reflects the subject matter, which is abundant in detail but intractable in form.

The author is associated with the Radiochemical Centre of the United Kingdom Atomic Energy Authority, and he knows what should and what should not be included in a treatise of this sort. The result is practical, concise, and well balanced.

The first chapter deals with the production of  $C^{14}$  via the  $N^{14}(n,p)C^{14}$  reaction. Included is a discussion of the incorporation of  $C^{14}$  in organic materials by the direct neutron irradiation of nitrogen containing organic compounds; this discussion covers the work of Libby, Wolf, Yankwich, and Zifferero, among others. The incorporation of  $C^{14}$  by chemical synthesis and biological methods of labeling is covered in the next two chapters. Here, as elsewhere in the book, the bibliographies are unusually complete. For example, 203 references to journal literature appear at the end of the chapter on chemical synthesis. At that, the author makes no

attempt to provide an exhaustive compilation, as the articles cited have been chosen to illustrate the text.

Catch then turns to consideration of a number of topics in a chapter entitled "Peculiar features of carbon-14 compounds." These topics include isomerism; double labeling; isotope asymmetry; rearrangements, exchange, and degradation reactions; behavior of small quantities; isotope effects; radiation decomposition; and nomenclature of carbon-14 compounds. This recital of the various special problems connected with the successful and accurate use of isotopic tracers is especially worthwhile.

A short chapter on analysis (including carrier dilution analysis), a quite complete chapter on the measurement of  $C^{14}$ , and a chapter containing some cogent remarks about precautions in the use of  $C^{14}$  compounds complete the presentation.

Anyone who is about to use  $C^{14}$  for the first time, or who has used this important isotope only occasionally, should not fail to read this book. Workers already in the field will be pleased with the extensive bibliographies. I recommend it also to undergraduates as collateral reading, for the insight it gives into an important experimental technique as well as into the subject of organic chemistry itself.

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## Miscellaneous Publications

*(Inquiries concerning these publications should be addressed, not to Science, but to the publisher or agency sponsoring the publication.)*

**The Food Economics of Urban Middle Africa.** The case of Ghana. Thomas T. Poleman. Food Research Inst., Stanford Univ., Stanford, Calif., 1961. 53 pp. Illus. \$1.50.

**A Guide to Fortran Programming.** Daniel D. McCracken. Wiley, New York, 1961. 96 pp. Illus. \$2.95.

**Guidelines for Preparation Programs of Teachers of Secondary School Science and Mathematics.** Recommendations of the Teacher Preparation-Certification Study of the National Association of State Directors of Teacher Education and Certification and the American Association for the Advancement of Science. AAAS, Washington, D.C., 1961. 36 pp. Report of a study supported by the Carnegie Corporation, New York.

**Handbook of Electronic Charts and Nomographs.** Allan Lytel. Bobbs-Merrill, Indianapolis, Ind., 1961. 58 pp. Illus. \$4.95.

**Industrial Transistor and Semiconductor Handbook.** Robert B. Tomer. Bobbs-Merrill, Indianapolis, Ind., 1961. 254 pp. Illus. \$4.95.

**Laboratory Manual of Vertebrate Embryology.** Roberts Rugh. Burgess, Minneapolis, Minn., 1961. 292 pp. Illus. \$4.

**NLL Translation Bulletin**, vol. 3, Nos. 3-5. National Lending Library for Science and Technology, Department of Scientific and Industrial Research, London, 1961 (order from Her Majesty's Stationery Office, Box 569, London). Annual subscription, £2 13s.; single copy, 4s. 5d. Formerly entitled **LLU Translation Bulletin**, No. 3 contains a list of approximately 300 academies and research institutes in and near Moscow; No. 4, approximately 250 planning and design institutes, laboratories, and higher educational institutions in and near Moscow; and No. 5, information concerning 155 libraries of the Academy of Sciences of the U.S.S.R.

**The National Peril.** A statement by the NPA International Committee. Where we stand in national defense. Franklin A. Lindsay. National Planning Assoc., Washington, D.C., 1961. 61 pp. Paper, \$1.

**Permanent Peace.** Walter Millis. Center for the Study of Democratic Institutions, Santa Barbara, Calif., 1961. 31 pp. Single copy, free.

**Some Commercial Autocodes.** A comparative study. A.I.P.C. Studies in Data Processing, No. 1. E. L. Willey *et al.* Academic Press, New York, 1961. 60 pp. \$2.50. Published for the Automatic Programming Information Centre, Brighton College of Technology, England.

**Symposium on the Metabolism and Function of the Fat-Soluble Vitamins A, E, and K.** *American Journal of Clinical Nutrition*, vol. 9, No. 4, pt. 2. National Vitamin Foundation, New York, 1961. 116 pp.

**Technical Information in the U.S.S.R.** Aram S. Melik-Shakhnazarov. Translated by Boris I. Gorokhoff. Massachusetts Institute of Technology Library, Cambridge, Mass., 1961. 122 pp. \$1.60.

**Television for School Science.** Organisation for European Economic Co-operation, Paris, 1961. 181 pp. Report of an international seminar held in July 1960.

**Tulane University.** *Tulane Studies in Zoology*, vol. 8, No. 6, pp. 155-182, \$0.60. "The female reproductive cycle of the crayfish *Cambarellus Shufeldtii*: the influence of environmental factors," Mildred E. Lowe; "Fecundity and reproduction in the largescale menhaden *Brevoortia patronus Goode*," Royal D. Suttikus and Bangalore I. Sundararaj. Tulane Univ. New Orleans, La., 1961.

**Vertebrate Locomotion.** J. E. Harris, Ed. Zoological Soc. of London, 1961. 140 pp. + plates. Paper, £1 12s. 6d. Proceedings of a symposium held 9 November 1960.

**Wesleyan University Series.** *The Earth and Its Story.* Geology for young scientists. Lou W. Page. 47 pp. *Exploring the Universe.* Allen Hynek. 47 pp. *Science Experiments.* Original problems for independent discovery in biology, physics, chemistry. Editors of *Science and Math Weekly*. 31 pp. American Education Publications, Education Center, Columbus, Ohio, 1961. \$0.15 each (in class quantities). A new series of science booklets intended for junior and senior high school classes, as supplements to regular textbooks.