

by the specialist, but those not specialized will labor under misapprehension until they learn by experience.

The worker in the small laboratory and the student may well profit from the treatment given in this book to the wide variety of scientific methods that may be applied in criminal work. These groups, however, will have the time necessary to evaluate the suggested techniques and recognize the limitations inherent in such instances, such as the educational background necessary and the amount of practical experience required to arrive at the logical conclusion in a given method.

Persons more experienced and more learned in the field of scientific criminal investigation will take a more kindly view of this book. Such must be the case as evidenced by the fact that New York University Graduate School of Public Administration and Social Service conducted an institute on "Modern Methods in Law Enforcement" on August 3-7, and selected this book as the textbook for the course.

WILLIAM E. KIRWAN

New York State Police Scientific Laboratory
Albany, N. Y.

Marine Fouling and Its Prevention. Prepared for the Bureau of Ships, Navy Department, by the Woods Hole Oceanographic Institution. Annapolis, Md.: U. S. Naval Institute, 1952. 388 pp. Illus. \$10.00.

This compilation is the outgrowth of the fouling investigations conducted by the Woods Hole Oceanographic Institution during the years 1940-46. It is both an introduction to an important aspect of marine ecology and a manual of antifouling techniques and materials.

Most of the book is designed for the use of naval and shipping interests, and the biological discussions are intentionally elementary, to be consulted by laymen, with one important exception. This is Chapter 10, "intended for the professional biologist and may have little interest to others." Although the professional biologist will consider most of the introductory chapters excellent essays in what might be called semi-popularization, this chapter intended for him has some serious defects. The key to the chapter is its 30-page appendix, a "list of species recorded from fouling." It appears to be a first approximation in several respects; eight categories, for example, have been compiled from single references and half a dozen more from only two or three sources. Granted that most of the categories so treated are groups of minor importance, nevertheless this list is used as the basis for several tables summarizing the distribution and types of organisms involved in fouling. Another defect of this master list is that several important groups are composed in large part of species drawn from unpublished sources and in several cases the determinations were made by individuals without published papers in these systematic groups. In almost every group, a specialist may be able to offer

additional species overlooked by the compiler of this list or point out duplications. This is extreme in the case of the anemones, where 12 species and varieties are listed although there are only 5 fully recognizable species (5 of the names are easily equated to 2 species by inspection). Nevertheless the 12 different names are carried into the summary tables as full species.

For the biologist, at least, one of the most useful chapters in this book is Chapter 5, "The Seasonal Sequence," summarizing by graphs the temperatures, periods of settling, and quantitative aspects of fouling in various parts of the world. The second half of the book is given over to methods of fouling prevention and control, starting with a short history of the subject and including a list of British, German and U. S. patents issued for antifouling compounds and devices. The emphasis throughout this section is on the protection of surfaces; the most adequate discussion of fouling control in salt water systems is to be found in the first chapter. The use of double systems in industrial plants or aquaria is not mentioned.

The book is well printed and illustrated; the large page size makes the volume comparable to an ordinary octavo of perhaps more than 500 pages.

JOEL W. HEDGPETH

Scripps Institution of Oceanography
University of California, La Jolla

Wood Chemistry, Vols. 1 and 2. 2nd ed. American Chemical Society Monograph Series. Louis E. Wise and Edwin C. Jahn, Eds. New York: Reinhold, 1952. Vol. 1, 688 pp., illus.; Vol. 2, 652 pp., illus. \$15.00 the volume.

General interest in wood chemistry has grown rapidly in recent years because of increased demands for wood pulp and because of greater fundamental interest and industrial curiosity regarding the numerous non-cellulose components of wood. For all persons interested in wood chemistry the new edition of *Wood Chemistry* will be of great value. It is a complete and extensive revision of the work first published in 1946. Because of the amount of material presented, the second edition is in two volumes.

Volume I is divided into three parts, each with its complement of chapters written by established research men. Part I, "Growth, Anatomy and Physical Properties of Wood" contains chapters by H. P. Brown and C. C. Forsaith. Here is described the general morphology of soft and hard woods from the biological viewpoint, but with notations as to the location of chemical compounds. Tensile and compressive strengths of woods are treated in relation to such factors as structure, moisture, and the presence of the various chemical substances.

Part II, "Components and Chemistry of the Cell Wall" contains chapters by W. M. Harlow, L. E. Wise, H. Mark, C. B. Purves, A. J. Stamm, E. C. Jahn, and F. E. Brauns. This part deals with the chemical composition of wood cells and middle lamella, and the physical and chemically modified

cellulose is exclusively treated with particular emphasis upon oxidation, hydrolysis, esterification, and solubility. The hemicelluloses are discussed from the standpoint of occurrence, preparation, and composition. An extensive review of lignin chemistry is also given.

Part III, "The Extraneous Substances" contains chapters by L. E. Wise, E. F. Kurth, G. C. Harris, M. A. Buchanan, and H. Erdtman. This section deals principally with wood substances extracted with neutral organic solvents. It contains a detailed description of the volatile oils (essential or ethereal), wood resins, tannins, coloring material, and other less easily classified extractives of wood. There is also an interesting discussion of the coniferous extractives in relation to taxonomy.

Volume II is divided into four parts. Part IV, "Surface Properties of Cellulose Materials" is a chapter by A. J. Stamm that discusses such factors as adsorption of gases including water vapor, selective adsorption from solution, dimensional changes resulting from sorption, thermodynamic changes, specific volume, mechanical properties, electrical properties, capillary structure, and chemical treatment of wood.

Part V, "Industrial Wood Chemistry" contains chapters by L. F. Hawley, A. W. Goos, E. E. Harris,

E. C. Jahn, W. F. Holzer, Holger Erdtman, and F. H. Yorston. The combustion of wood, its thermal decomposition, hydrolysis, chemical behavior, delignification and bleaching are discussed.

Part VI, "Decomposition of Wood by Microorganisms" consists of a chapter by W. G. Campbell which treats this subject in considerable length.

Part VII, "The Chemical Analysis of Wood" contains six chapters by B. L. Browning and one by Browning and I. H. Isenberg. In this section a lengthy and complete discussion of analytical methods is presented in usable form.

These new volumes contain a vast amount of information and extensive literature references. At several points, so many references are presented that the text becomes a series of brief uncritical abstracts of the literature. On the whole, the text is well written and critically presented. Very few proofreaders' errors were noted. The reviewer was impressed by the extensive and complete treatment given to most subjects. The volumes will prove of great value to everyone interested in the components of wood. Although written primarily for the chemist, the biologist will also find much valuable information.

ROY L. WHISTLER

Biochemistry Department, Purdue University

Scientific Book Register

- Acanthocephala of North American Mammals.*** Illinois Biological Monographs, Vol. XXIII, Nos. 1-2. Harley J. Van Cleave. Urbana: Univ. Illinois Press, 1953. 179 pp. Illus. \$5.00; \$4.00 paperbound.
- The Study of Human Nature.*** David Lindsay Watson. Yellow Springs, Ohio: Antioch Press, 1953. 262 pp. \$3.50.
- Groups in Harmony and Tension: An Integration of Studies on Intergroup Relations.*** Muzafer Sherif and Carolyn W. Sherif. New York: Harper, 1953. 316 pp. + plates. \$3.50.
- Our Neighbour Worlds.*** V. A. Firsoff. New York: Philosophical Library, 1953. 336 pp. Illus. + plates. \$6.00.
- Basic Mechanics of Fluids.*** Hunter Rouse and J. W. Howe. New York: Wiley; London: Chapman & Hall, 1953. 245 pp. Illus. \$4.50.
- Explorations in Science.*** Waldemar Kaempffert. New York: Viking Press, 1953. 296 pp. \$3.50.
- A Herd of Mule Deer.*** A record of observations made on the Hastings Natural History Reservation. Jean M. Linsdale and P. Quentin Tomich. Berkeley: Univ. Calif. Press, 1953. 567 pp. Illus. \$8.50.
- Mr Tompkins Learns the Facts of Life.*** George Gamow. New York: Cambridge Univ. Press, 1953. 88 pp. Illus. \$2.75.
- Progress in Biophysics and Biophysical Chemistry*, Vol. III. J. A. V. Butler and J. T. Randall, Eds. New York: Academic Press, 1953. 386 pp. Illus. + plates. \$9.50.**
- Tables for Rocket and Comet Orbits.*** National Bureau of Standards, Applied Mathematics Series 20. Samuel Herrick. Washington, D.C.: Government Printing Office, 1953. 100 pp. \$1.75.
- Endosymbiose der Tiere mit Pflanzlichen Mikroorganismen.*** Reihe der Experimentellen Biologie, Band 12. Paul Buchner. Basel-Stuttgart: Verlag Birkhäuser, 1953. 771 pp. Illus. Sw. fr. 66.50; paperbound 62.40.
- Plant Diseases in Orchard, Nursery and Garden Crops.*** Ernst Gram and Anna Weber; trans. from 2nd Danish ed. by Evelyn Ramsden, R. W. G. Dennis, Ed. New York: Philosophical Library; London: Macdonald, 1953. 618 pp. Illus. + plates. \$18.50.
- General Biochemistry.*** William H. Peterson and Frank M. Strong. New York: Prentice-Hall, 1953. 469 pp. Illus. + plates. \$6.50.
- Tool Engineers' Data Book.*** Gerhard J. Gruen. New York: Reinhold, 1953. 219 pp. \$5.50.
- Our Physical Environment: A Problem Approach.*** Leonard W. Gaddum and Harold L. Knowles. Boston: Houghton Mifflin, 1953. 625 pp. Illus. \$5.50.
- Brown Coal: Its Mining and Utilization.*** A series of post-graduate lectures delivered in the School of Engineering, University of Melbourne. P. L. Henderson, Ed. Melbourne: Melbourne Univ. Press; New York: Cambridge Univ. Press, 1953. 351 pp. Illus. + plates. \$7.50.
- Studies in Econometric Method.*** Cowles Commission Monograph #14. W. C. Hood and Tjalling C. Koopmans, Eds. New York: Wiley; London: Chapman & Hall, 1953. 323 pp. \$5.50.
- Soils and Land of Michigan.*** J. O. Veatch. East Lansing, Mich.: Michigan State College Press, 1953. 241 pp. Illus. + map. \$7.50.
- Vorstellungen vom Aufbau der Materie im Wandel der Zeiten.*** Eine historische Übersicht. Fritz Lieben. Vienna: Franz Deuticke, 1953. 384 pp. \$7.20.