

different topics of physical chemistry treated that several branches of physics and chemistry of special interest in combustion, explosion and detonation are not even mentioned, *e.g.*, propellant technology, the physics of rocketry, aerodynamics, hydrodynamics, and the physics and chemistry of ionized gases. The dearth in this volume of fundamental and detailed discussions and descriptions of ignition, flames, combustion, explosion and detonation is disappointing, especially in light of these extensive reviews, the title and subtitle, "Eine Einführung in die Grundlagen," the objectives stated in the preface of the book, and the tremendous general interest in these matters in our present era of propellants, rocketry, satellites, and space technology. It is, moreover, disappointing that practically none of the general principles discussed is applied specifically either to combustion technology or "Brandschutz." One may wonder, therefore, why so much of the book was devoted to these general subjects, *e.g.*, the electron structure of atoms, thermodynamics, reaction kinetics and the fundamentals of rate processes, the physics of radiation and absorption, Gibbs adsorption and certain aspects of atomic physics. All of these topics are, of course, available in excellent treatments elsewhere whether in elementary form for the beginner, more detailed and descriptive treatments for more advanced students, or comprehensive treatises for specialists. Certainly, one would not object to such introductory treatments, had they been applied directly to the particular technology treated in the volume.

The interests of this reviewer have not extended a great deal to considerations of ways and means of fireproofing substances, and controlling or extinguishing fires. The elementary considerations of the last two sections of this book treating "Brandschutz" were therefore of considerable interest to him and probably would be also to others whose main interests are combustion and explosives, and perhaps to scientists in general. In this light the parts of the book pertaining to this subject are valuable contributions to our scientific literature.

DEPARTMENT OF METALLURGY
UNIVERSITY OF UTAH
SALT LAKE CITY, UTAH

M. A. COOK

Laboratory Distillation Practice. By E. A. COULSON, M.A., D.Sc. and E. F. G. HERINGTON, D.Sc., A.R.C.S. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1958. x + 166 pp. 14 × 22 cm. Price, \$4.50.

This small book takes a useful practical non-theoretical approach toward its subject. Within this scope the treatment is quite complete, including columns and packings, associated equipment, simple theory, selection of operating conditions and practical considerations. The usual treatment on determination of the height of a theoretical plate is given, and a specific distillation unit is described in detail. Separate chapters deal with low temperature, low pressure, azeotropic distillation, measurement of vapor liquid equilibria, continuous laboratory distillation, extractive distillation, stripping, and fractionation of a reactive mixture. The discussion of azeotropes is more extensive than would be expected in a book of this kind. The British background of the authors is apparent in spots, such as the omission of any mention of widely used protruded packing. Some of the descriptions of specific pieces of equipment will be of limited utility because the devices mentioned are available only in the authors' country. Some packings of lesser importance and utility are included. The figures are excellent. The references are extremely limited in number and scope. The presentation is almost uniformly clear and suited particularly for new or occasional users of distillation techniques. The book is not intended for those already well versed in the subject. Items and subjects whose treatment is unusually good are manostats, thermocouple junction welding and the explanation and nomograph of the Fenske equation. The discussion on boilers and boilup rate measurement is weak. There might have been more emphasis on the increase in HETP with diameter in a packed column, a mention of the desirability of a holding device at the top of a packed column, a mention of electric heating mantles, and more about head temperature measurement and test mixtures. Nevertheless every laboratory that has occasion to do any distillation whatever should have this book at

hand, and time spent in reviewing its clear discussions will be much more than saved in improved apparatus and operation.

DEPARTMENT OF CHEMICAL ENGINEERING
THE PENNSYLVANIA STATE UNIVERSITY
UNIVERSITY PARK, PENNSYLVANIA

ARTHUR ROSE

The Chemistry of Natural Products. Volume II. Mono- and Sesqui-terpenoids. By P. DE MAYO, Imperial College of Science and Technology, London, England. K. W. Bentley, Editor. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1959. vii + 320 pp. 16 × 23.5 cm. Price, \$7.50.

The Chemistry of Natural Products. Volume III. The Higher Terpenoids. By P. DE MAYO, Imperial College of Science and Technology, London, England. K. W. Bentley, Editor. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1959. vii + 239 pp. 16 × 23.5 cm. Price, \$6.00.

The original purpose of this series of books under the general editorship of K. W. Bentley is to provide reasonably priced and reasonably sized introductory monographs to various areas of natural products chemistry. The two volumes under review are intended to cover the terpene field. This should be particularly welcome among American academic circles, where this subject is greatly neglected. Indeed, de Mayo's preface to these two volumes should be compulsory reading, because it states succinctly and convincingly the case for the enormous pedagogic and scientific value of terpenoids. The general approach is indicated in the preface by an apt quotation from Milne's *Winnie-The-Pooh* and the fact that the author has not succeeded completely is due largely to his publisher and to a certain extent also to unfortunate timing. If these books had been written toward the latter part of 1958 rather than in early 1957, they could have covered a very considerable number of recent advances, but more about this later.

To quote again A. A. Milne, "nobody—nobody could call me a fussy man BUT" this reviewer considers it unforgivable that two short books of this type took the publisher two years to produce. This is particularly preposterous in this instance where all structural formulas have been drawn by hand (at times a rather shaky one) and reproduced directly. Such books could be issued in less than six months or else additions should be made in proof to bring them up to date. In the final analysis, it is up to authors to bring pressure upon publishers to reduce the time interval to a reasonable limit, and this certainly was not done here. As a result, several recent advances are not included and this is precisely the material which would make the uninitiated student and his professor look up and pay notice. All of the classical studies can be found in Simonsen's "The Terpenes" and other compendia; the purpose of a short introductory book should, therefore, not be a condensation of the historical literature but rather to emphasize the most recent advances, using modern approaches, and to place the earlier literature (without disrespect, indeed often with admiration) into its proper perspective. With one unfortunate exception, de Mayo attempted and largely succeeded in accomplishing this (especially in Vol. II) and it is a pity that circumstances prevented him from carrying the literature coverage to late 1958 as could so easily have been done.

The introductory chapter aptly contains reference to various physical methods which have been used so extensively in recent times in structure studies of terpenoids. The coverage of ultraviolet and infrared methods is quite adequate, but immediately thereafter, the long publication time interval or the unfortunate timing becomes apparent. There is very brief mention of nuclear magnetic resonance, even less of rotatory dispersion and as far as the reviewer could determine, none of mass spectrometry. The last omission may be due to modesty since one of the important papers has been published by de Mayo and Reed.

The discussion of monoterpenoids is on the whole very satisfactory, especially chapter 4 dealing with the intricate rearrangements of bicyclic monoterpenes through non-classical carbonium ions. The least satisfactory portion is the one dealing with absolute configurations, the two pages starting on p. 174 representing really only a reprint of Birch's list (ref. 40). This will not teach a student how these stereochemical conclusions were really arrived at