Lehrbuch der Organischen Chemie. ed. 12. Paul Karrer. Georg Thieme, Stuttgart, 1954. (U.S. distr.: Intercontinental Medical Books, New York). 949 pp. Illus. $14.20.

The burden of maintaining contact with new developments in chemistry is indeed heavy today, considering the large number of advances made in recent years. Thus, the investigator, teacher, and student are indebted to the labors of those who prepare reviews, monographs, textbooks, and the like, making the classification and distribution of chemical knowledge easier.

The volume under review represents the twelfth German edition of a series of organic chemistry textbooks which since 1927 have had wide usage and recognition throughout the scientific world. The renowned author of these classic reference books, Prof. Dr. Paul Karrer, is recognized as well for his many personal contributions to the field of organic chemistry.

In preparing this volume, the author modified his last edition in accordance with recent developments in experimental and theoretical organic chemistry. The new edition, however, is organized basically in the same manner as the previous issue. In the classical tradition the subject material is arranged strictly according to the nature and number of functional groups. In varying degrees, modifications of and additions to all chapters are to be found. As the preface states, it was the author's object to devote more room to organic reaction mechanisms as based on modern theoretical electronic concepts. New material in all phases of organic chemistry is to be found. It is possible to mention here only a few of the new topics that are covered.

The introduction to the text of a great number of reaction mechanisms is noticeable. The free radical and ionic mechanisms for the course of such reactions as isomerizations, halogenations, polymerizations, oxidations, alkylations, carbonyl condensations, acylations, and the like, are included. The author also considers the electronic-theoretical aspects of a variety of subjects, such as oxonium ions, free radicals, resonance states of molecules, ozonides, aliphatic and aromatoc diazo compounds, neighboring group influence, and Walden inversion. Recent advances in the chemistry of actylenes (Reppe syntheses), organometallic reactions, olefins, fluorohydrocarbons, phosphoric acid esters, silicones, and others, are reviewed. A complete section dealing with the chemistry of tropolones is introduced for the first time.

In the field of biological chemistry, the text presents up-to-date material of various metabolic pathways, such as the glucose-ethanol conversion, transamination reactions, peptide synthesis, hexose interconversions, and purine and pyrimidine biosyntheses. The recent developments in the chemistry of a variety of substances of biological importance, such as vitamin B_{12}, coenzyme A, sphingolipids, nucleic acids, folic acid and biotin, are also considered.

Professor Karrer's textbooks are well known for their material dealing with the chemistry of natural products. The new text presents some of the later advances in the steroid, alkaloid, antibiotic, and carotenoid fields. Of great interest is the material on the total synthesis of cholesterol, lycopene, α-carotene, β-carotene, and morphine. The chemistry of cortisone, corticosterone, aureomycin, terramycin, chloromycetin, and mycomycin is included. In the alkaloid field, the recent advances in the chemistry of the senecio, tropanal, curare, morphine, lupine, codeine, colchicine, ergot, and strychnine alkaloids are reviewed.

The use of isotopes in the elucidation of reaction mechanisms is discussed in a section devoted to isotopic organic chemistry.

Tables of miscellaneous information in organic chemistry are omitted from the new edition. The author has extended the section dealing with important dates in the history of organic chemistry to the year 1951.

The quality of the textbook itself is fine. The paper and binding are good. The present German edition will be printed shortly in the English, French, Spanish, and Italian languages. It is the opinion of the reviewer that although designed for the student of organic chemistry, the textbook is an excellent reference source for everyone interested in the field.

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The Challenge of Our Times: Contemporary trends in science and human affairs as seen by twenty professors at the University of Wisconsin. Farrington Daniels and Thomas M. Smith, Eds. Burgess Pub. Co., Minneapolis, 1953. 364 pp. Illus. $3.50.

This book, based on a course, "Contemporary trends in modern civilization," which has been taught at the University of Wisconsin since 1941, consists of 28 chapters, reworked by the 20 lecturers who contributed to the course. It thus represents another of the currently popular attempts to view as an integrated picture a problem that concerns a group of disciplines.

The book is divided into five sections. The first, "Science is everybody's business," contains five chapters that cover briefly: the control of nuclear fission and fusion as examples of scientific developments that profoundly affect society, the history of science, the application of science to modern technology, and the operation of a modern research laboratory. These are followed by two chapters in which the general problems of controlling science in the United States and in Russia, respectively, are treated.

In the second section, "Nations in turmoil," economics, history, genetics, geography, political science, sociology, and anthropology are fused in an eight-chapter view of the changing picture of the control of energy and the problems of agriculture, with diminishing death rates and high birth rates presenting new problems in politics and geography. This section includes chapters on Russia and the Communist way

of life and What is wrong with Communism; other chapters discuss the causes of trouble in Europe and in the world, the emergence of Asia as a trouble spot which has been aroused as Europe became exhausted, and the transition period of the colonial peoples.

The third section is devoted to the world community, with chapters on collective security, the path to peace, the United Nations charter and organization, the possible production of collective security as a halfway step to world government and the problems and rewards when this is attained, and what the consequences of an actual world government would be.

The fourth section contains four chapters dealing, respectively, with what the United States can do in the world picture, the origins of the productive might of the United States, the causes of depressions and inflations, the problems of our foreign policy, and those of United States aid to the world. The final section deals with propaganda and its origins, and the bases for human freedom and happiness.

The authors are experts in their fields, and the individual viewpoints have been well integrated. The general appearance of the book, printed by photo-offset from typed pages, is that of a low-priced textbook in one of its earlier editions. An excellent list of suggested supplementary readings is included, together with short biographical sketches of the authors and a well-prepared index.

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Theory of Equations. Cyrus Colton MacDuffee. Wiley, New York; Chapman & Hall, London, 1954. 120 pp. Illus. $3.75.

This book was written for use as a text in a one-semester course in theory of equations. The mathematical maturity demanded of the student or reader is that of college juniors or seniors. The author intends the book both for those who plan to follow mathematics as a profession and those who will use it as a tool in other fields. He has used modern methods of algebra to present a complete study of linear systems of equations and of polynomials. The introduction of the abstract ideas of rings and fields forms a bridge between elementary algebra and advanced algebra and gives the student an insight into the more advanced work in modern algebra at an early stage in his training. These abstract ideas are introduced so naturally that they do not disturb the basic nature of the course, and a student who is not primarily interested in them will not object to them.

The topics considered include those covered in most of the standard texts on theory of equations, with the one exception that the study of determinants has been omitted. The author thinks that the study of determinants and matrices makes a good course for a second semester's work. The treatment of the topics differs from that of other authors in that the main emphasis is placed upon the theory of polynomials and use is made of modern methods in the development of this theory.

The text begins with a review of the solution of linear equations, and here the idea of a field is introduced. The second chapter contains a concise introduction to the theory of numbers, which some instructors might wish to expand. In the third chapter, the author gives an exact definition of rings and fields. After the definition of polynomials as elements of certain rings, the theory of polynomials is developed rigorously. The text ends with a discussion of Euclidean rings and systems of equations of higher degree.

The computational part of the subject has not been neglected. There are illustrative examples throughout the book. A sufficient number of good exercises (with answers) are provided for student drill.

At first glance, it may seem that there is not sufficient material for a one-semester course. But the abstract ideas of rings and fields cannot be pushed too fast in some classes, and an instructor may find that extra help and drill will need to be provided.

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New Books

Advances in Electronics, Vol. V. L. Marton, Ed. Academic Press, New York, 1953. 420 pp. Illus. $9.50.

Higher Transcendental Functions, Vol. I. Based, in part, on notes left by Harry Bateman; compiled by the staff of the Bateman Manuscript Project, California Institute of Technology. McGraw-Hill, New York–London, 1953. 302 pp. $6.50.

1954 Medical Progress. A review of medical advances during 1953. Morris Fishbein, Ed. Blakiston, New York, 1954. 345 pp. $5.00.

Human Behavior in the Concentration Camp. Elie A. Cohen. Trans. by M. H. Braaksma. Norton, New York, 1953. 295 pp. $5.00.

Infrared Absorption Spectra of Steroids: An Atlas. Konrad Dobriner, E. R. Katzenellenbogen, and R. Norman Jones. Interscience, New York, 1953. Introduction + 308 spectra charts. $11.50.

Sound. A physical textbook. 5th rev. ed. E. G. Richardson. St Martin's Press, New York; Edward Arnold, London, 1953. 352 pp. Illus. $5.00.

Introduction to Aeronautical Dynamics. Manfred Rauscher. Wiley, New York; Chapman & Hall, London, 1953. 664 pp. Illus. $12.00.

Who's Who in British Science, 1953. British Book Centre, New York, 1954. 292 pp. $9.00.

Evolution: Die Geschichte ihrer probleme und Erkenntnisse. Walter Zimmerman. Verlag Karl Alber, Freiburg–München, Germany, 1953. 623 pp. Illus. + plates. DM 32.

Main Currents of Scientific Thought. A history of the sciences. S. F. Mason. Abelard Schuman, New York, 1954. 520 pp. $5.00.

Man, Rockets and Space. Burr W. Leyson. Dutton, New York, 1954. 188 pp. Illus. $3.50.

Music Therapy. Edward Podolsky, Ed. Philosophical Library, New York, 1954. 335 pp. Illus. $6.00.