

idea of what it was like to work with Rutherford by glancing through the little volume, reprinted by the London Physical Society, of the first five Rutherford Memorial Lectures. These are delightful reading; if there is a fault it is because the speakers were over fond of their subject, but it is a real man that they are describing.

Structural Research. Vol 32 of *Handbuch der Physik*. Edited by S. Flügge. 663 pp. Springer-Verlag, Berlin, Germany, 1957. DM 144.00 (Subscription price DM 115.20). Reviewed by Joseph Hoffman, Roswell Park Memorial Institute.

A clarification of the title "Structural Research" is necessary because in many instances structure has come to connote chemical arrangement, as in "organic structure". This typically thorough treatise deals with arrangements of atoms and/or molecules as found in the liquid, gaseous, or solid state, and particularly the latter in finely divided form. The fourth chapter, for example, by W. W. Beeman, P. Kaesberg, J. W. Anderegg, and M. B. Webb has two main sections, the first being: Size of Particles; and the second: Lattice Defects. On the other hand, the sixth and last chapter on Neutron Diffraction and Interference by G. R. Ringo deals among other things with positions of hydrogen atoms. Therefore, the title means structure in its broadest possible sense.

The chapters mentioned above are two of the three that are in English. The third one is on Theoretical Principles of Structure Research by X-rays, by J. Bowman, and provides a very good summary of the subject, the experimental crystallographic aspects of which are described in the first chapter (in French) by A. Guinier and G. von Eller. Guinier's many years of work in x-ray analysis are reflected in the detail and elegance of this chapter. Further experimental methods for x-ray analysis of fluids and amorphous solids are presented in chapter three (also in French) by G. Fournet. Electron diffraction methods are described in the fifth chapter (in German) by H. Raether. To facilitate finding one's way among the chapters in three languages there are three index tables. The first translates from German to English, the second from English to German, and the third is in French only.

Each chapter is about 100 pages long and each represents a monograph in its own right. One can only indicate some of the many highlights of such a massive compilation. For example, there are the experimental methods for summing the Patterson-Fourier series for the electron densities from x-ray diagrams. The photographs showing the optical analogue for summing the series in von Eller's machine especially designed for the purpose and known as the "Photosommateur" are very striking. There is also a photo of Pepinsky's X-RAC (X-Ray Analogue Computer) along with illustrations of its remarkable results. In another direction, namely biophysics, Beeman et al. discuss the size determinations of viruses and protein molecules. Measurements of the

radius of gyration of large protein molecules appear to be unambiguous, yet they raise questions about their hydration. The main problem is to know if the water of hydration is inside or held as a shell on the outside. The solution to this problem has important consequences in determining the nature of the highly specific force patterns believed to exist about biomolecules.

A more general highlight of the book is in its profuse and fine illustrations. The uniformly high excellence of presentation by the authors is enhanced by the lucid diagrams and clear photos. The pages are of the firm, glossy paper long known to readers of the *Handbuch der Physik*. This volume is an essential addition to the bookshelves of those working in many borderlines of physics such as industrial applications of x-ray analysis and biophysics as well as in the pure physics of structure.

Books Received

PROGRESS IN LOW TEMPERATURE PHYSICS. Vol. 2. Edited by C. J. Gorter. 480 pp. (North-Holland, Holland) Interscience Publishers, Inc., New York, 1957. \$10.75.

ROUTE-MAPPING AND POSITION-LOCATING IN UNEXPLORED REGIONS. By W. Filchner, E. Przybyllok, T. Hagen. 288 pp. (Birkhäuser, Switzerland) Academic Press Inc., New York, 1957. \$9.00.

LES RAYONS COSMIQUES. By A. Cachon, A. Daudin, L. Jauneau. 117 pp. U. of France Press, Paris, France, 1957. Paperbound.

Gmelins Handbuch der Anorganischen Chemie (8th Revised Edition). Verlag Chemie, GmbH, Weinheim/Bergstrasse, Germany, 1957. No. 28, CALCIUM: Part A, Sect. 2; 488 pp.; paperbound \$55.68. No. 32, ZINC; 1025 pp.; \$138.00. No. 68, PLATIN: Part D, Platinum complex compounds with neutral ligands; 638 pp.; \$90.00.

THERMODYNAMICS: An Advanced Treatment for Chemists and Physicists (3rd Revised Edition). By E. A. Guggenheim. 476 pp. (North-Holland, Holland) Interscience Publishers, Inc., New York, 1957. \$9.75.

SCIENTIFIC FRENCH: A Concise Description of the Structural Elements of Scientific and Technical French. By William N. Locke. 112 pp. John Wiley & Sons, Inc., New York, 1957. Paperbound \$2.25.

PRACTICAL PHYSICS: A Course of Introductory Experiments. By R. W. Parsons. 89 pp. (Hong Kong U. Press) Oxford U. Press, New York, 1957. Paperbound \$2.00.

THE LIFE AND DEATH OF CELLS. By Joseph G. Hoffman. 301 pp. Hanover House Books, Garden City, N. Y., 1957. \$4.50.

REALITIES OF SPACE TRAVEL: Selected Papers of the British Interplanetary Society. Edited by L. J. Carter. 431 pp. Putnam & Co. Ltd., London, England, 1957. £1.15.0.

THEY WENT TO COLLEGE EARLY: Evaluation Report No. 2. 117 pp. The Fund for the Advancement of Education, New York, 1957. Paperbound.

GALACTIC NEBULAE AND INTERSTELLAR MATTER. By Jean Dufay. Translated by A. J. Pomerans. 352 pp. Philosophical Library, Inc., New York, 1957. \$15.00.

SCIENCE AND HUMAN LIFE. By J. A. V. Butler. 162 pp. Basic Books, Inc., New York, 1957. \$3.95.