most appreciated if studied in conjunction with a more theoretical treatment of enzyme chemistry or of metabolism. Under these circumstances the text would be recommended to students or to interested investigators trained in areas peripheral to biochemistry.

DIVISION OF BIOCHEMISTRY
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
URBANA, ILLINOIS
WILLIAM J. RUTTER

Correlation between Physical Constants and Chemical Structure. Graphical Statistical Methods of Identification of Mineral and Fatty Oils, Glass, Silicones, and Catalysts. BY H. I. WATERMAN, Professor of Chemical Technology, Technical University, Delft (The Netherlands), in collaboration with C. BOELHOUWER and J. CORNELISSEN, Research Associates, Delft, Technical University. D. Van Nostrand Company, Inc., 120 Alexander Street, Princeton, N. J. 1958. v + 120 pp. 17 × 24.5 cm. Price, $5.25.

The authors show how they have used simple graphic methods to correlate physical properties of a complex organic or inorganic material with the elementary composition or chemical structure of the material. Specific examples are given for mineral oils and related hydrocarbon mixtures, fatty acids, glasses and silicones, and coal.

Physical properties studied by the authors include density, refractive index, molecular weight, surface tension, kinematic viscosity, magneto-optical rotation and the Faraday effect. Chemical structure is in terms of ring number per average molecule (naphthenic, aromatic or paraffinic), percentage of carbon in ring structure (naphthenic, aromatic or paraffinic), or degree of branching in saturated molecules.

Each graph takes the form of a family of curves showing the relationship between two physical properties for each of several elementary compositions or chemical structures.

The formula $\log v = (A/T^x) + B$ (A, B, X = constants) for the temperature dependence of kinematic viscosity is shown to be useful for investigating such materials as mineral oils, silicones and glasses.

In the final chapter, triangular graphs are used to study the effects of catalysts in kinetic studies of the hydrogenation and the chlorination of organic compounds.

The entire book appeared in *Anal. Chem. Acta*, **18**, No. 5 (1958).

COLOR PRINT AND PROCESSING
EASTMAN KODAK COMPANY
ROCHESTER 4, NEW YORK
GRANT WERNIMONT

Nuclear Reactor Experiments. By the staff of Argonne National Laboratory, Operated by the University of Chicago for the United States Atomic Energy Commission. J. BARTON HOAG, Editor and Contributor. D. Van Nostrand Company, Inc., 126 Alexander Street, Princeton N. J. 1958. xv + 480 pp. 16 × 23.5 cm. Price, $6.75.

The international reactor school at Argonne National Laboratory has been in existence for several years and its graduates are now putting their training to practical use in setting up atomic energy programs in dozens of countries. "Nuclear Reactor Experiments" shows clearly the high level of the equipment used in their training—a first class high-flux research reactor with all its complex facilities. It is stated that the purpose of the course, lasting 7 months, is "to give the rough knowledge needed of the whole reactor field to enable work in teams." Obviously this aim implies a skimming over many subjects in cursory fashion. One may argue with this objective of a reactor training course, but the experiments here described show that the participants get at least brief acquaintance with a wealth of neutron physics and reactor techniques.

The material covered includes radiation detectors, measurements of diffusion lengths and neutron "age," "exponential" experiments, measurement of neutron cross sections, operational characteristics of a reactor, heat transfer, metallurgical treatment of fuel, corrosion and radiation effects on materials, "hot" laboratory techniques, and chemical processing. The book is actually a laboratory manual only, describing specific experiments, and including a small account of the physical facts behind each technique. The description of each experiment is detailed, complete with precise instructions for various manipulations, and reproduction of neat "data sheets" for calculation of results.

The material other than description of experiments is not of sufficient value to render the book useful as a text or reference. Furthermore, the experiments are built around the particular equipment in use at Argonne. Similar facilities are available at other reactors, but much of the manual is so closely linked with Argonne that it would not be applicable at other reactors. Other than its obvious value for students at the Argonne school, it would seem most useful as a guide to those setting up training centers with other reactors. They could not easily procure all the complex instrumentation of the Argonne school—this reviewer well knows the time scale involved, having designed some of the Argonne experiments a decade ago—but the book would be an excellent guide to the techniques now in use at a modern reactor laboratory.

PHYSICS DEPARTMENT
BROOKHAVEN NATIONAL LABORATORY
UPTON, LONG ISLAND, N. Y.
DONALD J. HUGHES