encumbered by theory. The second part (Polarographische Bestimmungen) outlines the scope of polarography by means of a variety of examples of the polarographic behavior of diverse inorganic and organic substances. The text is richly and very effectively illustrated by typical polarograms. The booklet concludes with some abridged tables of "depolarization potentials" and half-wave potentials of common inorganic and organic substances.

The treatment may seem to be parochial in the sense that the techniques originally developed by the author and his collaborators are described in minute detail, and scant mention is made of subsequent developments by other investigators. The fact is, however, that most of the basic principles and techniques of polarography do indeed stem from Dr. Heyrovsky's Czech school. The booklet should be appreciated for what it is, *i.e.*, a primer written by a master.

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Technique of Organic Chemistry. Volume I. Part II. Physical Methods of Organic Chemistry. Third Completely Revised and Augmented Edition. Editor, ARNOLD WEISSBERGER. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. xii + pages 895–1797. 16 × 23.5 cm. Price, $24.50.

The title of this volume, as is also the case with others in the series, is inexact. Certainly the subject of these books is not the technique of organic chemistry in the usual sense. These volumes contain, rather, fairly detailed descriptions of the principles and practice of physical methods which have been applied to the solution of chemical problems; these techniques can be used in organic chemistry, though not in every case have they been so applied. But this shortcoming is not a serious one. The "Technique of Organic Chemistry" has become so well known during its relatively short existence that every practicing organic chemist must be familiar with its content.

These books are necessarily more mathematical than is usual in treatises on organic chemistry, but it is hoped that the organic chemist with an innate fear of mathematics is disappearing.

The present volume contains descriptions of some of the most powerful tools for structure determination available to the chemist today. Recently publicized research leaves no doubt concerning the value of neutron, electron and especially X-ray diffraction methods; the use of high speed computing techniques promises to make these methods even more widely applicable in the near future. X-Ray microscopy is a new field which, though as yet untried in organic chemistry, holds considerable promise because of the advantages it offers over ordinary light microscopy and electron microscopy. Microspectroscopy is not only important to the natural products chemist who deals with very small quantities, but it has already shown its worth in the location of chemical constituents of biological systems. The modern organic chemist usually will not have all these techniques at his disposal, but he should know that they exist and where they can be applied. He must, therefore, be familiar with the principles by which they operate.

In addition to these newer techniques, the present volume discusses older methods, some of which have ceased to be very important. Crystallochemical analysis and molar refraction are certainly not as useful in the identification of organic substances as is infrared spectroscopy. This is not to say that a knowledge of these methods is no longer valuable, but in the interest of keeping a treatise such as this to a reasonable size (Volume I in its present revision will consist of four parts containing roughly 3500 pages; at a cost of $24.50 a part, this comes to $98.00 for the volume), these could have been left out as newer techniques were added. This seems especially reasonable in view of the fact that the chapters discussing these older techniques appear in essentially the same form in earlier editions of the work.

This brings up the only serious fault of the present volume: it is meant to be a completely revised and augmented edition, and yet few changes have been made. Only one of the twelve chapters, that on X-ray microscopy by W. C. Nixon is new; the rest all have counterparts in the second edition. Of these, that on X-ray crystallography by W. N. Lipscomb has been rewritten completely and bears no resemblance to the earlier chapter on X-ray diffraction by I. Fankuchen. It is perhaps the best chapter in the book. The chapter on electron diffraction was done by L. O. Brockway in both the second edition and the present volume; though the format has been kept the same, the exposition has been freshened by the choice of a new example to explain the method. The other chapters, "Determination of Diffusivity" (A. L. Geddes and R. B. Pontius), "Determinations with the Ultracentrifuge" (J. B. Nichols and E. D. Bailey), "Refractometry" (N. Bauer, K. Fajans and S. Z. Lewin), "Determination of Crystal Morphology" (the late M. A. Peacock, J. D. H. Donnay and G. Donnay), "Crystallochemical Analysis" (J. D. H. Donnay and G. Donnay), "Light Microscopy" (E. E. Jelley), "Microspectroscopy" (E. R. Blout), "Electron Microscopy" (F. A. Hamm), and "Neutron Diffraction" (J. M. Hastings and L. M. Corliss), are virtually identical with the corresponding ones in the previous edition. This similarity ranges from the addition of a few sections on diffusivity and the ultracentrifuge, through the addition of several references on microspectroscopy, to exact identity in the case of neutron diffraction. The latter is especially to be deplored when, in these authors own laboratory, neutron diffraction is yielding very useful information about hydrogen bonding in organic systems.

It seems pointless to issue a new edition which contains so little new work. A much less expensive way to modernize the treatise would have been to do what has already been done once before: to publish a supplement to the second edition. Though this book is decidedly valuable to chemists, its purchase can, unfortunately, be recommended only to those who do not have the second edition.

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Physical Chemistry of Surfaces. By ARTHUR W. ADAMSON, Department of Chemistry, University of Southern California, Los Angeles, California. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1960. xiv + 629 pp. 16.5 × 23 cm. Price, $12.75.

Interest in the broad field of surface chemistry has increased so rapidly in recent years that conscientious efforts to assemble and clarify material in this area are most welcome. Certainly in few, if any, areas of physics and chemistry can one afford to ignore the properties of surfaces or interfaces and the films that form at interfaces. In a very readable book, Professor Adamson has organized and interpreted much of the current as well as the classical work on surfaces. The discussions clearly reflect the author's strong background in surface chemistry at the University of Chicago, where he was greatly influenced by the breadth and depth of Professor W. D. Harkins' interests and by the thoroughness and care of Dr. G. E. Boyd's counsel.

Although the "Physical Chemistry of Surfaces" was designed primarily as a textbook for college seniors and graduate students, both theory and practice are covered more fully than is customary in texts. The comprehensive nature of the book and the relative emphasis on the topics discussed can be gained from a list of the chapters with the number of pages in each: Capillarity (42); The Nature and Thermodynamics of Liquid–Gas Interfaces (46); Surface Films on Liquid Substrates (68); Electrical Aspects of Surface Chemistry (45); Surfaces of Solids (72); Long-Range Forces (11); Friction and Lubrication (27); Wetting, Flotation, and Detergency (29); Emulsions and Foams (31); The Surface Area of Solids and an Introduction to Adsorption (28); Adsorption of Gases and Vapors on Solids; the Surface Area of Solids (65); Chemisorption and Catalysis (37); Adsorption from Solution (22).

Solid surfaces and adsorption on solids are justifiably given much space. However, one of the longest chapters concerns surface films on liquids—a subject that continues to grow rapidly because it is basic to such divergent areas as molecular structure and orientation, polymer behavior, water evaporation, emulsions, foams, and biological membranes. The discussion of surface films on liquids is subdivided into forty-two sections.