

thirds of the book, contain methods and formulas for 3500 histologic preservative, fixative, staining, mounting, and miscellaneous procedures. These are grouped according to a decimal classification. Each chapter begins with an outline of its contents. The directions are considerably condensed by the uniform use of the metric system, with the solutions adjusted generally to give 100 parts, except for the fixatives which are adjusted to give 250 parts.

A discussion of the more important methods is included, and practical applications are frequently given. Literature references appear to be complete.

It is unavoidable in a book of this type that many procedures of purely historical interest are included. Perhaps the book will serve to revive some of the beautiful techniques that were the pride of the older microscopists but which are unsuited to the modern mass production of slides.

The Microtometist's Formulary and Guide shows an almost deliberate avoidance of histochemical methods. Even the Prussian blue procedures, which have been used by biologists for almost a century, are excluded.

This book should be a part of the library of every serious histology laboratory.

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Instrumental Analysis. John H. Harley and Stephen E. Wiberley. Wiley, New York; Chapman & Hall, London, 1954. vii + 440 pp. Illus. \$6.50.

This book aptly fills a very definite need. The tremendous increase in instrument methods of chemical analysis has called for just this type of treatment. The authors discuss both the theory and applicability of practically all currently used instrument techniques. Sufficient theory is given so that a clear-cut understanding of the principles of a method is possible. Copious literature references are included for the reader who seeks more detail, but the treatment in this book is adequate for most purposes.

It is refreshingly up to date and supplies the reader with pertinent information on specific commercial instruments now on the market. Of course it is inevitable that some of the information given no longer holds true, but that is the penalty paid for completeness. I would have liked to have seen some reference to the use of the pressed-disc KBr technique in infrared because of its importance and usefulness, but perhaps this is expecting too much since it is only a year or so since this technique was introduced.

In general the authors have brought the latest developments in each of the fields discussed to the fore, and they are to be commended on the clarity of their presentation. This book should be useful not only to the practicing analytic chemist, in giving him both the fundamental principles involved for new techniques and sufficient practical know-how so that he can make use of a method, but it should be of even greater value to the nonanalytic chemist in giving him, under one

cover, the theory and power of the newer analytic techniques and sufficient information to enable him to make a good estimate of the probable applicability of a specific technique to a specific problem.

The instrument techniques that are discussed include visible, ultraviolet, and infrared spectrophotometry; Raman and emission spectroscopy; fluorometry; flame photometry; colorimetric pH, potentiometric, conductimetric, amperometric, and high-frequency titrimetry; polarography; x-ray and mass spectrometry; and, of course, radiotracer techniques. A chapter on practical experiments is included to serve for a college laboratory course. This is an excellent treatment, remarkably brief and clear, of a complex field of science.

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Adhesive Bonding of Metals. George Epstein. Reinhold, New York, 1954. ix + 218 pp. Illus. \$2.95.

It is probable that relatively few people are aware of the increasing extent to which industrial adhesives are being used as substitutes for rivets, bolts, weldments, and other conventional methods of fastening metal parts together. The author states:

It is the purpose of this book to give sufficient details so that an engineer or technician, faced with the problem of joining two materials, will be able to determine if an adhesive bonded joint would be advantageous, what type of adhesive to select, how to employ the adhesive and how to design the joint for optimum performance.

All things considered, the book comes surprisingly close to achieving this rather ambitious goal.

After an introductory chapter discussing the advantages of adhesive fastening, with perhaps insufficient attention to the disadvantages, the chemistry of the basic materials is reviewed. The real meat of the book is contained in three valuable and lucidly written chapters dealing with the problems of formulation of metal adhesives, design and testing of adhesive joints, and bonding techniques.

The roles and effects of the various ingredients in the formulation of adhesives are discussed extensively, and examples are given. Emphasis is placed on thermosetting structural (high strength) adhesives. In the chapter on bonding techniques, emphasis is placed on the very important step of surface preparation, and detailed instructions are presented for the optimum mechanical and chemical surface treatments for many metals and alloys.

Two briefer chapters are devoted to heat-resistant adhesives and adhesively bonded metal sandwich structures. The author has drawn extensively on the growing applications in the air-frame industry for most of the many illustrative examples.

The book is not without faults. The tyro is not warned of the difficulties that may be encountered because of adsorption of moisture. The second chapter, dealing with the chemistry of adhesives, will un-