

foods, drugs and adulterants, textile fibers and paper; the microscope in medicine, sanitation, forensic cases, chemistry, petrography and metallography. Sixty figures elucidate the text.

The material is for the purpose of illustration and conservative suggestion rather than detailed description. The book contains but little original data and does not attempt to treat any single subject with completeness from the standpoint of the expert. A bibliography at the end of each chapter will be of use to the student stimulated to consult the more exhaustive works.

The book can be very helpful to beginning microscopy students of almost every class.

ROBERT E. LYONS.

THE POLARISCOPE IN THE CHEMICAL LABORATORY. By GEORGE WILLIAM ROLFE. New York: The Macmillan Company. Price, \$1.90.

At the present day no laboratory for ordinary research, commercial business, or teaching is considered complete without a good polariscope. There has long been need for a handbook less ponderous than Landolt's for the use of students and analysts. This work of Rolfe is intended to supply this want.

The author gives a short account of the fundamental principles of optical polariscopy. A brief history of the polariscope is given with a description of the ordinary types. The polariscope as a saccharimeter is next described with an account of the accuracy of saccharimetric uses. The methods of installing and caring for a saccharimeter are given in some detail and are of great value. Apparatus which are used in connection with the polariscope are briefly described. Special forms of polariscopes also receive a separate chapter. The general principles of polarization of cane-sugar for commercial purposes are set forth and the ordinary errors attending the commercial use of the polariscope for the determination of cane-sugars are pointed out. The author is of the opinion that the sum of the errors of ordinary commercial work is practically zero, since some of them, such as the presence of lead precipitate, tend to increase the polarization, and others tend to diminish it, as for instance, polarization at temperatures above that at which the instrument is standardized. This observation could hardly be applied with justice to the ordinary polarization of sugars for dutiable purposes. The great bulk of these sugars are centrifugal sugars of the first crystallization of an average polarization of about 95. The lead precipitate in these sugars is extremely minute. They, however, are often

polarized at from 10° to 15° above the standard temperature of the instrument, thus introducing an error of from 0.3 to 0.5 per cent.

Usual methods of polarization where more than one optically active substance is present are described. The importance which the author attaches to errors caused by change in specific rotation of sucrose due to concentration would lead the reader to the opinion that such change is greater than that in specific rotation due to variation of temperature; such, however, is not the case.

A valuable chapter is that relating to the application of the polariscope in scientific research; this shows how the polariscope may be used in the study of some of the fundamental principles of physical chemistry. A valuable chapter is also contributed on the application of the polariscope to other bodies besides carbohydrates. A very interesting and practical part of the work is not indicated by the title; namely, pages 111 to 220 inclusive, which deals chiefly with technical subjects relating to sugar and starch manufacture, and the chemical methods for the determination of sugars and other carbohydrates.

The book as a whole will prove useful. It may be regarded as a reduction to practice of Landolt's work, to which have been added many practical suggestions derived from the large experience of the author.

H. W. WILEY.

SEWERAGE AND SEWAGE PURIFICATION. By M. N. BAKER, PH.B., C.E.
New York: D. Van Nostrand Company. 1905. Price, 50 cents.

This book is a second edition of No. 18 of the Van Nostrand Scientific Series which was published in 1895. The study of the past ten years has added decidedly to our knowledge of the bacterial changes that sewage undergoes as the decomposition of the organic matter that it contains proceeds. The ideal purification of sewage is accomplished when its noxious substances are completely changed into mineral substances and harmless gases. To do this as completely as possible and at an allowable cost is the aim of the sanitary engineer, and the studies of the past ten years have had this end in view.

Mr. Baker has had the opportunity to study, not only in this country but in England, the change in methods that has resulted from this study, and the portion of his book that treats of sewage purification, the last fifty-eight pages, has been almost entirely rewritten, and describes briefly but clearly the treatment of sewage by intermittent filtration beds, by septic tanks, by contact beds