

The eighty pages of text seem brief for the amount of fact they contain and a stupendous number of separate observations are condensed into the fifty-two tables, some of which are large, opening out like maps. The following are some of the titles of chapters:

I. The effect of different kinds of filter paper upon the height to which liquids ascend. . . . IV. The effect of the length of paper immersed on the height to which liquids ascend. . . . VII. Influence on the ascension of a mordant action on the fibers. . . . VIII. Capillary analysis of the extracts from separate zones which were obtained by a preliminary capillary analysis. . . . IX. Sensitiveness of capillary analysis. . . . X. Capillary analytical tests of water solutions of alkaloids. . . . XI. Capillary experiments with members of different homologous series of organic substances. . . . XII. Capillary experiments with water solutions of inorganic salts. . . . XIV. Capillary experiments with milk, with skimmed milk and with each diluted.

In some cases the results are gratifying, for instance potassium bichromate—sulphuric acid gave a positive test for strychnine on the filter paper strip when only one part of strychnine was present in 1,600,000 of the solution, while the same reagents did not detect one part of strychnine in 25,000 in the solution itself. Similar results were obtained with other alkaloids. In other cases the results are not so satisfactory. For instance, in one hour, pure milk rose 14.1 cm., diluted with 10 per cent. water it rose 14.7 cm., and diluted with 20 per cent. water it rose 16.4 cm. The difference in these heights is enough to make one hopeful but hardly enough to justify much reliance on the method for detecting watered milk. Capillary analysis in its present stage of development is an art rather than a science.

There is much of value to analysts in the book and it certainly should be in every reference library.

S. LAWRENCE BIGELOW.

A Course of Practical Organic Chemistry. By T. SLATER PRICE, D.Sc., Ph.D., F.I.C., AND DOUGLAS TWISS, M.Sc., A.I.C. London: Longmans, Green & Co. 1907. xiii + 239 pp. Price, \$1.20.

Both authors are connected with the Chemical Department of the Birmingham Municipal Technical School, Dr. Price being the head of the department and Mr. Twiss one of the lecturers.

The occasion for publishing the book, and the field it aims to fill are set forth in the preface as follows: "The recent revision of the Board of Education syllabus for Practical Organic Chemistry has naturally created the necessity for a text book which will cover the complete syllabus. . . . The present book really consists of an amplification of the notes which have been given to our own students. . . . who comprise (1) those working for the Board of Education examinations, and (2) for the B.Sc. degree," the classes being, "with few exceptions, held only in the evening."

The subject matter is divided into three Parts or Stages, corresponding presumably with those of the Board of Education syllabus, Stage I apparently covering Fatty Chemistry, and Stages II and III, Aromatic. Each of these stages is further subdivided into chapters, the contents of which appear to have been decided by genetic rather than by structural considerations.

It is, of course, a difficult matter for one not thoroughly familiar with the local conditions which this book aims to meet, to pass judgment upon how well it is likely to fulfil its mission. It is designed primarily to enable students to pass certain fixed examinations, and only those on the ground can tell how well it is succeeding.

As a laboratory text-book of organic chemistry for students in this country, it cannot be recommended. The style is too much that of the "cook book" type, and in the arrangement of the matter, representatives of widely different classes of compounds are grouped together because they happen to be obtained from the same substance. Formic acid, for this reason, appears in the chapter on bibasic acids. In several cases, the preparation of a substance is given in one part of the book and its characteristic tests and reactions in quite another. Many pages are devoted to separations of a special list of selected organic compounds, the scheme for which is given in detail.

A laboratory text-book should be something more than a collection of preparations. It should be so arranged as to be a useful adjunct to the lecture work, illustrating by practical examples the methods of preparation and classes of compounds discussed in the lecture course. In a subject of such limitless detail as organic chemistry, it is very important that the basis of classification should appear clearly in any laboratory book, so that the student should see this at once by the preparations given. The reviewer is also of the opinion that the working out of elaborate schemes for identifying one of a limited group of compounds, or separating a mixture of several of them, is undesirable from many points of view. The student should be taught the fundamental tests and reactions upon which all this depends, and then work out his own scheme of identification or separation, advancing from simple to more complex mixtures. This stimulates his interest, sharpens his powers of observation, and develops self-reliance, while the following out of a scheme devised by somebody else to cover a limited number of substances does not give him the same chance to test his own strength.

The student working through the book will, to be sure, gain a very good practical knowledge of the more important methods of preparing organic compounds, as well as an intimate acquaintance with a considerable number of typical organic substances, but if taken up in the order given, he will find it necessary to re-assort this information quite extensively before it

will run parallel to any of the lines of classification along which the subject of organic chemistry is generally developed.

As stated before, however, since the book aims to cover only a special field and is designed primarily for "home consumption," the above criticisms should not be construed too harshly. There are, on the other hand, many excellent features. The preparations selected are typical, the details are given clearly, and much more space is properly accorded characteristic reactions and analytical tests than is customary in such books. The book is in attractive form, and the proof has evidently been read with great care.

MARSTON TAYLOR BOGERT.

Practical Methods for the Iron and Steel Works Chemist. By J. K. HESS, PH.C., Chief Chemist for the Carnegie Steel Company, New Castle, Pa. pp. 60. Easton, Pa.: The Chemical Publishing Co. 1908. Price, \$1.00.

The author has compiled from various sources, methods for the analysis of such materials as iron ores, coke, coal, slags, irons and steels, fire-bricks, cements, boiler waters, fats, bearing metals, and chimney and producer gases. These have been modified to conform to his experience and it is stated that all procedures have been carefully tested, and that the directions as given are intended particularly as a guide to analysts of limited experience. For such readers the author also describes some of the essential features of a works laboratory, and gives directions for the general conduct of laboratory work, the preparation of reagents, or standards, and adds a collection of useful tables.

In his endeavor to make this a "practical" manual, the author has made his directions so concise as to approach, if not to pass, the danger point, especially in a work designed for inexperienced analysts. The volume is of interest as an expression of opinion on the part of one who is familiar with the demands made upon the laboratory of an iron or steel works, regarding methods best adapted for use in such a laboratory.

H. P. TALBOT.

A Laboratory Outline for Determinations in Quantitative Chemical Analysis. By ALBERT F. GILMAN, S.B., A.M., Professor of Chemistry, Ripon College. pp. 88. Easton, Pa.: The Chemical Publishing Company. 1908. Price, 90 cents.

The procedures described include a considerable range of gravimetric analyses and the volumetric determination of iron by the permanganate, dichromate, and stannous chloride methods. Each procedure is accompanied by a series of questions to be answered by the student, and a page upon which it is apparently intended that the student shall record his observed data.

It is, unfortunately, impossible to commend this little volume. It is badly written, the procedures are not accurately described, and many of them are unreliable, as the author states with singular frankness but