

The distillates gave no reaction for chlorine, and possibly the high figure was due to the presence of a little acetate.

Finally, in order to get rid of the disturbing influence of the coloring matters the following method was adopted. Fifty cc. of vinegar with fifty cc., of water and a drop of phenolphthalein were titrated with decinormal baryta, the latter being added to three cc. in excess, and then followed by five cc. of decinormal sulphuric acid. Whether the precipitates were allowed to settle in the cold or with warming, appeared to make no difference in the results, the coloring-matters being carried down very nicely. In one trial the precipitate was filtered off and thoroughly washed before titrating back with acid: in another, the assay was made up to 100 cc. in a graduate and twenty-five cc. were pipetted off and titrated. The former corresponded to 4.48 per cent., the latter to 4.52 per cent. The bulk of the precipitate was approximately one cc., and making the requisite correction gives us 4.48 for the latter result also.

These figures being higher than those obtained directly, I then went back to the use of turmeric, so highly recommended by Pettenkofer, and obtained 4.43 per cent. With great care in the observation of the first brown ring which forms in the presence of the slightest excess of baryta, when a drop of the titrated solution is brought upon turmeric paper, the end reaction can be detected with certainty. The reading is lower than that with phenolphthalein and may be relied upon even with highly colored vinegars. For ordinary purposes, however, the latter indicator with decinormal soda is adequate.

---

### NEW BOOKS.

AN ELEMENTARY COURSE IN EXPERIMENTAL AND ANALYTICAL CHEMISTRY. BY JOHN H. LONG, M.S., Sc.D., PROFESSOR OF CHEMISTRY AND DIRECTOR OF THE CHEMICAL LABORATORIES OF THE SCHOOLS OF MEDICINE AND PHARMACY OF NORTHWESTERN UNIVERSITY. pp. 507. Chicago: E. H. Colegrove & Co.

This book considers three subjects. Part I, covering 275 pages, is devoted to experimental chemistry. The first chapter presents experiments in crystallization, in distillation, and those

that show the difference between physics and chemistry. In the second chapter, oxygen, hydrogen, and their compounds are considered. The halogens and their derivatives constitute the third chapter. At this point elements and compounds, as well as the use of symbols, are discussed. Nitrogen and the atmosphere are the subjects of experimentation in chapter four, while the fifth, sixth, and seventh chapters are occupied by the other frequently occurring non-metals and their derivatives. Seven chapters follow; in them facts relating to the more important metals are presented in simple experiments. Analytical tests follow each metal. Combining weights, the atomic hypothesis, and valency are considered immediately after the metal magnesium. It may be inferred from this that the author advocates first giving to the student an abundance of facts before deducing theories or entering upon a discussion of fundamental principles. This thought is constantly before the reader throughout the entire book. The explanations accompanying the numerous experiments in Part I are clear and to the point. It must be admitted that the author has presented his subject in such a manner that good will result. Part II (twelve chapters) is given to qualitative analysis. The subject-matter is not exhaustive, but here, as in Part I, types are presented to the student. These he works out in detail, being assisted in his efforts by valuable explanatory remarks on the part of the author. Part III considers the elements of volumetric analysis. The examples selected for work are typical and cover a wide field. Recent methods of value have not been overlooked. In this section, as in the two preceding sections, the author has presented all the subject-matter in a very clear style. In short, after careful inspection of the book one lays it down with the conviction that it possesses great merit; it is an excellent book and worthy of commendation.

EDGAR F. SMITH.

ELEMENTS OF MINERALOGY, CRYSTALLOGRAPHY AND BLOWPIPE ANALYSIS. BY ALFRED J. MOSES AND CHAS. L. PARSONS. pp. 342, with illustrations. New York: D. Van Nostrand Co., 1895.

This work, as indicated in its preface, is mainly intended for use as a text-book. It is divided into four parts: I. Crystallog-