

faint blue color with ammonium molybdate; with mercuric chloride not even a trace of cloudiness.

I find that the ammonium molybdate as prepared in the laboratory gives the best results.

ALLEN ROGERS.

Professor C. F. Mabery has sent to the Paris Exposition, at the invitation of the United States Geological Survey, 150 specimens of products from petroleum, illustrating the composition of Pennsylvania, Ohio, Canadian, California, South American, and Japanese petroleums, and specimens of nitrogen compounds from California petroleum, and sulphur compounds from Canadian petroleum. Other specimens illustrate the composition of paraffin.

NEW BOOKS.

DESCRIPTIVE GENERAL CHEMISTRY. BY S. E. TILLMAN, Professor of Chemistry, Mineralogy and Geology, United States Military Academy. Second Edition. New York: John Wiley and Sons. London: Chapman and Hall. x + 429 pp. 8vo. cloth. Price, \$3.00.

This book was written to meet the requirements for a text-book on chemistry at the Military Academy at West Point. It aims to give in compact form the salient facts of chemistry that the professional soldier ought to know. The time available for the study of chemistry at the Academy is a little less than two-hundred hours, so that in order to cover the subject but a very limited amount of laboratory work can be undertaken. The chief aim therefore is to impart to the student the necessary information, rather than to make the element of mental discipline the more prominent one. Study of a text-book accompanied by recitations and experimental and explanatory lectures together with a small amount of selected laboratory work consequently make up the course pursued.

The book is divided into six chapters which are as follows: I. Essential Principles of Chemistry, pp. 1-58; II. Affinity, pp. 59-81; III. Non-metals, pp. 82-192; IV. Metals, pp. 193-310; V. Organic chemistry, pp. 311-356; VI. Applications of Chemistry, pp. 357-411. In the first chapter the general principles of chemistry are stated, while in Chapter II, the law of mass action, strength of acids and bases, theory of solution, electrolysis,

thermal chemistry, periodic law, etc., are discussed. All this is of course done very briefly, and in connection with these two chapters, in particular, the explanatory lectures mentioned above will no doubt be very essential. Chapters III and IV are not unlike chapters on the same subjects found in other texts. In the 45 pages devoted to organic chemistry only a number of groups of such compounds as are of the utmost practical importance to the particular student for whom the text is intended could be considered. The applications of chemistry in the last chapter include calorific value, explosives, fixed oils, dyeing, and the manufacture of glass, pottery, coal-gas, beer, distilled liquors, wine, bread, soap, leather, and cheese. While this chapter is devoted to practical applications exclusively, the author has not neglected to seize the opportunities of pointing out numerous practical applications in the chapters preceding.

The author has earnestly endeavored to incorporate recent discoveries and theories into his book. While his statements are generally clear, they are unfortunately not always free from inaccuracies. Only a few instances of this will here be mentioned. So on p. 69 the author neglects to point out that the assumption of electrical charges on the ions is a salient part of the theory of electrolytic dissociation, but simply adds in a footnote that the ions are probably electrically charged. On p. 71 heat of formation is confused with the thermal change that accompanies a chemical reaction. On p. 99 the statement is made that the form of the crystal is due to water of crystallization.

The book as a whole is good for the purpose for which it was written. The selection of the topics treated (upon which so much depends in a case like this) is wise; and the presentation is good considering the very condensed form necessitated. There can be no doubt that the book will meet the special needs of the students at the Military Academy better than any other textbook that is available at present.

LOUIS KAHLENBERG.

LEITFADEN FÜR DEN UNTERRICHT IN DER ANORGANISCHEN CHEMIE. BY DR. JOACHIM SPERBER. Zürich: Verlag von E. Speidel. 1899. 119 pp.

This is the first part of an extended treatise on inorganic chemistry. It treats of the usual gaseous elements, the halogens, and the non-metals. The author has applied the