

TABLE III.

Kahlbaum's stearic acid. Potassium hydroxide, strength 0.00499 g. per cc. Indicator, phenoltetrachlorphthalein.

Weight of acid in grams evaporated.....	1.1086	0.9967
Weight of acid in grams not evaporated.....		0.9778
Cc. of alkali required.....	47.71	42.81
Cc. of alkali required.....		42.21
Cc. calculated for 1 gram acid.....	43.04	42.96
Cc. calculated for 1 g. acid.....		43.17
Average, 43.00 cc.		

These results agree with those given above for palmitic acid in showing that slight esterification takes place—sufficiently to require consideration in certain cases.

As might have been expected, samples subjected to long-continued treatment with boiling alcohol showed decided esterification. For example, a sample of palmitic acid so treated with alcohol for 8 hours required 0.69 cc. less alkali than before boiling, while another, after 24 hours' treatment, required 0.84 cc. less of the alkali.

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NEW BOOKS.

Colloids and the Ultra Microscope. By RICHARD ZSIGMONDY. Translated by JEROME ALEXANDER. 238 pp. John Wiley & Sons. Price, \$3.00.

The subject of the colloidal state has within the past ten years grown to be almost another such active offspring of physics and chemistry as physical chemistry itself. It has quickly incited the active interest of scientists in many apparently remote fields, and to-day it demands the attention of both the pioneer investigator and the practical manufacturer. Through glue and glass, through geology of chert and coagulation of blood corpuscles, it clears a new and interesting way. There has been great need of a comprehensive treatise on the subject in English, and this first book of Zsigmondy's seems adapted to partly fill the requirements. An introduction of ten pages points to the differences between solutions proper and the colloidal state, which forms also the subject of Chapter I. Continuation of this attempt at clarification of definition through Chapter II leads to the introduction, for the first time, of many facts known to the colloid chemist, but which might have been better postponed until the inquiring reader had learned some of the results of the numerous investigations which are described much later in the book. Chapter III, comprising 60 pages, could be read before the others to advantage, by a novice, as it contains much of the important early work. Graham's remarkable publications are well given quite fully. Chapters IV, V, VI and VII are devoted to the ultra micro-

scope, which the author, in conjunction with H. Siedentopf, developed for study of colloidal solutions. Naturally, the application of the method of the ultra microscope forms a large part of this book, and many colloidal solutions are considered largely from the point of view of the size of the particles thus made visible.

It seems rather remarkable that the index contains no reference to electrical migration of colloids, to the assumed electrical charge on the particles in suspension, nor to the electrical endosmose or cataphoresis of Wiedemann, which in colloids seem to be intimately associated matters. Electric migration is merely referred to in the text as one of a list of properties attributed to colloids by Bredig and others. The negative electric charges of colloids are briefly touched upon in a theory of the author's that the colloidal particles are combined with hydroxyl ions which give them their negative electric charge. Whether similarly combined hydrogen ions are assumed to give positive charges to positive colloids is not considered. The peculiar quantitative relationships discovered by Picton and Linder, Hardy and others, in which negative ions seem to determine coagulation of positive colloids and positive ions, the coagulation of negative colloids, and that, too, with activities dependent in a calculable manner (Whetham) upon the valency and migration rate (Pappada) are omitted by the author. A number of other points which, to the reviewer, are of great interest to one studying this subject, could have been properly introduced in an elementary treatment of colloids.

The major portion of the book is devoted to the author's personal work on the advance in the subject, due to the ultra microscope, and his work on ruby glass. This constitutes one of the most interesting parts of the study of colloids.

The translation work seems to be particularly well done and the book itself, from the publishers' point of view, is attractive.

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