

3. The author concludes that the abnormal chemical composition of Dutch butter during the autumn is largely due to the fact that the farmers leave their cows in pasture until late in the year, subjecting the animals to the combined adverse influences of poor food and inclement weather. When cows are stabled earlier and well fed, this abnormal composition is not observed.

L. L. VAN SLYKE.

THE MANUFACTURE OF ALUM AND THE SULPHATES AND OTHER SALTS OF ALUMINA AND IRON. BY LUCIEN GESCHWIND. New York: D. Van Nostrand Co. 1901. 8vo. Cloth. 387 pp. Illustrated. Price, \$5.00.

Since so little has been written concerning the technology of these subjects, this book is an important addition to this literature. The author has gathered much information about the chemical properties of iron, aluminum and their compounds, which makes this book valuable as a handbook by giving the chemist easy access to information without having to search through volumes to obtain it.

If, however, the author had given more attention to the processes of manufacturing, this book would have been very much more valuable. The methods of making alum, sulphate of alumina, and sulphates of iron from shale, have, in this country, only an historical interest. American manufacturers would not think of operating a sulphate of alumina works according to the methods, which, the author states, are carried on in France.

The book is divided into four parts; *viz.*, first, a theoretical study of iron, aluminum and their compounds; second, the manufacture of the sulphates of iron and aluminum; third, the uses of the sulphates of iron and aluminum; fourth, analysis of iron and aluminum.

A review is given of many of the different methods which have been employed and are now used to obtain aluminum, but the Hall process, which has made cheap aluminum possible, and which is the most important method used, is not even mentioned.

As indicated above, the methods mentioned for making aluminum sulphate are not up to date. The grinding of only 400 pounds of bauxite to 60 mesh per hour is quite insufficient. Stirring a mix by hand is too expensive, and the new method employed at the Noyen works is not the best that could be used. The American trade requires a sulphate of alumina containing 17.5 per cent. Al_2O_3 , of which 1.5 per cent. is basic. Such a cake

can be far more readily ground than the one Geschwind described containing 16 per cent. Al_2O_3 .

In the chapter describing the method of purifying aluminum sulphate, it is stated that the introduction of zinc sulphate is disadvantageous. On the contrary, it is very advantageous with animal-sized paper, and is specifically required by many paper-makers in this country. If the author had included American practice, this chapter would have been much more interesting.

The method described for making crystal alum is essentially the same as that used in this country. The figures which are given are of much interest to any alum-maker.

The method given for analyzing bauxite for alum purposes is open to criticism. It will give too high results. The method of attack used in analysis to determine the alumina available for alum-making, should as nearly as possible correspond to the reaction which takes place in the mix tank.

The chapter on the uses of the sulphates is very interesting and instructive. No one who is interested in these manufactures should be without this book.

Notwithstanding its omissions the book is of sufficient importance to make it very valuable to those engaged in these manufactures, and to the chemical student.

C. D. VREELAND.

VORLESUNGEN UEBER THEORETISCHE UND PHYSIKALISCHE CHEMIE. ERSTES HEFT—DIE CHEMISCHE DYNAMIK. BY J. H. VAN 'T HOFF. Second Edition. Braunschweig: F. Vieweg und Sohn. 1901. xi + 251 pp. Price, 6 M.

Hardly three years and a half have elapsed since the appearance of the first edition of this part of the "Lectures." Its rapid succession by a new edition—or rather, a reprint—bears eloquent testimony, if any had been needed, to the conspicuous merits of the work. In this part of the subject, dealing with chemical equilibrium and reaction speed, the author is particularly at home, for references to his own or his pupils' investigations appear in almost every section. Whether we consider the original arrangement of the material or the masterly handling of the details, the book must be declared eminently successful. The characteristics of the treatment are so familiar to those who possess the first edition, or the English translation by Dr. Lehfeldt, that they need not be described here. In the present edition the only change,