

## NEW BOOKS.

ON THE COMPOSITION OF DUTCH BUTTER. BY DR. J. J. L. VAN RYN. London: Ballière, Tindall and Co. 1902. 55 pp.

Samples of pure butter from Holland having been declared by English chemists to be mixtures of butter and margarine, the Netherlands government directed Dr. van Ryn to make an investigation of the variation in chemical composition of Dutch butters known to be genuine, in order to ascertain the cause of the abnormal composition.

In the first portion of his treatise, the author discusses the characteristics of pure butter, especially with reference to the percentage of volatile fatty acids as represented by the Reichert-Wollny number. He calls attention to the various factors influencing this number, such as advance of lactation, food, environment, etc., stating the views of various authorities.

The second portion of the paper gives the detailed results of his investigation. Samples of butter were obtained during the months of September, October, November, and December, from thirteen different herds, varying in size from 3 to 144 cows each, and from twelve different creameries. It was during the fall months that Dutch butters had been found abnormal. The author gives statements as to number, breed and age of cows, dates of calving, nature of soil, kind of food, and date of stabling. The tabulated analytical results are given under the heads of refraction, specific gravity, volatile acids (Reichert-Wollny), insoluble and soluble acids (Hegner), saponification number (Koettstorfer), and iodine number (Hübl).

The volatile acid number was found to be the best factor to use in studying changes of composition. The following statements indicate the most important results reached :

1. Of 428 samples of pure butter examined, just one-half fell below 25 in respect to the volatile acid number, this figure being the lowest limit accepted in England for pure butter. Nearly 10 per cent. of the samples were below 22.

2. The amount of volatile fatty acids began to decrease in September, and reached its lowest point in October, after which it rose gradually, as indicated by the following monthly averages : September, 24.8 ; October, 23.7 ; November, 25.2 ; December, 26.6.

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