BULLETIN XCVI.

THE COMPOSITION OF MILK, CHEESE, AND WHEY IN RELATION TO ONE ANOTHER.

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An extensive chemical analysis of milk, choese, and whey was begun by us early in May last, to study the constituents of milk in their relation to the yield of cheese. This line of study was suggested by the excellent work upon the investigation of cheese commenced at Geneva, N.Y., in 1891, and by important conclusions drawn therefrom. It is to study this question from the standpoint of Ontario conditions, as well as to bring new facts to light, that this line of chemical investigation has been entered into.

The principal points of the present investigation are :

lst. The degree of uniformity in the proportion of fat to case in in our milk.

2nd. The relation of the fat contained in our milk to its cheeseproducing power.

3rd. The proportion of the fat of the milk lost in whey by our method of cheese-making.

4th. Fat as a basis in apportioning dividends to patrons.

5th. The average composition of our milk, cheese, and whey.

COMPOUNDS CONTAINED IN MILK, CHEESE, AND WHEY.

Water. Milk contains about 87.6, cheese 34.6, and whey 93.4 per cent. of water.

Fat. The fat of milk, cheese, and whey is a mixture of glycerol salts of several acids, and is the same substance that forms so large a portion of natural butter. Milk contains about 3.5, cheese 35.5, and whey 0.24 per cent. of fat.

Casein. Thir is the chief nitrogenous substance in milk, and is commonly called curd. This curd or casein can be precipitated in milk by acids or by the use of rennet. Milk contains about 2.3, cheese 22.1, and whey 0.13 per cent. of casein.

Albumen. Albumen is similar in composition to casein; but, unlike it, is not thrown down or made insoluble by acids or the action of rennet. In cheese making, the albumen passes more or less completely into the whey. The amount in milk is about 0.7, in cheese 1, and in whey 0.76 per cent.

Total Solids. By this term are meant all the compounds (except water) taken together.