torula to produce so much bitterness and bad flavor in the cheese. We must remember, however, that the torula is fully 20 times as large as the lactic acid bacterium; and we may assume that the changes brought about by the torula were in proportion to its size.

Several analyses of curd taken from the factory, just before putting to press, gave as many as 21,000,000 torula per gram; and taking into account the comparatively large size of the organism we see that these results are quite in accord with the bad flavor produced in the cheese.

Butter Experiments.

Professor Dean suggested that if the factory was turned into a creamery for a season or two, the bitter flavor might disappear; but before suggesting that course, we thought it advisable to conduct a few experiments to determine the action of the bitter torula on cream, and its subsequent action on butter.

The experiments on the effect of the bitter torula were made with both sterilized and pasteurized cream.

Sterilized Cream. The lot of sterilized cream was ripened with a starter composed of a culture of lactic acid bacteria and a culture of the bitter torula in equal proportions; 15 per cent. of this mixed culture was used, and the cream was ripened at 22° C. (70° F.) for 18 hours. The acidity at churning time was 0.72 per cent., and the taste was sour and bitter. The cream was cooled and churned. The butter in the granular stage was of good appearance; but somewhat spongy. Two days after making, the sample was scored by an expert judge, who gave it 32 points out of 45 for flavor; and he remarked that the butter had a flat, tallowy taste, without butter aroma.

Pasteurized Cream. The lot of pasteurized cream (160° F.) was ripened with a starter containing the bitter torula, for 12 hours, at 68° F. Very slight acidity developed, but the sample churned easily in 13 minutes. The granular butter was very pale in appearance, had an aromatic odor, and a nauseating, bitter, astringent taste. It would be impossible to sell such butter in any market.

Subsequently several churnings were made as detailed above; and in every case the butter was very bad, and had a pronounced, bitter, disagreeable taste.

These experiments show that the trouble cannot be got rid of by changing from cheese making to butter making for a time.

The majority of summer creameries in this Province do not pasteurize their milk; and where pasteurization is not done, there is danger of trouble from bitter organism, especially if the skim-milk is returned to patrons in the cans in which the whole milk is conveyed to the factory; and the danger is the same whether the factory is used for making butter or cheese.