

agree with me on this point, but time will enable them to shake off their attachments to old habits and free them from prejudices, and then they will agree with me. The unnatural custom of trading the butter through our stores all at the same price, to be mixed with 500 different varieties, should be done away with. This has, perhaps, more to do with the bad reputation of our butter than anything else. As the price depends on the reputation of the butter of the whole country, I see no way through which we can make our butter making pay, except through the creamery system. Here all the butter is made alike, and all will get the benefit of it. As the creamery prospers, so each individual butter maker in the country will be benefited—not only those who are patrons, but also those who are not. With all the weaknesses of the creamery business and its difficulties, it may already be said to be a grand success. A few years more, with the generous co-operation of the farmers, will overcome its difficulties and troubles, and the country will derive its principal harvest from it. Let every farmer, and every lover of good butter, work and act as though success depended on how he does his own duty.

There is a prevailing impression that if we made all our butter good, there would be so much of it that the quantity would reduce the price. Some good butter makers even think that it is to their advantage when others do not make as good butter as they do. This is a great mistake. I am satisfied that even in our own country three times the quantity of butter would be consumed if the quality was better. Let the travelling public speak who are stopping at the hotels, whether ten of them as a rule eat as much butter as one would if the butter was good; and the hotels generally keep as good butter as can be had.

If we, as a country, make a better butter, we will raise the price, increase the demand, fill our pockets, and make ourselves happy.

Comparing Creams with their Percentages of Butter Fats.

The notion is quite prevalent that cows which produce small percentages of cream by volume in their milk should be discarded, giving place to those which produce large percentages. It is well known that the percentage of cream is no reliable guide, but it is hardly ever expected that extraordinary differences are very apt to occur.

The "Scotch Agricultural Gazette" publishes an article from James Long, a dairy expert, in which he gives the following figures:—

Per cent. of cream.	Per cent. of fat.	Per cent. of cream.	Per cent. of fat.
2.00	2.33	16.00	2.76
16.00	4.33	5.00	3.46
13.00	3.16	14.00	2.97
12.00	2.34	17.50	2.51
4.50	4.37	11.50	2.64
20.00	3.67	6.50	4.10

Here the percentage of cream from the milk varies from 2 to 20, and the variation in the percentages of butter fats is but very slight. Comparing the first analysis with the second, it will be seen that the latter has eight times more cream than the former, while the percentage of fat is not doubled. In another case, where the milk shows 20 percent of cream, the fat is actually less than where there is only 4.50 and 6.50 percentages of cream.

These figures should set our creamery farmers a-thinking. The practice of dividing the proceeds of the butter according to the volume of cream delivered to the factory would be a fine thing for the slovenly farmers; but the thinking farmer will not knowingly enrich his stupid, poverty-stricken neighbor in this manner; he will unquestionably prefer making him a present of the money, thereby gaining a reputation for generosity. If the difference is so great in one breed, where is the virtue of pedigree, where like is supposed to produce like? Is it the like of 20 percent of cream or 2 percent? We question if our native stock, a mixture of all breeds, could produce so great a discrepancy.

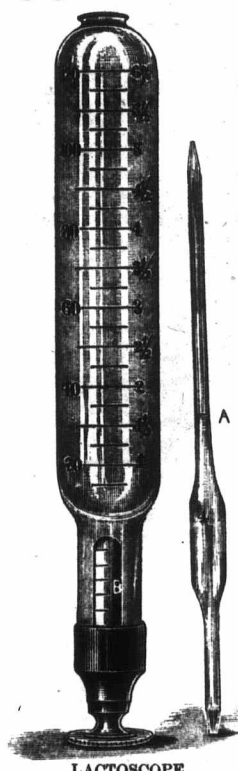
New Method for Testing the Quality of Milk for Butter and Cheese.

Although we still adhere to the position which we took last summer, that the very best quality of butter can only be made in private dairies, yet we desire to encourage the co-operative system all we can, for private dairying will be too limited for a long time to come, and in co-operative creameries an excellent and uniform article can be made, enabling us to compete successfully with rival countries in the world's markets.

We have pointed out the difficulty in securing ample justice to the patrons of the creamery on account of the differences in the butter-producing capacity of the cream from a variety of herds. In the co-operative system the cream must be collected, not the milk, so that the method of analysis should apply to the cream, as the milk cannot easily be reached for analytical purposes.

Herewith we present an illustration of a lactoscope, which we think will remove the difficulty. It is photographed from a lactoscope kindly furnished us by Prof. W. Saunders, of this city, who is the Government analyst for this division. He has tested the accuracy of the instrument by comparing the results with those made by chemical analysis, and he assures us that it is exceedingly accurate. It is constructed strictly on scientific principles, and being the invention of a German Professor, the quantities of water and milk used are given in cubic centimetres.

The small glass tube to the right is filled with milk up to the mark A. This is done by dipping the lower end into the milk; the upper end is then placed into the mouth and the milk drawn up until it reaches the mark A. This measure is four cubic centimetres (nearly a dessert spoonful). By placing the finger on the upper orifice of the tube, the milk is prevented from running out of the other end until it is poured into the lactoscope from above. Water is then poured into the instrument and thoroughly mixed with the milk. B is a small white-colored elevation which stands inside of the glass, and there are five black lines distinctly marked on it. Water is poured in until the milk becomes so transparent that these black marks can be faintly seen through the liquid. The figures on the right now show the percentage of butter that can be made from the milk, and the figures on the left indicate the quantity of water that has been poured in. For example:—If the black marks cannot be seen until the liquid reaches the figure 4, then 100 lbs. of the milk will produce four lbs. of butter, and 80 cubic centimetres of



LACTOSCOPE.

water have been added to the milk. It is easy to conceive that the greater the percentage of butter fat in the milk the more water will be required to bring the milk to a certain transparency. But it may be asked, What has the percentage of fat to do with the quantity of cheese which the milk will produce? and What has the analysis of the fat in the milk to do with the cream? It is now well understood that the fat in milk cannot be sensibly increased without at the same time increasing the total solids, so that the percentage of fat may be taken as a measure of the cheese-producing qualities of the milk, and is sufficiently accurate for all practical purposes. There are now three things to be considered, viz.: The percentage of fat, the total solids, and the specific gravity, any two of which being known the third may be easily calculated. The specific gravity can be easily ascertained, also (by the lactoscope) the percentage of fat, whereby the total solids can be computed or found by reference to tables made for this purpose.

With regard to the testing of cream, we have found that the instrument works quite accurately, but the standards of fat marked on the glass do not apply. The standard volume of cream required to make a pound of butter is 113 cubic inches, or two inches of thickness on the cans in ordinary use, but the extraordinary variations from this standard is the cause of the injustice of the existing system of co-operative dairying. Now, if this standard were used in the lactoscope tests, whereby cream of this density (113 cubic inches to the pound of butter) could be made to correspond to a certain figure marked on the glass, the relative qualities of the cream from different herds could be easily ascertained.

We are still prosecuting the enquiry and comparing the results of our investigations with the German standards. There is great need for such investigation, both for the cheese factories and the creameries, the injustice to the patrons in the one being as great as that in the other.

The lactoscope is only 9½ inches in length and 1½ inches in thickness, so that it can be easily carried in the pocket, and an analysis can be made inside of a minute. The milk or cream can be tested before the eyes of the patrons, and there will be no necessity for one party depending upon the honesty of another. By this method of analysis, the same herd can be converted from cheese to butter, or from butter to cheese. No matter what standard the breeder has aimed at—for butter or for cheese—for in either case each patron is paid according to the percentage of fat in the milk of his cows, and receives nothing for the water it contains, as is the case under the present system. Encouragement will thus be given to liberal feeding and good breeding, instead of the profits of the more intelligent patrons being measured by the quality of milk produced by the poorer herds.

Mr. T. D. Curtis is authority for the statement that last year 60,000,000 pounds of bogus butter was put on the market, most of it as genuine dairy product.

The chief poisonous ingredients used in the manufacture of butterine are caustic soda, nitric acid and mustard oil. Query—When are we going to enjoy our share of the American butterine boom?