

sockets fixed into a horizontal wheel which is attached to gearing proportioned so that the wheel which carries the test flasks makes about ten revolutions to one of the crank. The horizontal wheel is covered by a copper jacket with a cover for the purpose of holding warm or heated water. In creameries heat may be easily supplied by a pipe connection with the boiler. When the flasks are put in the water should be heated up to 200° F. if the flasks have stood after the acid has been added, but if they have not no heating at all is necessary. When the bottles have been whirled for six or seven minutes at the rate of 600 to 800 revolutions per minute, the flasks are filled to the neck with hot water, then twirled for one or two minutes and more hot water added. The flasks are taken out and the per cent. of fat read directly by means of a scale.

The distinctive differences between this method and the Oil Test is due to the simplicity of the former, and the rapidity with which a number of samples of milk or cream may be tested. The Oil Test, it may be stated, determines the butter-making value of the milk, but the late experiments of Vermont station are conclusive in showing that what it has been customary for dairy authorities to consider as a difference in churnability of fats, is really a difference in the methods of churning. Babcock's test could be put into practice in the same manner that the Oil Test is now used. The cream collector could be supplied with numbered tubes with which to take samples of cream, and these brought to the factory could be analyzed and the amount of fat shown entered by the clerk opposite the patron's name and paid for accordingly.

We are anxious to see our cheese makers take up this matter, for the single drawback to the cheese industry that we know of is the present system of paying for milk. This method of Babcock's is simple, true, cheap, and unpatented, so that there is no reason why it should not meet with general favour.

Duration of Milking Period.

While it is a lamentable fact that in general Canadian practice the duration of the milking period is unprofitably short, yet there is a danger amongst the more advanced breeders to err in the opposite direction, especially in the case of cows with their first calves. If strong healthy calves are desired, the dairy cow should have, in conformance with the demands of health, from one month to two months' rest before the next parturition. Weakly and sickly calves are sure to be born if the energies of the cow are taxed too much in requiring of her the support of a growing fetus, which heavily taxes her system, and the more heavy drain of a copious milk flow. The time of drying off should be determined largely by the stamina and maturity of the cow, which every stockman is able to estimate. In conversation with a leading dairyman, he informed us that he had suffered through too readily accepting the advice of others to extend the milking season, for he found that while it was directly profitable to stimulate the milking period to eleven months, yet when he came to look over the calves from his cows he came to the conclusion that the advisability of the practice, with him at least, was questionable. In urging the lengthening of the milking period of young cows the reason is given that the habit becomes fixed with them in after years. While there is truth in the observation, yet animals between two and three years of age, without their own growth finished, are not capable of standing without detriment this double drain on their energies.

It may not, perhaps, show any evil effects at once, but they will be shown none the less surely in the after development. In common practice it is surprising how short the season of milking is made by indifferent feeding, and worse management. There is a far greater possibility of advancement in that direction than in any other phase of the dairy interest.

How can we best Secure and Maintain a Wholesome Public and Private Supply of Dairy Produce?

Read before the Ontario Health Officers' Association, at Owen Sound, by O. J. SHAWKEL.

About three or four years ago in the city of Birmingham, England, a well-known butter and cheese dealer exposed for sale in his store window a certain keg of butter. The dealer was a judge of butter, he had tasted and tested that particular keg, and said that it was good and up to the average, and more than that, it was remarkably cheap. That keg of butter was purchased as an experiment; it had been shipped from Canada, and the Birmingham butter dealer desired to try if he could do anything with Canadian butter in the market. And so that keg had a prominent position in the centre of the marble slab of his handsome plate glass window, and was adorned with a bright show card setting forth its nationality, its superior quality, and above all its cheapness. One, two, three days passed away—people came and went carrying with them their cheese, butter, eggs, bacon and so forth, but that keg from Canada had not been touched. The dealer was a shrewd man and gave his orders accordingly: "Take away that Canadian butter and set it on the other side of the window, put a fresh card and mark it at the full price. But don't say where it came from." The order was obeyed and before night that keg was empty. This incident was of little consequence to the Birmingham dealer, and no doubt has long since passed from his memory. But to us in Canada it represents a leakage of thousands upon thousands of dollars in the national wealth of our Dominion, and points to an evil in our system of butter making which leads the world's market to avoid dealing with us in this article.

Let us now proceed to investigate the subject for ourselves. Great Britain, though a little spot, is far greater than many of us have any idea of in population, in wealth, in national influence, and in her demands for the good things of this life, and among these for those three great B's: bread, butter, and beef. We learn from the valuable papers of Mr. Thos. Macfarlane, Chief Analyst of our Inland Revenue Department, that the enormous amount of one hundred and eighty-seven million pounds of butter are annually imported by the United Kingdom. Set this down at the small first cost price of butter to-day in Canada, viz., 12½c. per lb., and we have a sum upwards of twenty-three million dollars, which is within the reach of the Canadian farming interest, and yet for three days one little keg is offered to the inhabitants of one of the largest cities in England, and not one pound of it will they buy until the name of Canada is hidden, and then they swallow the pill at once and find it is not so bad after all. And so we get a hint that some of our exported butter is very good and other is exceedingly bad.

There is another little kingdom in Europe, we speak of Denmark, a good agricultural country, with a climate something like our own, but very much smaller in her acreage. There is room enough in Canada to plant 235 kingdoms as large as Denmark and still leave us upwards of 12,000 square miles. And yet this little kingdom, with a population of 2,000,000 against our own 5,000,000, possesses 900,000 milch cows while Canada can only raise 781,000 odd. Out of the 187,000,000 lbs. of butter purchased annually by England, 69,000,000 are supplied by Denmark, and this amount is increasing annually at the rate of twenty per cent., while on the other hand America can only find room in the London market for 3,000,000 lbs., and this small amount has been decreasing at the same rate that the other has been increasing until to-day it takes a smart man to sell a single keg of

Canadian butter to the British public, and he has to draw the veil before he can do it. "What's in a name?" Ask any well appointed west end London housekeeper what butter she will buy, and her reply will be, "Oh the Kiel, certainly." Follow this with another question, "Do you ever buy Canadian butter?" and the probable answer will be, "Oh no, indeed, we never do," with a special emphasis on the "we." Now, true as all this may be, it is not gratifying to us who call Canada our home, and say from our heart, "Canada, with all thy faults I love thee."

If you want to know the cause of Denmark's supremacy in the butter market, read Mr. Macfarlane's paper on "Dairying Operations in Denmark," and you will be both delighted and instructed. But if you are willing to unearth the roots of our failure, let us together examine our own operations and see wherein they diverge from the system adopted in Denmark and from the laws of health.

Set a pan of warm milk in a close closet amongst your groceries, and in about an hour taste it with a clean mouth, and you will be able to detect the various parcels of pepper, spice, coffee, soap, or what not, that are lying near the milk. Bear in mind this faculty which milk possesses of partaking of the taste of things which are near and not actually touching, and then answer for yourselves the question: Is that milk good wholesome food which has stood in the underground milk house, built of logs partly decayed, with fungus and mould in the corners, some of the chinks stopped with damp straw, and it may be a toad peeping out from under a loose stone? We hardly dare carry this hint on warm milk any further, in cases of fever or contagious disease in the family where the butter is to be produced. Inspectors and laws are powerless in such a case under our present system. But to return to the dairy. It may be the cows are few and not giving much milk, and the cream crocks are filling up very slowly, the weather is close and the cream is getting thick and sour, but the table must be supplied. There is nothing but the cows for the family to depend upon, so the eldest girl must churn and carry the butter to market. The horses are busy in the field, so she must walk. The road is long, hot and dusty, and when she arrives at the store, wearied with her load, the butter is too soft to lift from the dish, and so the boy after weighing it, dish, cloths and all, carries it into the cool cellar where he gets rid of it in some way, returns the oily dish and cloths and fills the basket with the required groceries *ad valorem* for the weight of the butter, and the tired girl returns home. But the butter! We cannot forget its appearance when it was carried away to be poured out in that store-keeper's cellar. We must remember that there are also many good butter makers, and much of the good as well as the bad finds its way to this store, or we fear our own housekeepers might be tempted to send to Denmark for their supplies. But to get rid of that butter. A selection is attempted, a little salt is added to kill the rancidity, the various parcels are compounded, packed in kegs, and shipped to establish a character for Canada wherever there is an opening for doing so. And the taint of all those ill-kept cellars, dairies, and cupboards, is gathered together in that compound. The poison in it may not be very potent, but such as it is it is all there, and it enters into the systems of all those who partake of that butter for food, and it does its work accordingly. This picture, though still true to-day, is not to be taken as the general system of Canada. The creamery collectors have worked a great improvement. The warm milk being placed in closely covered cans and submerged either in ice water or a running stream, escapes most of the evils of the tainted dairy, but it is not generally adopted or likely to be, as the farmer's pay from the creamery proprietor is regulated by the market price of butter sold in the store, which means that no matter what care the farmer takes to supply good cream, he must be satisfied with one cent per pound above the lowest price which the worst quality of home made will produce on the market. He also loses all his buttermilk, and is further subjected to deductions in cash for certain tests by the creamery proprietor, over which he has no control, and this leaves him financially worse off than those who do their own churning.

We will now briefly review the operations of Denmark, again quoting from Mr. Macfarlane.

The history of her butter-making he divides into three periods:

(1) The Repacking Period, which corresponds with our system, and failed as ours has done.