

cow's milking power, but also to produce richer milk.

It is important, also, how often the cow is milked daily. Some experiments concerning this question have also been tried, which show that the more times a day the cow is milked the more and richer the milk she yields. But whether one milks three times or only twice a day, the intervals between the milkings must, as far as possible, be of the same length. The cow is in a very high degree dependent on habit, and her udder works evenly and regularly. The milking hours, therefore, must be carefully observed, and the same persons must, every time, in the same course, milk the same animal. If the milking is begun too late, the cow becomes uneasy, and the tension of the udder causes pain to the animal. In both cases loss of milk ensues. The fact that the quantity of milk is lessened by milking less frequently and less energetically is a thing of which one avails oneself when wanting to dry a cow. But even in this case it is a bad plan not to clean strip the udder; it is by far preferable to milk less often, finally once only every other day, every third day, or more seldom still, till the cow gives so little milk that milking may be dispensed with.

The milker must pay great attention to the cleanly condition of the udder and the teats. If he observes knots and tenderness in the udder, sores on the teats, the milk canal stopped up, or the milk having an unnatural appearance, etc., some remedial steps should at once be taken. Diseases in udders and teats, often being contagious, cows in that way infected must always be milked the last, and the milk from the affected part of the udder be put into a special vessel and destroyed, in order to hinder further spreading of the infection.

Cream Testing.

A reader interested in dairying asks the following questions, which have been answered by Prof. Dean, O.A.C.: Which is the more accurate in testing cream, the Babcock or oil churn test? Does ripened cream test higher than unripened?

Answering the first question, would say in reference to "Which is the more accurate in testing cream, the Babcock or oil-test churn," that the Babcock is more accurate. In order to understand this question we need to know something of the nature and objects of these two tests. The Babcock test determines the absolute or total fat in cream or milk, while the oil-test determines only the churnable fat or oil in cream. The fat in the case of the Babcock test is separated by a chemical (sulphuric acid), centrifugal force and hot water. With ordinary care all of the fat in a sample is separated and measured. On the other hand, in the oil test the only means employed to separate the fat or oil is that commonly known as churning, together with heating of the samples. It is a well-known fact that some samples of cream churn more readily and more exhaustively than others. In a creamery where the oil test is used, each patron's sample is churned separately, hence a man with cream which churns readily is likely to receive a higher test than one with cream which does not churn so readily. When all the cream is mixed together for ripening and churning purposes, there would be little difference in the exhaustiveness of the churning, hence the man with cream lacking churnability is likely to be unjustly dealt with. With the Babcock test all these little differences disappear, as the chemical, hot water and centrifugal force cause a complete separation. About the only danger of error is in the sampling and measuring of the cream, but as the oil test is equally liable to error in these respects, we come to the conclusion that the Babcock test is much more accurate than the oil test.

In answer to the second question, "Does ripened cream test higher than unripened?" would say that with the Babcock test there is no difference, but in the case of the oil test, the tendency is for higher readings with ripened cream. The reason for this is that ripened cream, as a rule, churns more easily than unripened cream, hence the test is higher, because the oil test is essentially a churn. This fact is taken advantage of by patrons of cream-gathering creameries, and they ripen the cream before sending it to the creamery, in order to obtain a higher test. This plan, however, makes it much more difficult for the buttermaker to produce a good quality of butter, because the cream is over-ripe before it reaches the creamery. In many cases it should be churned before it leaves the farm, and by the time it is delivered, cooled and churned at the creamery, it is impossible to make fine butter out of this cream.

On the other hand, sweet cream can be more accurately and conveniently sampled than can sour cream for the Babcock test, although there is no difference so far as the actual testing is concerned. This fact will induce patrons to deliver cream in a sweet condition, and will do a great deal towards improving the quality of butter at cream-gathering creameries. When patrons

become familiar with the Babcock test they are not likely to wish to go back to the oil test.

H. H. DEAN.

Fat Content and Cheese.

An Oxford County subscriber asks: "How many pounds of milk should it take to make a pound of cheese from milk testing 3.85, 4.00, 4.10 and 4.25?"

Prof. H. H. Dean, Dairy Department, Ontario Agricultural College, makes reply as follows: "Regarding the pounds of milk required to make a pound of cheese, from milks containing different percentages of fat, I beg leave to submit the following results as being the average of several experiments made with milk containing the percentages of fat given:

Milk testing 3.85% fat required 10.02 lbs. milk to make 1 lb. cheese.

Milk testing 4% fat required 9.91 lbs. milk to make 1 lb. cheese.

Milk testing 4.1% fat required 9.75 lbs. milk to make 1 lb. cheese.

Milk testing 4.25% fat required 9.28 lbs. milk to make 1 lb. cheese.

Your subscriber will understand that the yield of cheese from milk containing these various percentages of fat will differ at different seasons of the year, and according to whether or not it has been properly cared for."

British Dairy Imports.

During the past year the bill paid by the people of Great Britain for imported dairy produce was 29½ millions of pounds sterling, of which 20½ millions was for butter, 7 millions for cheese, and 1½ millions for milk. This shows an increase over the preceding year of nearly three per cent., or fully four-fifths of a million pounds. There has been only two per cent. increase in the quantity of butter imported. No less than 43 per cent. of foreign butter was supplied by Denmark. This little country, whose total area is not so much as one-eighth of Britain, has captured to such a large extent the English market for this class of food. The average price of Danish butter is returned at 11½d. per lb., whereas the average declared value of the imported butter from other sources was a little under 10½d. per pound. Canadian buttermakers must bestir themselves.

Dairy Notes.

If your hired man is inclined to kick your cows, get him a pair of soleless rubber boots for stable use, and if you can induce him to wear them he will soon stop his cow-kicking habit.

Study markets. Many sales are made lower than they should be consequently middlemen's profits and makers' loss. "Get close to the consumer, not the middleman," should be the motto of every dairyman.

When planning work, if the dairy department be made a side issue to the general farm work, both quality and quantity of the product will depreciate and no profit from that department be the result. On the other hand, should a systematized method be adopted, along with the practice of common sense, full remuneration can rightfully be expected for every hour of labor. No department on the farm requires more system than the dairy.

APIARY.

Care of Outdoor Bees.

By Morley Pettit.

The oldest settler cannot remember so severe a winter as this, although he has seen hundreds of them. Fortunately he who has his stock well housed in cement stable or modern bee cellar. The cattle may winter in the stock yard, or the bees on their summer stands, but they certainly cannot come through with the same vigor as those in more comfortable quarters.

The outdoor bees have the advantage of snow this year, which may in a large measure counteract the severity of weather. But here, as in so many cases, a caution is needed. More bees wintered outdoors die from suffocation than from any other cause. The snow piles up in front and over the hives. Well? It is a porous, warm covering, and excellent protection. The moisture from the bees' breath condenses in the hive, and runs down to freeze near the entrance. A thaw comes and snow outside melts, then freezes on the entrance: a crust also forms over the snow. The chances are when the mercury next retires into the bulb of the thermometer the entrance will be so choked with ice that no air can get in, and the bees will smother.

Bees require very little attention in winter, less in proportion to their value than any other stock. We can then afford to do this for them. Whenever a thaw comes, see to the snow at the entrances; shovel it away so the entrance can clear out and dry out, and be ready for the next freeze.

GARDEN AND ORCHARD.

P. E. I. Fruit-growers.

The annual meeting of the P.E.I. Fruit-growers' Association was held in Charlottetown, on February 4th, with President Rev. A. E. Burke in the chair. Notwithstanding the fact that the weather was bitterly cold and stormy, and the country roads almost impassable, there was a very fair attendance of representative fruit-growers from nearly every section of the Island. The visiting horticultural experts present were Mr. W. A. Mackinnon, Chief of the Fruit Dept. at Ottawa; Mr. A. McNeill, Ottawa, Dominion Fruit Inspector, and Mr. Saxby Blair, of the Nappan Exp. Farm. These gentlemen added very greatly to the interest of the meeting, and their addresses were brimming with points of intense interest to our fruit-growers, many of whom are just going into the business. Senator Ferguson gave an excellent paper on the "Apple Outlook," which he said was very hopeful, as our fruit was in demand in England.

Mr. Mackinnon spoke of the great necessity of co-operation among our fruit-growers, so that we might secure the lowest rates. The best varieties—large lots of one variety, to induce buyers to visit us. To get cheaper rates from the nurserymen; central packing-houses to cull, class, pack and ship the fruit so as to have uniformity in quality and packing. Advised growing only a few varieties for export. King, Baldwin, Spy and Golden Russet are good kinds for English market. These varieties all do well here. Senator Ferguson said Ben Davis and Baldwin always fared well in the British market in shipments he had made.

A mass meeting was held in the evening, at which the President delivered his annual address, and addresses were also delivered by Messrs. Mackinnon and McNeill. A musical programme also tended to enliven the proceedings. Mr. Mackinnon's address was on "Fruit exhibitions and exhibits." Prize-lists should be in two divisions, commercial apples and those for home use, or export and domestic, commercial apples to be shown in packages in which they were to be shipped. Mr. McNeill said a good deal about the judging of apples, and spoke of the points a judge should give for color, size, quality, etc. He gave an object lesson, by taking the first- and second-prize plates of Gravensteins in his hands, and showed the great difference in quality between them. He said they were better than Nova Scotia Gravensteins, and as they were a month later in maturing here, they would be a good apple to grow for export. He saw no reason why P. E. Island should not be exporting the best of apples in large quantities in the near future. A few of the good points in the President's address which struck an optimistic note in the beginning and continued to the end: He advised the planting out in blocks of one or two commercial varieties, and the top-grafting of undesirable kinds with some standard variety, so that we would have for shipment large lots of export apples. He advised co-operative shipping, so that small growers could send the product of their mixed orchards to central packing-houses, to be properly selected and graded for foreign markets. We needed shelter-belts and wind-breaks to protect our fruit while on the trees, and also to protect the trees. Situated as we are, in the center of a storm-swept gulf, we were the most exposed community in the world engaged in horticulture. He urged the necessity of a winter fruit show, because we could not exhibit our winter fruit at fall shows, except in an immature state. The winter show would be an education in placing winter apples before the public fully matured. "Feed your trees well if you would get fruit of a good size, quality and flavor." We wanted evaporating and canning establishments here to prepare our early apples and small fruits for the English markets, where such goods were in demand, but which were a dead loss here for want of being prepared in such an establishment.

Prof. Saxby Blair, of Nappan, who did not arrive till the second day of the meeting, gave an excellent address on "Soil moisture in its relation to fruit culture." "Can we control soil moisture so as to best utilize it?" The necessity of cultivation to get the soil in good mechanical condition, and also to form a mulch on top, thus preventing the escape of the moisture from below, at the same time letting in the heat from the surface, was strongly emphasized. The leaves of the trees ought to be kept healthy, so that they could take in the necessary carbon from the air. Prof. Blair illustrated his remarks by using a chart. A committee was appointed to examine the question of co-operative packing, suggested in the President's address. It was resolved to refer the matter of excessive charges on fruit to the newly-appointed Railway Commission.

The fruit show in connection with the meeting was very much ahead of any previous one, and most all of the standard varieties were shown in excellent condition. There is now no question about P. E. Island being one of the best spots in