

marked changes in our methods of butter-making in Ontario before many moons have appeared in the sky. To the writer it looks as if we need to:

1. Grade the cream delivered at our creameries and pay a higher price for the number one grade stuff at the rate of three to five cents per pound fat extra. This will induce farmers, or cream producers to strive for top grades, because it will pay them to do so. Nothing else under heaven will cause the farmers of Canada to change their methods. All the appeals by circulars, articles in the press, or speeches from public platforms, though delivered by angels, will not cause very much improvement in the quality of cream delivered. The "pocket-nerve" is a most sensitive one. Our creamerymen in Ontario at least should enter into a "gentleman's agreement" on this point. It should not be necessary to have legislation. Laws at best are expensive to administer, and are bound to be galling at some point. Freedom to do what is right is the highest type of freedom known to mankind.

2. Aim to have the cream delivered and churned sweet. We have been making some interesting tests in the Creamery Branch of the Dairy School, this past winter. We have found that sweet cream pasteurized, cooled and churned with not over .3 to .35 per cent. acid, reckoned as lactic acid, not only made high-grade butter, but the fat practically all "churned out" of the butter-milk, leaving a very small loss. The old idea of "souring" cream before churning is rapidly passing away with modern churners. The shorter the time which elapses between milking the cow and churning the cream into butter, the better will be the quality of the butter, other things being equal. This means in creamery practice, frequent delivery, pasteurization immediately after delivery and churning as soon as possible after the fat has become cooled and hardened. To do this effectively means that the very latest and most modern kinds of machinery are needed and the butter-maker must be a trained man. Our creamerymen cannot afford to continue the use of out-of-date machinery, nor hire behind-the-time men to make the butter.

3. The third requirement is pasteurization of the cream by heating the sweet cream to 170 degrees F., holding for fifteen to twenty minutes, then cool to about 50 degrees F., and hold for at least four hours before churning. This gives mild-flavored, long-keeping butter, which will suit either local or foreign markets. As the butter-maker, in many cases, does not know when and where the butter is to be marketed, he must aim to make a butter that will suit any market. The markets of the world are rapidly becoming standardized, which will simplify the butter-maker's problems.

4. The fourth point is to grade the butter. At this point there is some difference of opinion. Some authorities claim that grading the butter will cure all the evils of the creamerymen. My own judgment favors grading cream in preference to grading butter, if only one can be done. However, if both cream and butter can be graded, so much the better. The main thing is to do something better than we have been doing, and not continue in the same old rut that we have been in for some time in this Province.

ICE-CREAM, CITY MILK, CONDENSERY AND POWDER MILK.

So far as the ice-cream trade and city milk business goes, the prospects are good. People in towns and cities are receiving higher wages than ever before, and they are spending their money freely. The man or firm who is supplying the trade in these two lines of dairying is sharing in the general prosperity. There has been considerable "kicking" at the supposed high cost of milk and its products, but this has been largely on the surface. The people have the money and they are spending it not only for the necessities of life but also for life's luxuries. It is reported that one of the largest ice-cream plants in America is being erected in Toronto, where there are already, one would think, enough establishments of this kind to supply a city twice the size of Ontario's capital. Men must have large faith in the ice-cream business who will venture their money on a large enterprise in what has always been considered a luxury, but is becoming a food more largely each year.

The markets for condensed and powder milk are reported dull, chiefly on account of difficulty in exchange, which will probably right itself before the season is over. The corporations which control these huge concerns are extending their business in all directions. Creameries and cheeseries are being either purchased outright, or are "crowded to the wall." There is only one way for the small factoryman to compete with these moneyed interests, and that is to combine their business in such a way as to have all the benefits of buying and selling on a large scale, without losing their identity. Unless they do this, nothing is more certain than that the small factories, whether owned privately or co-operatively will either have to sell out, or go out of business. A small business concern with little capital, simply cannot compete with "big business" having plenty of capital to tide them over times of depression in the markets. The factory which has to sell regardless of price, in order to pay patrons, and labor, and to meet ordinary running expenses, is seriously handicapped.

THE MAN ON THE FARM.

I have left till the last, that most important link in the dairy chain—the man who produces the raw material for dairy manufactured products. What about him? The prospects are none too bright for the milk producer. He is faced at the beginning of the season with advancing costs of everything required to produce milk—labor, seed, implements, feed, fertilizers, groceries, boots, clothing—all these have gone to un-

heard-of prices. Instead of having an increased return for his products in order to meet these increased costs of production, he is met with dull markets and sagging prices. To the man who is facing sixty dollars a month, house, etc., for a hired man; who is paying \$60 to \$90 per ton for cow and hog feed; who is being asked two dollars per bushel for seed oats and forty-seven dollars a bushel for red clover seed, the prospects are not very "rosy" for 1920, and he is asking, "where do I get off at?" And yet, many will go into the game, "just once more" with all the faith of a gambler, who believes that fortune's wheel must turn in his favor some time, and why not in 1920? The foregoing is not too dark a picture. The writer knows whereof he writes, because he is, as the Dutchman said, "against it up," and is not writing from a theoretical viewpoint, which is a common weakness among many writers and speakers on farm topics. The Honorable Minister of Agriculture for Ontario is reported as having said that College Professors must get in closer touch with farms and farmers. If I may be so bold as to offer a suggestion, it is that all the Professors at the O.A.C. should either be compelled to buy and manage a farm, or where they cannot do so for financial reasons, that such be furnished to them, then they will know the real problems of a farmer in a way that cannot be obtained otherwise. O. A. C., Guelph. H. H. DEAN.

Scours in Calves.

Probably no other trouble rises up so frequently and prominently before the dairymen who raises calves, as scours. The occurrence of this ailment is, in a sense, an indication of the owner's success in calf rearing, because if calves can be brought along without being affected by scours they stand a good chance of being free from the other forms of trouble. Scours are of two kinds, common scours, indigestion, or inflammation in the stomach and the more deadly and virulent kind known as white scours or calf cholera.

WHITE SCOURS.

White scours is contagious and infectious and is due to an infection of the navel after birth, whereby the germ of this disease enters the blood of the calf shortly after birth by means of the freshly seared navel cord. Generally speaking this disease usually appears within three days of birth and is characterized by a whitish, foul-smelling dung accompanied by a general air of dejection and a hollow-eyed appearance.

In rare cases it may not appear until the calf is from four to eight days old, but in any case treatment is not generally satisfactory. The first indication of the disease is an indifference to the dam on the part of the calf. It stands with its head down and will not suck. The diarrhoea appears very shortly and faeces are of a grayish-white color, frequently of a foamy nature and containing hard lumps of coagulated milk or clots of blood. The calf will lie down much of the time and, while straining will accompany the passing of the faeces in the early stages, they will be passed involuntarily later on. The calf rapidly becomes weak and saliva will flow plentifully from the mouth, while a sticky mucous is noticeable on the tongue. Breathing becomes fast and shallow while the temperature rises at first but lowers again as weakness comes on and may be below normal at death. This lowering of the temperature and bloody diarrhoea are pretty sure indications of death. Fatality seems to be more certain if the disease appears very soon after birth. The disease rarely occurs except during spring and fall.

The immediate cause of white scours is, of course, infectious bacteria. The general causes and treatment have been well set forth by Dr. G.H. Conn, Ames, Iowa, who says that the presence of the colon bacillus is not unusual in the intestinal tract but that this bacillus, it is thought, sometimes becomes virulent to such an extent as to cause outbreaks in stables previously free from it and in which there has not been any known means of infection from outside. In such cases faulty care is believed responsible for the sudden virulence of the bacteria by reason of the calf not being allowed to get the first milk or colostrum of the dam, or on account of the fact that boiled milk has been fed to the very young calf. Where heavy losses are caused with animals raised artificially we are told that it is wise to suspect dirty feeding vessels or boiled milk, because, in boiling, some ferments are destroyed that may play a very important part in the process of digestion and even prevent the growth of the bacillus.

Cows in infected stables may carry the disease in the vagina in such a way as to cause infection during birth. The germs of the disease may be in the litter or on the floors or walls of the stables. The calf may become infected through the contamination of cows teats by contact with dirty straw when lying down or by licking the floors and walls. The virulence of the disease may be retained in a stable for a long time and if no steps are taken to prevent its recurrence it may appear regularly with disastrous effect every spring and fall for several years. Treatment can be given but it is not always satisfactory. Mild laxatives such as 1½ to 2 ounces of castor oil, are recommended by Dr. Conn, digestive tract. Afterwards, intestinal antiseptics may be given and a level teaspoonful of the following, dissolved in a small quantity of raw milk, and given three or four times a day after thoroughly mixing, is recommended. Two parts sodium sulphate; one part tannic acid and one part iron sulphate (all by weight). Linseed, barley or oat gruels, together with the feeding of eggs in milk will aid considerably in keeping up the strength of the calf. Prevention is always better than

a cure and rigid cleanliness, frequent disinfection, clean straw for bedding and clean hands for attendants will do more than any cure to keep down the ravages of white scours. If it is known that the stable is already infected, cows about to calve should be removed to clean stalls several weeks before calving. The vagina of the cow, the stall itself and the litter should be disinfected, and the calf should always be allowed to suck the first milk of the dam.

COMMON SCOURS.

Indigestion in calves as in other animals and human beings can be brought about by various causes and the first thing to do is to cut down the ration so that the calf may get a chance to rid itself of the cause of irritation. Half the battle lies in beginning treatment as soon as anything wrong is noticed. If the milk is cut down one-half and in severe cases withheld entirely, the calf will probably appear normal after one or two feeds have passed, so that full feeding can be gradually resumed. In any case feeding should be light for a few days after an attack of scours, until the calf has regained its strength. In severe cases, two or three ounces of castor oil in a little milk may be necessary. Special points to observe in preventing and controlling scours are, condition and temperature of the milk, cleanliness and over-feeding. Milk should be fresh and sweet and fed at a temperature near that of blood-heat or about 95° to 100° F. This is about the temperature that the calf would get the milk if it were sucking the cow and having it at this temperature prevents any tendency to check the digestive processes by taking chilled milk into the system. As the calves get to be two or three months old, milk of a somewhat lower temperature may be fed, but in any case the temperature at each feed should be as uniform as possible.

Overfeeding is probably the most frequent cause of scours. To satisfy a calf's appetite for milk is to overfeed it, because it is impossible to give a calf what it will take without overfeeding. Weighing the milk is a good practice and cannot be too highly recommended. Where several calves are fed in the same pen, it is best to tie them at feeding time so that each one may receive no more than its share and for the same reason it is not advisable to give all the feed night and morning. Roughage fed during the day will prevent overloading the calf's stomach. Care should be taken to see that the calves do not get much of the foam from separator milk. This may easily cause bloating and sickness. If the feeder is careful to provide clean quarters and protect the calves from extremes of temperature and if he avoids overfeeding, common scours should never prove serious. Prevention of sickness is far more successful than curing it and the dairyman who is constantly on the lookout for disorders is seldom likely to be troubled much by them.

Milking Machine Notes.

It is interesting when in dairy districts to study the progress of the milking machine as an assistance to the dairy farmer. Not so very long ago we happened to visit several farms, among which were three or four that were actively interested one way or another in milking machines. On two farms two different makes of machines were installed and working successfully. On another farm a machine had been installed, but at the time of our visit the herd of forty cows was being milked by hand. In another herd the owner was thinking seriously of purchasing still a different make. Another man was seriously interested in watching his neighbors lose out, but had not made up his mind yet whether or not it would pay him to invest. The extremes of attitude were shown by two men, one of whom had one of the more moderately-priced machines installed and who said that if his machine were to be taken away he did not believe he could get his boys or his men to do the milking. The other man, with a larger herd, had no difficulty in getting his herd milked by hand, and thought the results secured were better. At the time of our visit there were three milkers, and usually there were four.

Now, aside from the matter of price and the question of individual preference in machines, there are only three principal matters of interest in connection with milking machines once they are installed and in active operation. One must first of all decide, of course, whether it will pay him to install a machine, but if he thinks it will pay him to do so, and before he actually does install, he should pay particular attention to the three important points referred to. The first of these is the matter of the operator. This is probably the most important point so far as the effect of the machine upon the cows in the herd is concerned. We have tried to follow carefully the conclusions reached from all experiments with milking machines, not the least of which are those conducted by our Dominion Experimental Farms system, and the conclusion is invariably reached that if the operator is a good one the results from machine milking are at least equal on a whole to the results from hand milking. In one survey made upon a large number of farms, in one of the States to the south of us, it was found that the farmer's son made the most successful operator of the milking machine. He was even better than his father for some reason not stated. Hired help, especially of the kind one so often meets with nowadays, is not usually satisfactory. There does not seem to be the same personal interest in the individuals of the herd which would lead the employee to see that the machine is adjusted to suit each cow where necessary. More than that, it is necessary that the cows be stripped when milked with a machine, just as with hand milking, and this is too often neglected,