

a pride and profit to the father, will be an investment at a high rate of compound interest for the son, and will stand a living monument to its original preserver when his grave is sunken and his fallen tombstone covered with grass.

We hear nowadays of reforestation, tree nurseries, etc., and this is all right, yet the simplest plan is to let our present wood-lots reseed themselves. Some complain they need the bush pasture. But is it real economy to sacrifice the revenue and the blessings of a fine bush for a few months of inferior grazing? Plant instead a few acres of soiling crop, oats and peas, lucerne and corn, and keep the stock out of the bush.

Hundreds of thousands of acres of rocky and hilly land in the Eastern Provinces of Canada should never grow any crop but wood. Their cultivation is either impossible or unprofitably difficult. Keep them under trees. Plant them if necessary, but if the bush is already there, take care of it. A general awakening is coming on this subject of the farm wood-lot, and not any too soon. Meanwhile, every example counts. Who will be the first man in each locality to commence?

THE FARM.

Care of Milk and Utensils.

Part of an essay written by Miss Annie W. Green, at the O.A.C. Dairy School, 1905. Now cheese and butter maker for the Aylmer, Ont., Cheese and Butter Association.

No professor in any factory or creamery, even if he has the most up-to-date machinery and fixtures to work with, can produce a good quality of cheese and butter from poor milk and cream. We ought to give the factoryman milk and cream in the very best condition, then he will have control of flavor. We are getting new evidence every year of the great need of more care of milk at the farm. Our leading dairymen are awake to the fact that there is something in the air that is very detrimental to the keeping qualities of our finished product—butter and cheese. The milk secreted in the udder of a healthy cow is sterile, but it soon becomes contaminated with bacteria, and as we study the ripening process of milk and cream, we find that some bacteria are very beneficial, and some are very detrimental. Bacteria are really plants of the very lowest form, and for rapid growth they require food, heat, and moisture. Milk, then, is one of the very best substances we can find in which to produce bacteria. The greatest care should be taken to keep milk cows in good health, and to exclude from the herd any animal that is not well, and the dairyman must do this in order to insure the purity of his milk. Bacteria are present in the first few streams drawn from the udder, and it contains very little butter-fat, so in discarding this milk the loss is not great.

The contamination of milk is largely under the control of the producer, and if he does not send in to his factory a first-class quality of milk and cream, he himself will be the loser, and milk is the one farm product above all others that calls for exceptional cleanliness, because it is a human food.

Few men put on a clean wash suit to milk in; this is one thing necessary, for average farm work will cover the clothes with dust, and this, falling into the milk pail, will rapidly produce bacteria detrimental to the keeping qualities of the milk. The dairy stable should be well ventilated, and have abundant light. This will prevent disease and add to the comfort and health of the animals. The stable should be cleaned, and all feeding done at least one hour before the milking begins. The cows should be well groomed, especially the udder, flanks and abdomen, and a damp cloth taken, and the parts mentioned gone over with it to remove any loose hair and dirt that may still be clinging to the cow. Bacteria are always found in dirt, dust, cobwebs, and litter of all kinds in the stable or dairy room. The exclusion of dirt and dust from the milk means the exclusion of bacteria, and we find that most of the impurities in milk get into it during the short time after it comes from the udder, and before it is taken from the stable. Very small particles of dust, hair, etc., which are always floating in the air of a filthy stable, drop into the milk every second it is exposed there, and infect it with the bacteria, which are carried around on the dirt, and so we find upon investigation that it is only the filthy, untidy farmer or dairyman who would send his milk to the factory in such a condition.

Again, if the cow is not properly looked after and groomed, dirt and hair will fall directly into the pail while she is being milked. The flank and udder hold quantities of dust and dirt which are dislodged by the motion of milking, much of it falling straight into the milk pail, and experiments have shown that it is always greater when the cow is milked by one who jerks or shakes the udder than when the cow is milked quietly.

Through the country we see many farmers allowing their cows to go in the most filthy condition, more especially where the cows are housed the greater part of the year. It is next to impossible to keep milk clean if the animal is not groomed, and grooming is something the cow enjoys very much. Then the milker should be clean, tidy, and good-natured. We would advise milking with dry hands; if this cannot be done, then moisten the hands with some vaseline. To milk with wet hands, usually transfers the dirt from the hands and teats into the milk pail, carrying with it thousands of bacteria we do not want. After milking,

cool as quickly as possible. There are two ways of cooling milk that must be kept over night. One is to give it a good stirring, and the other is to set the can in cold water, but we advise combining the two methods. The object of cooling milk is to prevent it from souring. Souring is the result of the development of certain bacteria. Cooling milk by stirring it and exposing it to the air tends to prevent souring, but it also exposes the milk to the danger of being contaminated with bacteria, which causes bad flavors in the



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cheese and butter. This fact emphasizes the importance of stirring the milk, when that process is necessary, in pure air.

The air a few feet from the barn we found in our practical bacteriology work to be the most laden with germs, and, consequently, the milk should not be exposed any more than is necessary near the barn, but should be strained and otherwise handled some distance away, and in a place where currents of air do not carry contamination from the barn or milking yard to the milk.

Cooling the milk with ice or water would be the better way, where ice or cold water could be had, as this exposes the milk less to contamination. In such cases sufficient stirring could be given to cool all parts of the milk as quickly as possible, and especially would



Queen of Roses.

Guernsey cow, winner of first at the Royal, Bath and West of England and London Dairy Shows, 1905.

we recommend aerating where rape, turnips or other strong-smelling foods are given the cows, though the use of such foods should be strongly condemned.

Stirring and aerating the milk at or near the barn or yard cannot be too strongly condemned, as it is just such work that adds to the cheese and butter makers' troubles, and not only that, but lowers the reputation of the maker himself. Lactic acid bacteria are what we want in our milk and cream. Bacteria of most kinds thrive best at a temperature from sixty to ninety degrees F., and where the temperature falls to forty five or below freezing they remain dormant. This source of contamination, then, is largely under the control of the dairyman. The exclusion of dirt and dust

from the cream means the exclusion of enormous numbers of bacteria, and from a fine-flavored milk or cream the manufacturer can produce a fine quality of cheese and butter that will command a high price. We are safe in saying that properly-handled milk or cream will keep sweet long enough to be got to the factory in good condition.

The milk utensils should be made of the very best pressed tin, all seams well soldered, and, if possible, the factoryman should wash and sterilize the cans at least once a week with the steam pipe at the factory. After washing and scalding, all cans should be set in such a position that they will drain and the sun fill them, and before using them again they should be well rinsed, to remove all dust.

Cleanliness and care will bring our milk in sweet every time, and get us the best price for what we are able to produce. Let us educate the farmer, as professors, instructors and students, into the fact that "cleanliness" is money—this is the only hope for cleaner milk and dairy products.

Milk Record the Basis for Improvement.

Editor "The Farmer's Advocate."

"Does it pay to keep daily milk records?" I say decidedly, yes! In support of this declaration, I will mention a few of the very many reasons which appeal to me. Firstly and lastly, it increases a man's interest in his herd, and in his individual cows, without which he had best give up dairying; this interest brings better care to the cows and better feed. These two, care and feed, are the foundation stones upon which all successful dairy herds must be built. How are you to feed intelligently or economically without a knowledge of what every cow is doing at the pail? I can think of no more certain way of bringing about better feeding than through the keeping of a daily record and the use of the Babcock test for butter-fat. If our watchwords are, Breed, Feed, Weed, the scales and the test are an absolute necessity for the successful accomplishment of any one of them.

I am at present milking 23 cows, Ayrshire and Ayrshire grades, have kept a daily milk record for four years, and try to take a Babcock test once a month.

I use a blank, ruled, for one month, supplied by Prof. Grisdale, of the Central Experimental Farm, who sends them free of charge on request. This hangs on a board in the stable, beside the small spring scales, close to the can into which each pail of milk is emptied. Ten seconds per cow at each milking is the average time consumed in weighing and recording the weight. In order to avoid errors and to save time, we put down the gross weight, deducting the tare of the pail at the end of the month.

Samples are taken for a composite test, from both milkings, three days a month, a tablet of corrosive sublimate being used as a preservative. I takes about two hours to make the Babcock test for the herd, with a ten-bottle machine. At the end of the month the old sheet is taken down, and an hour or so devoted to adding up the totals and deducting the weight of pail, and the result is inscribed in a monthly summary sheet, giving the number of days milked that month, pounds

of milk, pounds of butter-fat and test, from which it is a very easy matter at the end of the year to arrive at each cow's record for twelve months. Believing, as I do, in the importance of weighing and testing, I have assisted in organizing a cow-testing association for this district, under the offer of the Dominion Government, with a membership of 27 dairymen, with over 600 cows. I will continue keeping my daily record, and let the Government do the testing.

I am convinced that whoever has tried it, will prefer to keep a daily record, rather than one or three days a month, as it quickly becomes a habit, is rapidly done, owing to constant practice, and is not thought any trouble at all, but where only attempted occasionally, it will be looked upon as a very hard task, will take longer, and will very likely be put off in any busy time.

However, this plan of the Government is the thin edge of the wedge, and will, without doubt, be productive of immense good; but it is simply amazing to find how many apparently intelligent farmers there are who will have nothing to do with testing and weighing, even when offered to them free of cost. In conclusion, I would say that by itself, keeping a daily record will not result in a greatly increased yield from a given herd, but if used as the basis of feeding, breeding, weeding, it must very soon treble the total yield from the average herd.

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Roots, corn silage, clover and lucerne are the key to success in the economical feeding of live stock.