

plump and straight from top to bottom. An experienced man knows just how to go about the work, and time, money and temper will be saved as well as a better silo secured by engaging a man to oversee the job.

Formerly one-half inch material four ply was used for hoops, but now three-eighth inch stuff five ply has been found to be much more satisfactory, as the lighter material bends much more easily, and a neater, stronger hoop is the result. Again it was once the practice to space the hoops quite closely on the bottom part of the silo, and much further apart toward the top. Owing to its much neater appearance, however, equal spacing of the hoops three feet apart is now used on most silos.

It is also usual now to make the cement foundation with a diameter of two feet more than the silo, thus leaving a margin of a foot or so around the bottom on which, after the silo has been erected, a sloping ring of concrete is built, extending well up over the first or bottom hoop, the ring being re-inforced by a strong wire laid in its centre and extending entirely around the silo. By this plan the structure is firmly anchored to its concrete base.

The cost of a silo twelve feet in diameter and thirty feet high will run about as follows, although the price of the materials as well as labor may differ in different localities:

MATERIALS.

One-inch hemlock lumber, 2,700 feet at \$18 per thousand.....	\$48.60
Four-inch elm for hoops, 400 feet at \$16 per thousand.....	6.40
Ripping elm hoop material into $\frac{3}{4}$ inch, 190 pieces 12 feet long at 3 cents per piece.....	5.70
Two by four-inch scantling for rafters, 80 feet at \$18 per thousand.....	1.44
Cement for foundation, 5 bags at 55 cents per bag.....	2.75
Nails and spikes.....	4.00
Prepared roofing, 3 rolls at 25 cents per roll.....	7.50

LABOR.

Expert builder, 4 days at \$2.50 per day.....	\$10.00
Assistant carpenter, 4 days at \$2 per day.....	8.00
Farmer, 4 days at \$1.50 per day.....	6.00
Hired man, 4 days at \$1.50 per day.....	6.00
Man and team drawing lumber, 1 day at \$3 per day.....	3.00
Man and team at ripping mill, $\frac{1}{2}$ day at \$3 per day.....	1.50
Man and team drawing gravel, $\frac{1}{2}$ day at \$3 per day.....	1.50
Two men digging foundation and laying concrete, 1 day at \$1.50 each.....	3.00

Total cost.....\$115.39
Simcoe Co., Ont. W. J. GALBRAITH.

THE DAIRY.

Winter Care of Milk.

Editor "The Farmer's Advocate":

Practically all of the articles written and addresses given, on the subject of "Care of Milk," have been with reference to the summer care, and almost nothing has been written or said on the equally important topic, winter care of milk. With plenty of ice or cold water and a cooler, it is less difficult to get good milk in summer than in winter, although nearly all standards for bacteria in milk allow a larger number in summer than in winter. For instance, the Ontario Milk Act of 1911 allows in certified milk from June to September inclusive, 10,000 bacteria per c.c., while from October to May 5,000 bacteria per c.c. is the standard. In this connection, we may mention that some bacteriologists are questioning the advisability of a standard number of bacteria. As one man pointed out, 100 typhoid germs in milk are much more dangerous than 100,000 lactic acid bacteria, or other harmless types. As a matter of fact, it is easier to keep out of milk harmful types in summer than in winter.

The first thing to bear in mind is that all utensils coming in contact with milk, must be washed as soon as possible after being used. There is a great temptation in winter, when the weather is cold, to wash pails, cans, strainers, separator parts, etc., not more than once a day, or at most, to simply "give them a rinse" with gold water. This is sure to result in milk and cream of poor quality. Hot water is the best and most easily obtained cleanser of dairy utensils on the farm. A little soda or some of the soda preparations for removal of fat from pails, cans, etc., is a good thing to use for washing milk-soiled vessels. Before applying hot water, the milky parts should be rinsed with cold or luke-warm water, to prevent coagulation of the albumen. Many pails, etc., have a yellowish coating on the inside which is very difficult to

remove. This coating is caused by using hot water for washing the milky parts, which coagulates the albumen in milk, making the yellow-looking appearance so often seen on improperly washed dairy utensils.

The next point in caring for milk, assuming that the stables are clean and free from dust, is to keep the cows clean, and especially that they be cleaned at milking time. In spite of the most modern stable equipment and the greatest care, some cows are dirty nearly all the time, while others are almost as careful as some persons, in keeping themselves clean. There seems to be no way of teaching the lower animals habits of cleanliness as laid down in human standards. If there could be arranged some attachment to the hind parts of a cow, which would catch all the waste products, then automatically detach and another holder takes its place, it might be possible to keep a cow clean, but under present conditions, except where cows are almost constantly attended as in certified milk stables, it is practically impossible to keep "cows clean" when remaining in the stable most of the time, as cows do in winter. The man who can solve this question of keeping cows clean while in the stable, without too much labor, will deserve the thanks of all cow owners and all those who use milk as a food. After making allowance for the difficulties, which all recognize and admit, there is no excuse for allowing cows to become a living litter carrier. Cows known to be dirty should have the hair on quarters, udder and tail clipped short before going into winter quarters. Some cows should have the switch cut off to the end of the bone in the tail, as they are an intolerable nuisance at milking time, when they are almost sure to slap the milker across the face with this dirty switch. This is more than human nature can bear without losing temper. A man or woman who can stand this without having the "dander rise," deserves to be catalogued among the saints. We saw an arrangement in a Dutch farmer's stable in Holland, for keeping the cow's tail out of dirt that looked good. Behind each cow, suspended from the ceiling, was a stout string and on the end of the string was a piece of leather, which was looped around near the end of the tail, and when the cow laid down, the string was of the required length to hold the cow's tail out of the dirt.

In addition to all stable precautions, clipping hind parts, etc., cows should be cleaned daily with curry comb and brush, have the udder and teats washed if necessary before commencing to milk, and in the case of certified milk the cows require to be bathed daily. In some stables a "vacuum cleaner" is used on the cows. One man is reported as going so far as to wipe or dry each cow after giving her a bath, with a clean towel—no two cows are wiped with the same towel. Some brush the teats of cows daily. This is going to extremes, but indicates the care some men require to be given the cows producing the highest grade of milk.

From the foregoing, we learn that the chiefest part of caring for milk in winter, should take place before the milk is drawn. This is the main difference between caring for milk in winter and summer—in winter the main work is before milking; in summer the caring for milk takes place mostly after milking.

In winter, however, it is also advisable to cool milk in water instead of with cold air, for these reasons: water is a better conductor of heat than is air, hence milk can be cooled more rapidly in water than when exposed to the air only, the second reason is, that air, even in winter, about stables and dairies is likely to be

contaminated, hence milk exposed to such air is very likely to be more or less impure and taint the milk exposed to it.

By placing cans or bottles of milk in cold water, having chopped ice surrounding the milk vessel, the milk is cooled rapidly and conditions are most favorable for having good milk. On the other hand, it is not a good plan to allow milk to freeze. Aside from the danger of bursting cans and bottles, through expansion by frost, it is considered that freezing tends to injure the physical character of milk, although we have not seen any very bad effect of freezing milk for either cheese or butter manufacture, and we receive a considerable portion of both milk and cream in a frozen condition during winter. The chief trouble is getting it out of the can, and weighing or sampling. In most cases the weighing and sampling are not satisfactory.

We would emphasize the need of proper care of milk in winter, because there is greater tendency to neglect this in winter than in summer, as people rely on cold weather to look after the milk.
O. A. C. H. H. DEAN.

Starting the Dairy Calves.

The dairy calves are at the beginning of one of the most important periods of their lives. The first winter in the stable dairy calves are usually made or ruined. Most good dairymen do not believe in overfeeding, but it is equally true that very many poor dairymen underfeed, and the calves come through the first winter in such bad condition that it takes them almost the next summer to make up lost time. This is a distinct loss to their owners who, to make the most of the business, are endeavoring to get the calf matured at the earliest possible date that it may be added to the productive end of the herd. It is now generally believed that young stock of the dairy breeds should be liberally fed; the old-time ideas that dairy youngsters should be lean, and almost skinny have vanished, and our best dairymen now put forth efforts to get a certain amount of flesh and thickness in their youngsters. Most of this disappears later on when the animal gets to work at the pail, and her first season as a producer generally requires that she have considerable in reserve to meet the extra drain upon her system. Accordingly, we claim that calves should be well fed during the first winter, otherwise they are not likely to give the best possible account of themselves during their first lactation period, or in fact before this in growth and general development. It is a treat to see the youngsters munching away at good, sweet silage and pulped roots. There is nothing about the farm that will hasten the calves' development and keep them in the best possible condition to the same extent as will silage and roots, particularly the latter. During the past few years root growing has not been carried on in Ontario to the same extent as formerly, chiefly because of high-priced labor and the fact that corn may be worked much more easily than roots, but we still think that roots have a very prominent place in our agriculture if for nothing else than for calves of all kinds. We think also that a little grain should be given to these calves during their first winter. This should not be heavy grain, such as corn, peas, or wheat, but rolled oats, or even in some cases whole oats and a little bran may be used to good advantage. Where it is available we would advise keeping alfalfa or clover hay before the calves at all times. This does not mean, however, that their mangers should get stale with it. Nothing will throw calves off their feed more quickly and cause the feeder more difficulty than



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