

or river where a supply of ice can be got quite conveniently, but in case there is nothing of this kind in the vicinity then steps should be taken to provide a pond next summer, where ice can be cut for the locality. There is hardly a section of country where such a pond could not be made at small cost.

The following are the requirements for storing it—

1. The ice should be as clear as possible and free from snow or shell ice. The snow should be kept cleaned from the surface of the ice so that it will freeze to a greater depth and furnish pure ice.

2. The blocks should be cut as squarely as possible so that they will pack closely in the ice-house to exclude air and thus prevent melting. An ordinary cross-cut saw, with one handle removed, does very well for cutting ice, to be used on the farm.

3. The house should preferably be filled on a cold, frosty day.

4. The ice-house should provide drainage under the ice, ventilation above the ice, and protection from sun and rain. So long as these requisites are found in the ice-house there will not be much waste, provided the ice is covered on bottom, sides and top with good insulating material—say one foot of dry sawdust.

The women folk of the farm should "keep at the men" until they put up a supply of ice. If necessary they should threaten to cut off their meals. Nothing will bring a man to his senses so quickly as the fear of losing his rations.

O. A. C.

H. H. DEAN.

Milking Machine Tests.

Milking machines are gradually yet effectually forcing themselves upon the dairymen in Canada as they are in the United States. Something is necessary to decrease the amount of labor necessary about the dairy stable and the milking machine must do it sooner or later. At the Central Experimental Farm, Ottawa, several machines are being tested for efficiency and effect upon the cows, and E. S. Archibald, Dominion Animal Husbandman, has communicated the results of their research work up to December, 1913. In these experiments the endeavors have been directed towards ascertaining the purity of the milk produced, the influence of the machine upon the cows and the importance of the milking machine in reducing the cost of production.

Purity of Milk.—During the first six months of the test [the machine-produced milk contained from three to ten times as many bacteria as that of scrupulously careful hand milking, and ranged from 5,000 to 7,000 bacteria per cubic centimetre (cc.). The milk produced by hand, however, was extremely low, containing on an average only 1,590 bacteria per cc. No precautions were neglected in the production of the milk drawn by hand, as it was being sold as certified milk, which is far above the ordinary standard in cleanliness and purity. During the next three months of the test, by the aid of colder weather and improved methods of washing, sterilizing and manipulating the machine, splendid results were obtained from the milking machine, but even here the hand-drawn milk contained only one-third as many bacteria as that drawn with the machine. While the machine was new and the rubber tubing smooth and clean, the machine-produced milk ranked very well with the hand-drawn milk, but, as the machine began to wear, its efficiency, in delivering pure milk, decreased.

A higher grade man is required to operate the machine than draw correspondingly clean milk by hand, but this argument is offset by the fact that the proprietor of a dairy herd would operate the machine himself, whereas capable men to milk by hand are very hard to procure.

Effect on Cows.—To date the cows have responded well to the machines, taking to them with indifference. Only with a few exceptions, do they object to them at all, and then only for a short time.

It would be unfair to draw comparisons between the production of milk obtained by these two different methods during one period of lactation, as the cows are only becoming accustomed to the machine. It has been the practice to strip by hand after the machine has operated for a sufficient length of time and only a very slight falling off has been observed other than would obtain under normal hand milking. As yet none of the machines have produced any perceptible injury to the teats or udders of the cows.

Economy.—In twelve months, one machine has economized the labor of milking fully 50 per cent., but on the other hand, has largely increased the labor in washing and sterilizing dairy utensils. Absolute and thorough washing and sterilizing twice per day of the milking machine is imperative if one is to produce clean milk. Barring accidents, a farmer might install a two-unit outfit and milk 15 cows alone, with 50 per cent. less labor than by hand milking. Figuring 300 milking days in a year for 15 cows

and valuing labor at 15 cents per hour, he would save \$180.00 per annum in milking, but this would be offset by \$40.00 more labor in washing, which would leave him a possible profit of \$140.00. A two-unit outfit would be installed for approximately \$400.00, and the upkeep should not exceed \$20.00 per annum. This saving in labor should return a handsome profit over and above the interest on the investment, but, as yet, the Experimental Farm has not substantiated these calculations by research work, and we must wait through another period of lactation of the Farm herd before getting definite figures relative to the actual cash advantages of the milking machine.

HORTICULTURE.

"Health's Best Way, Eat Apples Every Day."

This is a slogan now being used in the United States by the growers, who are stimulating an increased consumption of apples. It would not be well to undermine the medical profession completely, but Canadian growers might shout more than they do.

Begin to make up your mind not to spray next spring when the trees are in full bloom. You are sure to kill a great number of bees, which are indispensable in an orchard. They carry the pollen from flower to flower and fertilize the bloom. Bees are the best friends of the fruit grower and he should not willfully destroy them. The beekeeper doesn't like to have his bees killed either.

At the Western New York Horticultural Convention a vote was taken to ascertain if the growers thought the cutting out of pear blight a practicable treatment and remedy. The answer was: "Yes." If our neighbors to the south find time to treat their pear trees in this way, we may as well cut away at them too, especially as there is no other treatment known.

Some Points About Cabbage.

The members of the London Vegetable Growers' Association listened with considerable interest, on February 14th, to an address delivered by A. H. MacLennan, of the O. A. C. on the production of cabbage. The important feature brought out in the address was the transplanting. When the young cabbages are produced in flats and taken out to be transplanted, the small root hairs which are a principal feature of the plant are destroyed in considerable numbers and thus weaken the feeding capacity of the plant, and destroy to some extent its possibility of getting a firm grip on the land. Mr. MacLennan recommended using what is commonly known as dirt bands. For these a special paper is necessary, but one that can be procured at any printing office. It is somewhat thicker than the paper used in groceries or general stores in tying up packages. The dirt band when completed is about two and one-half inches high and the same breadth across or a little less. They can be pinned together, but a more modern way of fastening the two ends after the paper is cut the right size, is to make a slit half way down one end, about one-half inch from the end and a similar cut on the other end, only from the bottom up, than the two ends can be joined together by simply drawing these two slits together. There is no bottom to the band, but they can be conveniently stood in an ordinary finnan haddie box, which will hold from fifty to fifty-six bands. The dirt is then put into them and the seed or the small plants can be transplanted into the dirt bands. When they are taken out to be planted, every particle of root system, which has ever developed, will be left on the plant.

Most growers make use of the small disk in preventing root maggot, and the six-sided disk will cut with the least waste of paper. Tar-felt paper is desirable, as the ordinary tar paper will lift up before it has been out very long. Wood ashes have been used to some extent and with some success in the prevention of the maggots, but other growers report no advantage, whatever, from the use of wood ashes.

200 pounds of nitrate of soda per acre will force the plants ahead, and give satisfactory returns if the other conditions are right. This might be sown broadcast or put in proximity to the plant if precautions be taken not to allow the small crystals to come in contact with the small plants.

For varieties, the growers were partial to the Danish Ball Head, short and long stem, in the late varieties, while in the early kinds the Copenhagen market and the Summer Danish Ball Head were most popular.

A characteristic of plant life which applies to most species of the plant kingdom as well as to animal life, is the productiveness of the first cross of two pure-breds. It has been proven

with poultry as well as with plants that when two pure-breds are crossed the progeny will be more productive than either pure-bred parent. But when this offspring again reproduces the resulting get may be, and usually is, quite disappointing. This experiment might be conducted with tomatoes or cucumbers by bagging a plant after removing the stamens and when the pistel is mature and ready to secure the pollen, take it from the stamens of a flower born on a plant you wish propagated in the offspring, and fertilize the pistel. Bag it till the fruit sets, and the operation is complete. The seed from this fruit should produce plants with exceptionally high power of production.

The True Spirit.

A young co-operative association in Middlesex County, Ont., has demonstrated what a small amount of mutual and combined effort may accomplish. The whole output of this organization for 1913 would not equal the yearly production of some of our large apple growers, but for No. 1's and 2's they averaged over \$2.95 per barrel. Had they attempted to sell their small offerings individually, they might have been played one against the other in each one's attempt to obtain more than his neighbor, but through burying their petty prejudices and suspicions each one obtained a handsome return for his labor and fruit. In each barrel was placed a card asking for comments on the quality of the contents, and over a dozen replies have been received voicing the buyers' appreciation of the fruit and integrity of the packer. For them a future market is assured.

The motto to be drawn from this is: A large, cumbersome, pretentious organization is not necessary in a community to return the results of co-operative effort. What is most necessary is a friendly, neighborly, unsuspicious and ungrasping group of farmers combined in a little organization for their mutual benefit.

POULTRY.

Egg Production in Canada.

Editor "The Farmer's Advocate":

A message to a Montreal paper, dated Toronto, February 5th, runs as follows:

"There are practically no domestic eggs on the local market this week, and as a result the city wholesalers are bringing in eggs from Chicago every day. Receipts from this source average roughly about 5,000 cases per week these days, which means about 150,000 dozens eggs. A duty of \$4,500 per week is being paid on these eggs."

We may be certain this is not all of it, and what did we see during the fiscal year, ending March 31st, 1913? No less than nearly 14,000,000 dozens eggs imported into the Dominion from the United States. We have a peculiar condition prevailing here; some of the middle Western States have produced more eggs than they need for home consumption since mixed farming became general in those States, but some of the Eastern States have not. Such prices can be obtained in this country that these Western States will export to Montreal, Toronto, and more Western Canadian cities, in the face of a duty of three cents per dozen. There is no duty on eggs going into the United States from Canada now, and if we need the States' markets we have a great opportunity, especially as far as the East is concerned.

Now, we find on looking into the figures that ten years ago Canada was exporting large quantities of eggs; to-day she is exporting practically none; she has been doubling her imports yearly and to some extent increasing her production. Here we have three factors which would be expected to militate against an advance in market prices at home, but what do we see? Just this, prices have steadily advanced year by year, and what is the explanation? The explanation is, that there is a tremendous demand for eggs of genuinely good quality put on the markets in such perfect condition as only a sound marketing system can do. This demand is increasing so much more rapidly than our production that we are allowing others to do more and more of our business every year. Supposing that we should some day reach a point where with our production we could supply our home demands, there would be the export trade to exploit again, and at present this looks like a very remote necessity.

What should our farmers do? They should give these questions of egg production and marketing their serious consideration and then they would awaken to the fact that if this problem is properly taken in hand the poultry department on the farm will come near being their most valuable asset. Why not adopt careful and correct methods of breeding as with other live stock,