

has aged; particularly is this
bbles.

mixed a little water than is
mixing must be thorough in
ns may be properly inter-
are must be exercised not to
ts by pouring or dropping
rough a considerable height.
e spoiled. After laying, the
ightly in order to drive out
holes. Following this, the
aded. That is, a spade is
and the form and drawn up
tly "puddle" the surface,
ttle and leaving the surface
and non-porous as possible.
stions given, the concrete
ter, but concrete that will
e extent cannot be made.
ent absorption by adding
to the concrete when
surface of the concrete after
under the above conditions
ue to the excess of cement,
les because of the excess
tiny capillary tubes which
f water yet will absorb it
undesirable in many places
to prevent it some one of
employed.

to be protected, only surface
eir object is a filling of the
substances are commonly
cement, asphalt, paraffin,
This last is known as the
one of the most effective.
also for new work as will
face coating a hot castle
dissolving three-quarters
gallon of hot water. A
of alum to four gallons
e substances are thorough-
applied to the wall, the
The hot soap solution is
ing used and care being
ing the work. After this
ars, a coating of the alum
o dry for a similar length
te coatings to the extent
g a full day to elapse be-
g chemical process which
nces used, the resulting
ores in the cement. The
coatings of each material
square yard.

expensive, is often used
melted and applied while
ly warmed, or it may be
as benzol, xylol, or even
l, these liquids quickly
s will be needed, and
neighborhood of 50 cents
he work yourself and do
wn time and labor, this
inuous products are the
st of results in unskilled
liquids, allowed to dry,
robably the cost for two
er square yard.
e of cement, sand, and
e, very liquid and applied
cient when used on old
r cakes off after a short
this or a mixture of the
ough to handle with a
used.

n of are as valuable for
nd porous stone as for
brick needs very little
rb from 3 to 5 per cent.
brick is expensive and
n. The common brick
25 per cent. of its weight
pecially if made by the
own as the dry process,

appear to be satisfactory
ctures such as dams,
ore care must be taken.
e of the heavy water-
burlap saturated with
uous layer against the
ly a satisfactory water
leakage of foul gases
rete. A method known
ed where it would be too
workmanship described
This consists in the
ixed, of some fine, dry
small particles, usually
of their size, may fill
nt and sand grains and
e dense. Usually only
surface is thus treated.
ome soap or oil emulsion
lly within the concrete

vester process before
ded to the cement and
with which the mixture
goes on in the mass,
before, fills the spaces.

Many, many other substances may be used. In fact, one farmer in waterproofing a cracked wall filled the cracks with corn stalk pith and wet it, causing it to swell and fill the cracks completely. The whole object of waterproofing is to fill all holes, pores, and cracks. Any method of doing this satisfactorily is entitled to consideration.

THE DAIRY.

Plenty of Water for the Cows.

Producers of winter milk often neglect one important source of profit. This source of profit is water, but not the kind for which one can be prosecuted for adulteration. In the latter connection, it is worth noting that one man in 1919 made five hundred dollars by adding water to the milk he sold, but it is just possible that if he had given his cows all the good, pure water they wanted to drink, at regular intervals, his income would have been just as great from actual milk produced as from poorer methods combined with the breaking of the law. Only a few days ago we chanced to see several systems of running water in operation in dairy stables. Only one or two of these systems were what manufacturers of barn equipment would call strictly modern or up-to-date. Nevertheless, they were in successful operation. We do not know what an exact survey of several hundred farms would show, but we have been somewhat surprised to note that the men in many cases who are pointed out to us as progressive and successful dairymen are the men whom we later on find out have systems of running water installed.

The men to whom we previously referred were asked just how much benefit it was to them, aside from the convenience, and every one of them thought the cows would drink at least a third more water from the time they were put in the stable in the fall until they were let out in the spring, and one or two said that the cows would give at least a third more milk. In one or two of these barns the stables were fitted up with steel stanchions, cement floors and mangers, and with, in one case, individual drinking bowls, and in another case bowls for each two cows. In three or four cases, long, continuous troughs were placed above the manger just so that the cows could get their muzzles into them easily. In one stable the trough had a galvanized lining, but in another stable there was just a plain wooden trough which for some time had been giving perfect satisfaction. On one side of this stable a large steel or galvanized iron tank was mounted near the ceiling, and from this tank the water flowed into the trough, its level being regulated by a float located in a small, closed compartment beneath the tank.

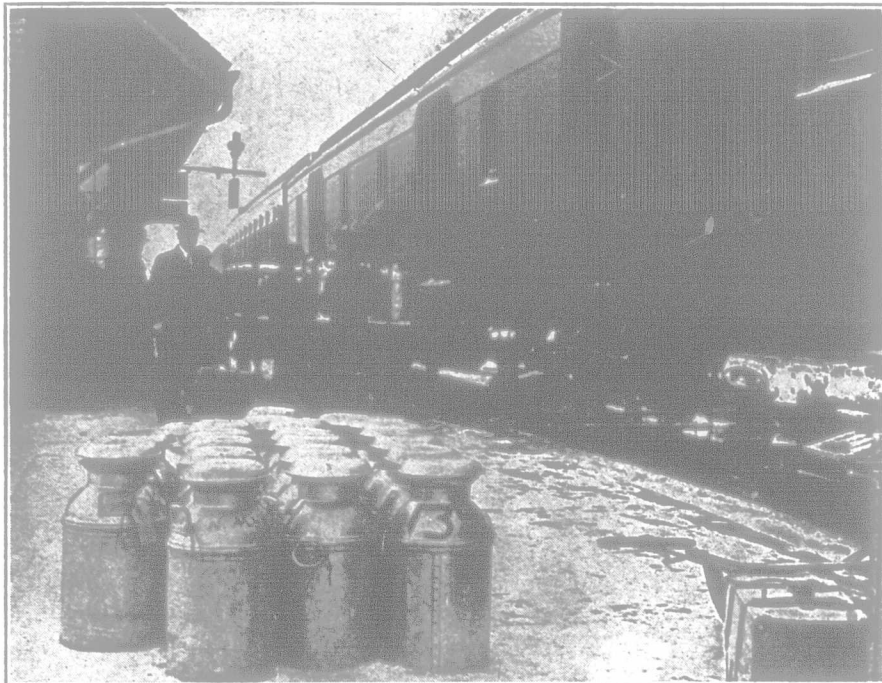
There is no doubt that running water in the stable has a very material effect upon milk production, if only for the fact that water in the stable is warmer and can be used more economically in the system of the cow, but everyone who has turned cattle out to water on a cold winter's day, where possibly they had to break the ice with their muzzles before they could get a drink, knows full well that oftener than not the cattle will not drink anywhere near the amount they require. It is, therefore, quite within reason that when they have the water available in the stable they will drink fully a third more, as has been mentioned. The following paragraphs are quoted from Eccles on the subject of water for cows:

"Large amounts of water are necessary for producing the milk itself and for the digestion and assimilation of the larger quantities of feed required to make it. The author found by experiments that a cow producing 27 pounds of milk per day drank 77 pounds of water. The same cow when dry drank only 15 pounds per day. Another cow producing over 100 pounds of milk per day used an average of 250 pounds of water. These figures show that the water requirement is in proportion to the milk produced and the food consumed. They also show that the question of water supply is much more important for the cow in milk than for the dry cow. Dry cows need not be watered more than once daily in winter time and do not seem to want it oftener. During the summer the demand for water is greater on account of the greater evaporation from the skin. Cows on heavy feed, producing large quantities of milk, should always have access to water at least twice daily. For the best results, water of good quality should be supplied close at hand, since if the animals are required to walk long distances in cold weather, they may not drink a sufficient amount, and the milk flow may be reduced for this reason. Water contaminated by drainage from barnyards or with sewage should be avoided for sanitary reasons, as well as for the additional reason that cows may not drink as much as is needed for the best results.

"In very cold climates it is profitable to warm the water for dairy cows. It is cheaper to warm the water with a tank heater by burning coal or wood than to supply the necessary heat by allowing the animal to burn high-priced feed in its body for this purpose. A cow producing 25 pounds of milk daily requires about 1 pound of corn daily to warm the water used if it be given at the freezing point. Larger producers would require a correspondingly larger amount for this purpose. An even more important reason for warming water is that a heavy-milking cow will not drink enough water if it is near the freezing temperature. The activities of the organs of digestion and milk secretion are almost stopped for a while if a cow drinks 30 or 40 pounds of ice water. Where water is warmed it is generally brought to a temperature of about 60 degrees F."

Comparative Milk and Cream Prices

An interesting point has developed in some sections as regards the price received by shippers of whole milk per can as compared with the price received by cream shippers per pound butter-fat. Some dissatisfaction has been shown by cream shippers who have for the most part been receiving in the neighborhood of seventy cents per pound butter-fat, while neighboring milk shippers have been receiving \$3.10 per can of eight gallons as per the limit fixed by the Board of Commerce for the City of Toronto. It is a little difficult to work out a comparative price for butter-fat unless one works on the assumption that the percentage of fat in the milk and in the cream are uniform. However, some secretaries of milk producers' associations have deemed it fair to consider that the average test of winter milk is 3.6 per cent., and this is probably not far out when it is considered that there is usually a good percentage of Ayrshire or Jersey blood in the cream-producing herds. Of course there are herds of these breeds that would average very much more than this, but assuming the milk to test 3.6 per cent. fat and the cream to test 30 per cent. fat, the comparative price for butter-fat



Taking on the Morning's Milk for Shipment to City Consumers.

when the price of whole milk is \$3.10 per eight-gallon can may be worked out as follows:

\$3.10 per can of 82½ pounds is the equivalent of \$3.75 per hundred pounds, from which must be deducted express and city delivery charges of 25 cents per can, or 31 cents per hundred pounds. This leaves a net price to the producer for whole milk delivered at his local station of \$3.44 per hundred.

With milk testing 3.6 per cent., and cream testing 30 per cent. butter-fat, 12 pounds of cream will be secured from every 100 pounds of milk, leaving 88 pounds of skim-milk. Valuing the skim-milk at 65 cents per hundred, which is certainly not too high and yet, no doubt, quite fair when it is considered that it is being fed under all conditions and by the indifferent as well as the good feeder, we find that the skim-milk in 100 pounds of whole milk is worth 57 cents. Subtracting this from \$3.44 as the value of the whole milk, we get \$2.87 as the value of 12 pounds of 30 per cent. cream secured from 100 pounds of 3.6 per cent. milk delivered at the producer's local station. To be comparative, the price for cream must be a price delivered in Toronto, so that we must add express and delivery charges of 31 cents per 100 pounds of cream. But 100 pounds of whole milk only furnishes 12 pounds of cream, which will cost 4 cents for express and delivery, bringing the comparative price of the cream from 100 pounds of milk up to \$2.91; delivered in Toronto. This is the price then which must be received by the producer for the 3.6 pounds of butter-fat contained in the original 100 pounds of whole milk. Each pound of butter-fat is therefore worth 80.8 cents, if the producer is to get the equivalent of \$3.10 per can for whole milk.

On the other hand, the market price for creamery butter seems low even in comparison with the price of 70 cents per pound butter-fat that is being paid to cream shippers, and some producers have wondered how

the creameries can continue to pay this price. In some cases, it is claimed that any difference is being made up by giving lower tests, but if this is being done it should be very easy for the cream shipper to detect it. One shipper that we know of has solved the problem of low tests by providing in his contract with the creamery to which he ships, that he, as well as the creamery, would test the cream, and that if there should be any difference between their tests at any time, a test made by the O. A. C., at Guelph, will settle the matter finally. Since making this contract he has been rather amused to find the creamery test invariably one-half per cent. higher than his own.

The Dairy Season of 1920.

EDITOR "THE FARMER'S ADVOCATE":

In the spring a dairyman's thoughts naturally turn to cows, feed, milk, cheese and butter. He wonders what is in store for him during the coming season. The past five seasons have been so out of the ordinary, that dairymen are beginning to ask what 1920 has "up its sleeve." As usual, there is a pessimistic note among the buyers of dairy products. A large firm to whom we have been selling the cheese made during dairy school term for a number of years, in reply to our letter of inquiry regarding the purchase of 1920 dairy school cheese, said, "we are not interested in cheese this spring"—and this, in spite of a recent reliable European market report which says: "Europe is in need of cheese and shipments will go to Antwerp, which is the chief distributing centre for Canadian produce. As soon as credits are arranged and when completed large shipments will ensue." If this reflects actual conditions in the cheese markets of Europe, Canadians holding cheese should not worry. Personally, I should like to see greater development of our home markets for cheese. Right here in Canada is a great big market for Canadian cheese, but the difficulty seems to be that Canadians are not cheese eaters. This is probably due to the fact that we in Canada do not know the value of cheese as a food. At thirty to thirty-five cents a pound, cheese is the cheapest buy on the food market. If cheese were eaten once a day, instead of meat, it would mean a big saving in cost for table supplies. However, the fact is, grocery-men seem to be shy on buying cheese. If they are approached and urged to buy cheese, they seem afraid. There is less risk in buying cheese than in any food commodity they handle. It will keep for an almost indefinite length of time, if kept reasonably cool. If the cheese are paraffined, they lose practically nothing in weight, and if properly made they will improve with age. Scientists tell us that a pound of cheese is equal in nutritive value to at least two pounds of average meat, and it costs only about half as much money. Why then, are not Canadians using more cheese? It comes back to the proposition we started out with, the people do not understand its value as a food.

One of the best aids to the 1920 cheese trade, would be a campaign in Canada demonstrating to the people the value as a food, of our home product, Canadian Cheddar Cheese—not only in towns and cities, but in villages and on farms. No food can equal cheese for muscle-building and our farmers will need a good deal of muscle from April 15th to November 15th, 1920. Why not lay in a stock of muscle-former right now and help out the cheese situation at the beginning of the season? If 500,000 farmers each bought a cheese weighing 70 pounds, or two flats weighing 35 pounds each, it would mean a market obtained for thirty-five million pounds of cheese right at the opening of the season, and we should start with a clean slate and empty warehouses for the year, 1920. I hope the plans of the National Dairy Council to do work of this kind will be carried out, as it is one of the greatest dairy needs to-day and would, to a large extent, make us independent of the uncertainties of transportation, and the intricacies of exchange on, foreign markets. Surely we as Canadians have enterprise and courage enough to tackle this problem and thus prevent what looks to be at present, a very serious situation in our cheese trade. We ought to spend some money right now in advertising the value of cheese as a food for the benefit of the people in Canada, and our cheese business.

A BETTER BUTTER BUSINESS FOR 1920.

So far as the reputation of Ontario butter is concerned, we seem to have one about as poor as is possible. Having got as far down as we can in the scale, we shall probably have a change for the better during the coming season. It is an old saying that when things are at their worst, matters begin to improve.

Our creamerymen and farm butter-makers have this decided advantage over cheese manufacturers, in that their market is largely at home. Canadians are large consumers of butter, and fortunately for some of our butter-makers, they are not so "pertickler what they eat," as in the case of some countries. But the public taste is changing in Canada, and it will be more important in future to make good butter to sell at home, than has been necessary in the past. Ontario consumers like fresh-made butter and do not lay in stocks ahead—they leave that to speculators. This too, has been favorable for Ontario butter, as it did not have to pass through the testing stage in cold-storage. In this respect, many think there will be a decided change in the near future—if not in 1920, then it is sure to come in 1921, and Ontario butter will have to stand up in flavor and general good keeping quality for at least four to six months. To make this kind of butter, grading of cream and butter, and the pasteurization of milk or cream will be necessary. Already the buyers have "pretty near" offered a premium on such butter for 1920. Possibly by 1921 they will "go over the top." Everything points to