

My system is this: The water is forced by hydraulic ram at the spring stream into a large tank in the barn. Troughs are placed in front of the cattle and connections made to the tank with piping and arranged with taps so that the troughs are filled while we are doing the feeding. The troughs are arranged with covers so no dirt or litter can get into them (and if anything gets in they are cleaned). The advantages are these: The water is always of a normal temperature, nothing to chill the systems of the cattle by an over-draught. They can drink at will, or at least three times a day, in quantities according to their own inclinations, undisturbed and unmolested, not being hooked or crowded away by a stronger animal. I have often noticed with outdoor watering that cattle on a cold day would take only a few swallows and shake their heads—yes, crimp up their whole bodies—then to be roughly dashed aside by a stronger animal. The result would be no more water that day, an over-dose the next, and the following day probably a derangement of the system or a case of indigestion. I have noticed with indoor watering some animals will drink a dozen times a day in small quantities, while others will drink three times a day in larger quantities. I am also convinced that under any system of feeding, even with roots fed abundantly, cattle will drink some water, and no more than is good for them. With ensilage they also drink very freely, and where neither ensilage nor roots are fed they drink very large quantities, and I believe the only practical way to successful dairying or stall feeding is indoor watering. Should you want to exercise your cattle give it as they need it. For young stock indoor watering is indispensable. Waterloo Co., Ont. A. C. HALLMAN.

Chemistry of Canadian Soils.

To the Editor FARMER'S ADVOCATE:

SIR,—In a note upon the papers of special interest to Canadian farmers which were read at the British Science Association meeting I overlooked an important one carefully prepared by Mr. F. Shutt, M. A., Chemist to the Dominion Experimental Farms, on "The Composition of Canadian Virgin Soils." These are soils that have not either been cropped or manured. After pointing out that chemical analysis alone cannot diagnose the productiveness of soils, owing to the varying effects of drainage, rainfall, sunshine and temperature, he shows that a knowledge of the maximum amounts of the several plant foods which may be present in the soil will guide the farmer to supply deficiencies and to do it in an intelligent and economic manner. Pot or plot experiments with the various fertilizers are at present the only means of reliably testing the soil's needs, but he expressed the belief that ere long an agreement upon laboratory methods for the determination of available plant food will be reached along the lines of Dr. Dyer's citric acid method. He presented tables of over sixty analyses and followed Dr. Hilgard in the statement of his deductions. According to Hilgard's standards of fertility, good agricultural soils will show between twenty-five and fifty parts in ten thousand of potash. On soils falling below fifteen it will pay to use potassic fertilizers. Less than one per cent of lime in clay soils indicates a deficiency in this mineral. Phosphoric acid should appear in the proportion of fifteen to twenty-five parts in ten thousand, but its adequacy is largely dependent upon the quantity of lime present. As a rule, it pays to dress peaty soils with lime. He showed in conclusion that in all the provinces of Canada large tracts of untilled land exist that would rank with the fertile soils of other countries, and that many Canadian soils are possessed of most abundant stores of plant food such as to allow of their favorable comparison with the richest soils of which we have any knowledge. J. DEARNESS.

An Excellent Farm Paper—Where to Place the Tank.

To the Editor FARMER'S ADVOCATE:

SIR,—In answer to "Subscriber's" query in your October 1st issue as to the best location for the water tank, I may say that we have a large bank barn with eleven-foot stone wall, which gives plenty of room for roots. Just inside of barn doors we bored six holes through the sleepers, and hung our supply tank in the roothouse on six iron rods. It takes up very little room. By boring a hole in the barn floor we can connect pipe with engine for threshing. The frost never gives any trouble.

It is twenty years since first I took the ADVOCATE. It is an excellent farmer's paper, full of valuable information regarding everything belonging to the farm. DAVID ROBERTSON.
Middlesex Co., Ont.

A Good Point Along With Subscription.

To the Editor FARMER'S ADVOCATE:

SIR,—Find enclosed two dollars to pay for the ADVOCATE for the years 1897-1898. I water cattle in the stable, and think it has everything in its favor. The cattle get water when they want it and do not get chilled. It does not interfere with turning out when you desire to do so. The tank is placed in the straw mow, beside the granary, over the alley in front of the cows, where the warm air from the stable helps to keep it from freezing. Pump water with windmill from outside of barn. Did not know what comfort doing chores meant till I got water inside. Success to the ADVOCATE. W. A. BEEBE.
Durham, Co., Ont.

DAIRY.

The Dairy Thief.

BY DICK JOHNSTON.

Bill Buckboard has a brindle cow
That does not pay her board.
He keeps the beast because she's now
The best he can afford.

Once, as the sun rose in the east,
He drove his cattle home;
Sat down beside the brindle beast
And lashed her milk to foam.

But Brindle shook her nimble foot,
Displacing Bill's support;
He from the dirt surveyed the brute
And thundered this retort:

"You long-legged, lanky, lean old fool
(Mind, now, I'm warning you),
Next time you dare to kick my stool,
You'll kick the bucket too."

Bill works each year to pay the debts
Of that old dairy thief.
He'd better save his empty threats
And turn her into beef.

Hints for Flaking Butter at Home -- Churning -- Salting -- Packing.

(From an address delivered at Lacombe Exhibition, Oct. 6, by C. Marker, Dairy Supt. of Alberta.)

I have been requested to act as judge of the dairy products and to give a short address on the exhibits with a view of making some suggestions, based on the character of the exhibits, which might help and encourage some of the patrons.

Before entering on my subject I wish to consider with you for a few moments the value of our agricultural exhibitions, more particularly the educational feature of them.

Besides offering prizes for such articles and products as are of a superior quality, they excite a friendly spirit of competition and rivalry among the exhibitors. Competition is not only commercial warfare, but also the great vehicle of education. Nothing has done more towards the development and progress made in the most prominent agricultural sections and countries of to-day than competition and a higher standard of general education which follows in its wake. These two great factors in modern civilization are as cause and effect. We might consider the great market of the world—Great Britain—one huge progressive exhibition, patronized by all lands, competing for first prize, viz., a regular market and highest prices paid for products of fine quality. The competition on the British market was never so keen as at present; all competing countries are doing their utmost to have the privilege of catering to that great consumer.

It is true all exhibitors do not get first prize, but they are given the opportunity of learning what is really required in an article to entitle it to recognition, and this feature should not be lost sight of. Remember there is always room at the proverbial "top of the ladder," and—that we must climb in order to reach it.

Previous to the exhibition the following list of questions was handed to each exhibitor, who returned his answers along with his entry:

1. How long have the cows been milking?
2. Do the cows get good drinking water?
3. Do they have access to salt regularly?
4. Was the cream raised in deep pails or shallow pans?
5. How soon was the milk set after milking?
6. How many hours was the milk set?
7. If set in deep pails, what was the temperature of the water in which it was set?
8. Was the cream skimmed off the milk or was the skimmed milk drawn off at the bottom of the can?
9. How long was the cream kept from the time of skimming until time of churning?
10. What temperature was the cream kept at while ripening?
11. What was the temperature of the cream when put into the churn?
12. How many minutes did the churning take?
13. How soon after did you work the butter?
14. Was the butter made from mixed herd's milk?

The objects in sending out these lists were to ascertain the particulars in connection with the manufacture of each entry of butter on exhibition; to compare with them the results of the scoring, and in that way to point out where the mistakes, if any, had been made in each particular case; and also to impress on the minds of the exhibitors that a number of conditions have to be complied with in order to make a good quality of butter as economically as possible, or, in other words, with as little loss of butter-fat in the skim milk and buttermilk as possible.

The replies accompanying the butter which was awarded first prize show that the cows had always access to good drinking water and to salt. The milk was set in deep pails immediately after it was milked, and left for twenty-four hours in water at 45° F. The cream was ripened for twenty-four hours and churned at 60° F., the churning taking about thirty minutes. The butter scored 97 points out of a possible 100.

The score card used by the judges is a very valuable feature of the agricultural exhibition, as it shows the awards in points, made by the judges, also the defects found in each entry.

Experience teaches that improvements are sure to follow when the exhibitor, having such defects pointed out, decides to concentrate his efforts to-

wards avoiding them in future. Below is a sample of an ordinary score card:

SCORE CARD.

	SCORE.	REMARKS.
Flavor (45).....
Grain (25).....
Color (10).....
Salting (10).....
Appearance (10).....
Total (100).....

Judge.

With regard to the exhibits, we shall now consider the defects pointed out on the score cards and discuss means whereby they may be avoided.

I find a couple of samples with "old" flavor; there may be various reasons for that, but the answers to the questions show in both cases that the cream was kept from five days to one week. In addition to this we find also that the cows from whose milk the butter was made have been milking nearly ten months. When cream is kept too long, the fermentation goes into the wrong channels, producing flavors termed old, bitter, tallowy, etc. In order to make a strictly fine quality of butter, we must not keep the cream too long before churning; it is essential to churn often and not hold the cream more than a couple of days, particularly in the fall of the year, when most of the cows have been milking a long time.

I found in one case a sample with "heated" flavor, which, I think, is caused by ripening the cream at too high a temperature.

"Herbal" or "weedy" flavor is no doubt caused by the cows eating some strong-flavored herbs or weeds. Herbal flavor is sometimes called "sectional flavor," being peculiar to certain sections of the country.

The grain or texture of the butter exhibited is, with a few exceptions, good, but here we have a couple of samples with a weak texture, containing too much moisture; these samples were evidently churned at temperatures higher than desirable. When we churn at too high temperatures we have a great loss of butter-fat in the buttermilk, and the butter comes soft, holding excessive moisture which cannot be worked out afterwards without injury to the texture. While it is not practicable to lay down any rules as to churning temperatures, which sometimes vary as much as 10° Fahr., we find that a successful churning should take about half an hour.

Another sample here is somewhat "salvey." Overworking of the butter is liable to remove too much of the moisture, which is required to make butter palatable, it being, to a great extent, the moisture which distinguishes butter from lard in the matter of texture. We have then to strike the happy medium or we shall find the texture of the butter weak, moist, or salvey.

While the color is largely a matter of choice, the scoring was based on the color of June grass butter.

The salting of butter is also a matter of taste, and should be regulated to please our customers and also to suit the general quality of the butter, as salt sometimes covers a multitude of mistakes made in the manufacture. Butter intended for export should be salted at the rate of half an ounce per pound, while the local markets require about twice that amount.

Last, but not least, we shall consider the appearance or finish of the several entries. If the appearance be not attractive, as a rule we do not feel encouraged to look for any other qualities; this is especially true regarding dairy products. "A thing worth doing is worth doing well." The buttermaker who produces a fine quality of butter is also careful to give it a neat and attractive appearance.

Packages.—I think it would be well to point out in a few words how the market likes the butter put up; this should, after all, be our guide. For the local market it may be put up in tubs, square boxes, prints or rolls. The tubs or boxes should be lined with the best quality of parchment paper, wetted in cold water or brine. This is waterproof, and prevents the moisture of the butter from soaking through the wood and giving the packages a wet, mussy appearance. The butter should be packed as closely as possible with a wooden packer. The best way to finish the upper surface is to pack in more butter than the package actually holds, then draw a fine cord, stretched across over the edge of the package, through the butter. The surplus thus cut off is removed and the surface is perfectly smooth. Cover the surface with parchment paper and nail the cover on tight.

Prints are made in small boxes, known as butter printers, holding one-half, one, and two pounds of butter. The movable wooden block of the printer should have some initial or trade-mark carved on it, so that each print of butter could be stamped tastefully. Prints and rolls should always be wrapped up in parchment paper. Ornamental butter is only made for exhibition, and should not be sent there unless a special class and prize be awarded it.

Has no Equal.

C. A. CASS, L'Original, P. Q. —"I think yours, as an agricultural paper, still continues to hold its own against all others."