

## ring Grain.

h, I noticed that the value of a ton of animal takes from a very important and could realize the value, they would than is now com-

the manner used, and the fed to the ani-growing, milking sidered in valuing

al is much more g animal. Why? animal takes from are converted while the proteids only waste tissue, solid excrement antities of nitro-almost equal to These constitu-require in order that in the case ash and 95% of find their way of growing and less value; the s and ash to de-use of the milk-composed large-ssity come from ds containing a ts, oil cake and of more value roots alone.

at the time it on it is subject the action of e away. This ure taken from s in the winter, w, will give the on. The objec-ill lose all its must be remem-orates, and the h contain the ain behind, to the plant roots ure hauled out so that it fer-gh the nitro-and the action of ammonia. eekon it on the cult. But, a several experi-applying farm-one field sown ard was ap-ting. On half applied, with a e remainder of the part ma-per acre, with art unmanured per acre, with as a difference t 40 cents per 6.00 per acre, ure. Besides and the ground the succeeding ents with bar-nture, manure g it in in the the field with as sown, and the part where nter gave the s earlier than

the rest. The part top-dressed after seeding gave double the yield over that unmanured; an increase of 12 bushels per acre, which at 55c. per bushel equalled \$6.60. This was put on at 6 loads per acre, which would make the manure worth \$1.10 per load. These experiments were tried on clay-per soil. Where the land is top-dressed it not only adds fertility to the soil, but it prevents the evaporation of soil moisture to a large extent. Owing to the varying conditions affecting the value of farmyard manure, it is very difficult to give a fixed value for the manure. But it is certain that it has a value far above what the average farmer puts on it.

I. B. W.

"It is time some concerted good-roads movement was made in all three of the Western Canadian Provinces," remarks "The Farmer's Advocate and Home Journal," of Winnipeg. "Figured in dollars and cents it costs more to haul wheat from the farm to the elevator or loading platform than it does to transport it to the lake front; more, in some cases, than it does to carry it to the seaboard and across the ocean. When Harriman assumed control of the Union Pacific Railway it had stopped paying dividends, because operating expenses were too high. He spent several million dollars lowering grades, improving roadbeds and straightening out the line. To-day every locomotive on the Union Pacific hauls 50 per cent. more freight than it did ten years ago. The road is paying. A Harriman is needed to do something like this for our public highways."

## THE DAIRY.

## Creamery Problems.

Address by Prof. H. H. Dean, at Convention of Western Ontario Dairymen's Association, St. Thomas, January, 1910.

What we shall have to say about creamery problems will center about three words, which are associated with progress. These words are MORE, BETTER, BRIGHTER. We prefer these words rather than most, best, brightest, because the latter indicate the highest possible achievement, and when man has reached this stage there is nothing further to be done; he may as well quit this phase of existence. Progressive, improving, do-better dairymen are what is needed in the creamery and all other branches of the dairy.

## MORE CREAM PER COW AND PER ACRE.

Larger dairy farms are not needed in Western Ontario. A greater need is more cream per acre of land on the present farms. Because cream is a more or less indefinite commodity, it will suit our purpose better if we use the term, milk-fat. Some recent investigations in Ontario would indicate that the amount of milk-fat supplied to creameries is less than one-half pound per cow daily. If the average 100 acres carry ten cows, and the cows milk 250 days in a year, we have 1,250 pounds milk-fat produced on 100 acres, an average of 12½ pounds per acre. If we spread 12½ pounds fat over one acre of land, we shall have a very thin coating, so thin that it could not be seen with the naked eye. If we can increase the milk-fat production to 300 pounds per cow, and the number of cows to 50, per 100 acres—a by no means impossible increase—we shall have a production of 150 pounds milk-fat per acre, which would be a visible quantity. If this were done, it would mean more profit to the farmer, less expense for hauling cream, hence less cost for manufacturing, as the cost of hauling the cream is about one-half the total expense for making the butter.

## MORE BUTTER PER GALLON OF CREAM.

A great deal of loss to the farm and extra expense to the creameryman results from what is commonly known as "thin" cream: i. e., cream containing too small a proportion of fat and too large an amount of skim milk. Manufacturers and agents of cream separators can do a great deal to assist on this point. With average milk, the separator ought to be so regulated that not more than twelve per cent. of the whole milk is taken as cream. This will give a cream testing about 30 per cent. fat. The advantage to the farmer in having cream which tests about 30 per cent. fat is that he thereby has more valuable food for stock, and more fertility for the farm. The creameryman obtains more butter from a given volume of cream, which is likely to be of better quality, as it is the skim milk in cream which is the cause of sourness and most of the bad flavors.

## MORE MONEY PER POUND OF BUTTER.

What is a pound of butter worth as human food? It would be difficult to give a direct answer to the question, because the value of foods is always comparative. A food has a certain value compared with something else. Generally speaking, we believe that butter is worth not less than twenty-five cents per pound. If there was less poor cheap dairy butter put on the market, it would tend to increase consumption and price.

If farmers would patronize creameries, instead of making the butter at home and selling it or "trading it out" at stores, and allow the expert salesman of the creamery to sell the butter, the price of butter could be advanced at least five cents per pound. We know of a creamery which practically controls the butter market of a certain city, and, as a result of the farmers having patronized this creamery, the prices obtained for their butter are fully five cents a pound more than they formerly received, after paying the cost of manufacturing, and they are saved the labor and expense of making the butter at home.

## BETTER CREAM.

Stronger efforts are needed towards the improving of cream—the raw material for butter-making. Ideal cream is that which is not over 21 hours old, sweet and clean in appearance and flavor, and tests an average of about 30 per cent. fat. Where pasteurization is practiced, sweet cream is very important, in order to reduce the loss of fat in the buttermilk. Experiments conducted at the Ontario Agricultural College during 1909 gave the following losses of fat in the buttermilk, when creams of various percentages of acidity were pasteurized:

Cream containing less than .35 per cent. acid, buttermilk contained .13 per cent. fat.  
Cream containing .35 to .4 per cent. acid, buttermilk contained .2 per cent. fat.  
Cream containing .4 to .5 per cent. acid, buttermilk contained .34 per cent. fat.  
Cream containing over .5 per cent. acid, buttermilk contained .52 per cent. fat.

These results indicate the importance of sweet cream where pasteurization is followed.

Cream containing a relatively high percentage of fat, kept at a low temperature (50 degrees F. or under), and delivered frequently (at least three times a week), are favorable conditions for obtaining better cream at creameries.

## BETTER BUTTER.

Better butter means butter of cleaner, sweeter flavor, uniform in color, properly salted, and put up in packages suitable for the market to which it is sent, and shipped to the consumer while in a fresh condition. Where butter is to be kept for any length of time, or where uniform quality is desired, pasteurization of the cream is one of the greatest aids in making better butter. The markets of the world are asking for more butter and better butter. It is the business of the creamery managers to supply this demand and exact the price. In the words of a somewhat slang phrase, "Plan your work, then work your plan."

This leads to the central thought of my address. One of the biggest creamery problems is how to obtain

## BETTER-MANAGED CREAMERIES.

To obtain this, it is necessary to have:

1. A good manager—a tactful, good business man.
2. Loyal patrons—those who stay with the creamery through good report and ill, so long as the business is well managed.
3. Quick, safe sales, with prompt returns, are necessary.
4. Prompt monthly or bi-monthly settlement with patrons.
5. A proper system of bookkeeping, and clear, concise monthly statements.
6. Careful, honest drivers.

## BRIGHTER MEN.

It is no reflection on the men at present engaged in creamery work to say the business would be improved if brighter men were attracted to and remained connected with the creamery industry. Chas. Reade, in one of his books says, "Better is a bright comrade on the weary road than a horse litter." To change this into modern dairy language, we might say, "Better is a bright butter-maker in the creamery than an automobile or an airship for gathering cream."

We need men like Goldsmith speaks of in his "Deserted Village":

"He tried each art, reproved each dull delay,  
Allured to brighter worlds, and led the way."

These are the men who hold the destiny of the creamery business in their hands. But we must not expect all to be smooth sailing. The creamery business has its ups and downs, like everything else. Carlyle expresses this idea in one of his aphorisms, "The brightest triumph has a bar of black in it, and might always have been brighter." Another writer says, "We hesitate to call vain and sorrow evils, when we remember what bright characters they have made." All this leads us to express the hope that our dairymen shall not grow discouraged at results below expectations, nor give up because of apparent failures.

A term at the Dairy School will give a man encouragement, insight into the creamery business, and enable him to solve creamery problems which cannot be solved so easily in any other way. There ought to be double the number of students at present in attendance at the two Dairy Schools of the Province. The founder of Cornell University, located at Ithaca, New York, said, "I would

found an institution where any person can find instruction in any study." Our dairy schools ought to be institutions where any dairyman can find instruction in any branch of dairying.

To sum up the creamery problems, they may be grouped as follows:

How to get more cream per cow, per acre, and per farm.

How to get more butter per gallon or per 100 pounds cream.

How to get more money per pound of butter.

How to get better cream, better butter, and better-managed creameries. And finally, how to secure and retain brighter men, better educated men—men whose hands and minds and hearts are in the creamery work. In this latter is to be found the main work of the revolving-arm-chair buttermakers, who may not know all the details of buttermaking and creamery practice, but who are, or should be, an inspiration to the toilers on the farm and in the factory.

## Roughage for the Dairy Cow.

## HOW TO GROW: HOW TO FEED.

Summary of an address by Prof. Grisdale at Eastern Dairymen's Convention, Belleville, Ontario.

One of the first things to be considered when discussing roughage for the dairy cow is pasture. That is the weakest point in dairy practice in Eastern Ontario. The prevailing practice is that once cows are turned out on grass, they are left to hunt for themselves, the feeling being that, no matter how bare the pasture may become, they will find something. How can they find it when it is not there?

It is doubtful if permanent pastures are possible, but, whether possible or not, they are impracticable. Pastures, then, of a short term—one or two years—are alone worth considering. Much of the value of such a pasture will depend on the seeding.

A field which has been in hoed crop the preceding year is the best one to use for seeding to grass. If it had been well manured, and the crop properly attended to, it will be rich, clean, and in good tilth, in ideal condition. But if anyone has no field fit for hoed crop, he need not despair of getting a first-class catch of grass. It can be done. Plow a sod field early in August, or in the latter end of July, and, after rolling it, work well with the disk. Cultivate or harrow occasionally during the fall, and late in the fall plow again, slightly deeper, or throw it into ridges with a double-mouldboard plow. Land treated in this manner will be ready for seeding in the spring from five to eight days earlier than ordinary ground. Put in a nurse crop of oats, barley or wheat, sowing more thinly than usual, and sow the grass seed the same day, and roll. If the ground is not dry enough for the roller, give a light harrow, and roll later.

"Don't forget to sow the grass seed." That is, do not be satisfied with a thin seeding. The very best mixture for meadow and pasture is timothy, red clover, and alsike, and, if the soil is suitable, alfalfa. Sow liberally, using about 12 pounds timothy, 9 pounds red clover, 3 pounds alsike, and, if alfalfa is added, 4 pounds alfalfa—28 pounds in all. That would probably cost \$30 for a ten-acre field. But the gain from such abundant seeding would be from \$100 to \$200 in the next two years. No drill that they have at Ottawa will sow that quantity of grass seed at once, and it is just as well. The seed should be divided into two equal parts, and one-half sown with the drill, the other half being sown by hand, crosswise of the drill marks. This insures that there shall be no blanks.

There are two good reasons for sowing grass seed thickly. The first is that every square half inch may be occupied, and the next that the clover stalks may not be so coarse as to be uneatable, as sometimes happens when the crop is thin. The hay crop may not be so very much heavier—at the Ottawa farm, however, five tons per acre have been taken off at a single cutting—but it is fine, and of better quality.

With pasture such as is ordinarily seen, it requires two acres, and some supplemental food besides, to keep a single cow for the season. At Ottawa, they had kept 60 cows from the first of June till the end of July on 14 acres. The cows had eight acres as a pasture run, and the grass on the six acres was cut and fed to them. After the end of July the fence was taken down, and the cows had the run of the whole field.

Pastures like that would revolutionize dairy conditions.

## ENSILAGE.

It is not profitable to have sufficient land in pasture to keep stock grazing throughout the whole summer season. To do that, three acres per cow would be needed. All pastures usually