

## DAIRY.

**Why the Dairy Farmer Should Feed Well.**

1st.—Because the cow takes about two-thirds of all she eats to keep herself decently alive, so that only one-third remains for production and profit. On scant feeding a cow may continue to elaborate milk, but she will do so at the expense of her own body. Net result: Starved cow, starved dairyman.

2nd.—In order that the young she is to rear, and which is a constant and heavy drain upon her system for three-fourths of the year, shall be properly nourished and have a fair start in life.

3rd.—Because it is an established fact, as every breeder knows, that a properly fed calf means a better cow. Prof. Roberts found, in experimenting, that grain-fed milking two-year-olds and three-year-olds developed into better animals than their stable mates receiving no grain.

4th.—Because milk is not a miraculous product any more than wheat or an egg. Some cows will do better with their food than others, no doubt, but the truth remains that the cow must receive a liberal share of proper food out of which to elaborate milk. Something cannot come from nothing. She must receive the raw material out of which to convert the fat, casein, sugar and other elements of milk, or the process will come to an end. Because some experimenter did not find a higher fat per cent. in the milk after increasing the grain ration, no reader of the ADVOCATE is likely to run away with the foolish notion that a straw stack and brewer's grain ration will properly fill the dairy cow's bill of fare. For many reasons it certainly will not.

5th.—Because the cow is like a good savings bank—she will return what she receives with a handsome interest, besides supporting herself, also meanwhile enriching the farmer's fields, which the bank will not do. It is no uncommon thing for cows (nor are they confined to any one breed) to add from 100 to 200 per cent. to the value of the food consumed in their milk product.

6th.—Because it will lengthen her milking period, and, consequently, the time of profit making. Milking for only 6 or 7 months is a bad habit into which careless dairymen have let their cows fall.

7th.—Because it will improve her milking powers the following season. This was strikingly proven by the authorities of Cornell Experiment Station staff in comparing herds of cows fed grain in addition to pasture. The two herds were evenly selected and had not previously been grain-fed on pasture. The first season the grain-fed lot gave 27 per cent. more milk and gained 53 lbs. in weight each more than the other herd. The following season it was found that the lot that had been grain-fed yielded over 16 per cent. more milk than the others.

8th.—Because it will promote a larger flow of milk and a consequent greater product of butter, cheese and by-products (skim-milk, whey, etc.) for feeding.

9th.—Because (and now we are on much-debated ground) while in some experimental feeding tests increasing the meal in rations fed cows has not been followed, at least in a limited period of time, by an increased fat per cent. in the milk, in other cases it has, which indicates that there are problems in cow feeding not yet fully understood by experimenters. If the conditions were not different (for instance, foods not judiciously chosen or used, or some difference in the cows,) why did the butterfat increase in one case and not in another? In one experiment which we have in mind, the cows had been previously under good feeding, and were, perhaps, up to what is sometimes styled their "normal capacity," which a short feeding test could hardly be expected to vary. But how many farm herds are doing their best? The latest new data along this line is furnished by the Vermont Experiment Station, where it was found, in testing the waste products of corn ("cream gluten meal," "sugar meal" and "corn germ feed") in comparison with a standard ration of bran and corn meal, that the former produced more milk in eleven cases out of seventeen. They produced a richer milk (increased butterfat percentage) in fourteen cases out of seventeen, and a larger total product of butterfat in fourteen cases out of seventeen. Prof. Cooke adds a word of caution regarding the use of these waste corn products, especially the sugar meal and cream gluten meal, which are rich concentrated foods like cottonseed meal. Three or four pounds per day of sugar meal per cow is as much as it is safe to give, while with cream gluten meal the limit of two pounds per day per cow should not be exceeded. In one creamery herd, of which we have knowledge, adding cut-sheaf oats to a ration of straw, clover hay and corn silage reduced the quantity of milk to make a pound of butter from 18 pounds to 15. (Cows were well on in lactation, and separator was used.) When the sheaf oats were dropped the old and lower average was resumed. In our own experience we have been struck with the prompt effect of cottonseed meal in limited quantities on both the texture and color of butter. Wm. Warfield, the veteran Shorthorn breeder, after 50 years experience handling cattle, writes in his treatise on breeding as follows:

"That one cow can be made to give as rich milk as another may not be possible; but, by proper food, a cow may be made to give richer milk than when fed on improper food."

Prof. E. W. Stewart, a thoroughly practical authority, in his standard work on feeding ani-

mals, cites numerous instances—several being actually conducted by himself with both heifers and cows—in which by a steady course of special feeding a gradual but sure improvement was effected, both in quantity and quality. Since most farmers will begin the work of development with their present herds (securing, from time to time, all the advantage possible from the infusion of pure blood,) they should, under no circumstances, neglect generous feeding. Rightly done they are sure to effect an improvement that will become a fixed characteristic, and last as long as the cow's constitutional vigor holds out.

10th.—Because the cow whose dairy quality has been improved and fixed as described will transmit, as a rule, this desirable trait to her offspring. In trotting horse lore a "developed" sire or dam is one that has had sufficient handling in harness to show his or her best speed, and it is a well recognized fact, that a "developed" horse is far more likely to beget speed than if he were not so trained. This is equally true of the dam. Prof. Stewart mentions the case of heifer calves raised from two cows before he had developed them, which proved to be very ordinary milkers, but heifer calves raised after development proved to be excellent milkers, there being no gain in the latter case by the use of a better sire.

11th.—Because the universal experience of successful dairymen demonstrates that good feeding pays, and is the only sort that does pay. In short, of no one can it be more truthfully said than of the dairyman:—"The liberal man deviseth liberal things, and by liberal things he shall stand."

**The Economical Production of Butter.**

BY JAS. W. ROBERTSON, DAIRY COMMISSIONER.

There is nothing sordid in economy. The economical production of anything is the result of the application of the best skill to its manufacture. Men sometimes sneer at economy, because they think it has an element of meanness in it. I know men so mean that they will clasp both hands over two cents, and grip them so hard and continuously that their fingers will be too numb to scatter the seed in springtime to get a good crop for harvest. There must first be a giving out, a liberal sowing, before there can be an abundant harvest for reaping with joy. It is economical to sow bountifully when the seed and the soil are good.

Now, in the production of butter it is always economical to recognize that economy takes cognizance of a man's environment. We can grow oranges in Canada; we have an orange tree bearing oranges in Ottawa, but it is in a conservatory. We cannot grow oranges economically in this climate. Many men try to go on doing something, regardless of the natural conditions that they find around them. Now, we have in Canada the conditions for an economical production of butter. We have, first of all, a fertile soil—a soil rich in all the elements of plant food. We have a soil which gives the largest crops of forage plants in the world, with conditions to support all animal life in robust health. We have a capable people needing occupation—needing employment. Why should a man, living in Canada, want to go elsewhere to get more room to spread himself on a great big farm? The money to-day is being made on small farms by men who farm well, and not by men who spread themselves over great areas and farm poorly. We have markets calling out for fine butter all the time; and making butter will enable farmers to keep their land in good condition, and give them and their families profitable employment. It is economy for the governments, for the people, to do all they can to extend the economical production of butter.

It pays to concentrate the products of the soil, and sell the refined products that carry the highest value with the least exhaustion of fertility. It is a fact that in one ton of hay you will sell 85 times more from the soil than you will in one ton of fine butter, and you will get for the hay probably \$10 and for the butter \$450.

Then, in the economical production of butter, it will always pay a farmer to remember that butter is merely a kind of food whereby a man obtains energy for work. If I move my arm I rub off some of the material of my muscles—the friction has worn some off. I need something in my food to repair the waste of tissues in my body; besides, I need a supply of energy that will make it possible for me to originate and continue motions and perform the functions of living. There is nothing in fuel that will repair the waste of the cylinder of an engine; but without the fuel you could not get the motion. What does that mean? You get all energy in all food and fuel from the old sun. He streams his rays down on the earth and on into the plants, which the soil carries. He rolls his strength up into plants, as I might wind my strength into the spring of my watch. A plant may then become food and fuel. It is economical practice on the part of the farmer to select for his fields the plants which can serve him best in that capacity. The sun can store more of his energy during a single season's growth into the corn plant than into any other plant that grows easily in Canada. A cornstalk furnishes to the cows more energy than any other plant. Then you get this energy transmuted into butter, and you have "materialized sunshine" energy to supply force for your work. There is economy in that method of getting the sun to serve you by means of cornstalks, cows and butter. For this reason I think that every man who helps to make a farmer have

increased faith in the value of cornstalks does a service to his country. The wealth of the Western States has come practically from two sources—from the sun and from the minerals; from the sun through the cornstalks, which in various forms of derivative diet, has furnished the energy to dig up the minerals. You need not try to "bamboozle" yourselves into thinking that wealth comes into existence without somebody's effort.

Then, in the production of excellent butter, the farmer needs to have good cows. I have a great deal of respect for a good cow. I have a good deal more respect for some of the cows in my stable than I have for some men. If you will treat a cow properly, she will give back an equivalent for what she gets. She is therefore honest, and will pay for her way through life. I will hunt with a microscope in the careers of some men, to see what they have given to the world of valuable service, and cannot find it. A cow sometimes does get more than she gives. I would not spare that cow. Put her on the block; get your money out of her in that way. You think of cows as boarders, kept for the profit of the man who keeps the boarding house. Did you ever think of a man keeping a boarding house, running on the general satisfaction plan, saying that if he does not get enough from one boarder to pay for his keep, he will get it from the others? No! he expects to make a profit on each one of them. The farmer should act in that way towards the cows. There is advantage from watching the cows and selecting the best of them. It is not so very hard to do, and most cows are capable of paying for their board in full, if they are given a fair chance. But if they are brought up the wrong way, they are sure to go astray—just like boys.

Some people have a preference for a large cow. To my mind, if I wanted a cow to consume more food than she will give a return for, I would like an immense animal. If I wanted her to pay for her board, I would just as soon have a small one. I believe I would rather have a small cow than a large one, if she will give the same quantity and value in her milk. Then there is a notion that the bigger the cow, the better the quality of her milk. It is not so. I have faith in the quality of goods done up in small packages. I want to tell you what selection has done. The Hon. Thos. Ballantyne—a man who has done more to advance the dairying interests of Western Ontario than any single individual I know—spoke lately in my hearing, and he stated that one cow in his herd last year gave 12,000 pounds of milk; another gave 11,000 pounds in the season. They furnished milk for cheesemaking during the summer and for butter through the winter. It is possible for a farmer, by judicious selection and feeding, to enlarge the capacity of the cows in his herd. Mr. George Allan, who lives near Ottawa, is an excellent farmer. He had four cows in 1888, which gave only 78 pounds of butter each. He began to grow cornstalks, and feed these with a little bran, and in 1889 they gave 131 pounds each; and in 1890 his cows gave him 204 pounds of butter each. See the enlargement of capacity, and therefore the economical production. It is possible to enlarge the capacity of the cow, and thus reduce the cost of production. That belongs to economy, and the wise man is economical always, because to be otherwise is to waste; and waste is worse than folly.

(TO BE CONTINUED.)

**Dairy Question.**

Would you advise perforated metal tops on deep milk cans, which are set in a well? Will the cow flavor have any injurious effect on the butter? There is a pump in the well and plenty of water. Will it be better to cool the milk before placing in the well?

A SUBSCRIBER.

ANSWERED BY PROF. DEAN, O. A. C. GUELPH.

Do not set the milk in the well at all. The risk of injuring the water by spilling milk or cream is too great. It will be far better to pump the water into a tank or barrel and set the milk cans in it there. This water should be changed at least twice where ice is not used. It is almost necessary to use ice to get good results with deep wells. The milk should be cooled to 45° F. before skimming, as there will be great loss of fat or butter in the skim milk. I would prefer covers with a perforated top, or the submerged can, such as the Cooley, which allows the animal odors to escape into the water. If there is neither of these, then the lid should be left off for half an hour after setting. The flavor of the butter will be improved by allowing these stable odors to escape.

**Report of Mt. Elgin Winter Creamery for 1892 to 1893.**

Ninety-five patrons supplied milk. Total quantity of milk received was 497,271 pounds; total quantity of butter manufactured was 23,798 pounds. The average per cent. of fat contained in the milk was 3.90. The average number of pounds of milk to make one pound of butter was 20.89. The average number of pounds of milk required to make a pound of butter in each of the months was as follows:

January,	19.62	"	"
February,	20.79	"	"
March,	23.86	"	"

The total quantity of butter manufactured during the winter of '91 to '92 was 11,062 pounds, showing an increase of 12,736 pounds.

T. J. DILLON, Supt.