

comparing Protina (a proprietary meal made from alfalfa hay and concentrates) with wheat bran, cottonseed and linseed meals. The conclusions were:

1. When wheat bran was replaced by alfalfa meal, the loss in milk yield was 3 to 6 per cent.
2. The distiller's dried grains produced 13 per cent. more milk and 18 per cent. more butter-fat than did the alfalfa meal, both meals being fed along with hay, silage, cottonseed and linseed meals.
3. The "Protina" food seemed to compare favorably with bran as a milk-producing food, but was entirely outclassed by distiller's grains. The wheat bran, however, was much cheaper as a milk-producing food, when compared on the basis of market values of these two foods.

#### EFFECTS OF FREEZING MILK ON CREAMING, CHURNING AND QUALITY OF BUTTER.

During the winter, in all northern countries, it is difficult to prevent freezing of milk or cream on the farm, and especially during transportation to the creamery. The results from several trials by the Vermont Station indicate:

1. The skimming of the milk by a centrifugal machine (separator) was unaffected by exposing the milk to freezing weather for 12 hours before creaming.
2. The ripening of the cream and the completeness of the churning were not affected in any way by the freezing of the milk.
3. Freezing of the milk tended very slightly to lower the grade of the butter. The effect, however, was so slight as to be almost negligible, although in the lots held in cold storage for two months, the difference was a full point in favor of the unfrozen lots.

#### THE EFFECT OF AGE OF COWS ON THE YIELD AND QUALITY OF MILK.

The question is often asked, When is a cow at her best? The conclusions reached are based on a careful study of 99 cows (chiefly Jerseys and grade Jerseys), representing 427 year-records made during nine years at the Station. The results are tabulated, and show:

1. A gain of one-sixth in the milk flow in the third year over that given when two years old; of one-fourth when the cows are four to five years old; of one-third when they are from six to ten years old; and the attainment of substantially maximum flow by the fifth year.
2. A tendency to drop the total solid percentages of the third and fourth years, as compared with the second, 1 per cent.; of the fifth to eighth years, 2 per cent.; of the 9th to 11th years, 3 per cent.
3. A tendency to drop the fat percentages of the third and fourth years, as compared with the second, 2 per cent.; of the fifth to eighth years, 2½ per cent.; of the ninth to eleventh years, 3 per cent.
4. A tendency to drop the solids not fat percentages, of the third and fourth years, as compared with the second, not at all; of the fifth to the eighth years, 1½ per cent.; of the ninth to eleventh years, 2 per cent.
5. The quality changes are slight, but the general trend is distinct, the figures being:

	2nd year	3rd to 4th year	5th to 8th year	9th to 11th year
Total Solids.....	14.98%	14.87%	14.68%	14.63%
Fat .....	5.43%	5.34%	5.30%	5.27%
Solids not Fat.....	9.55%	9.54%	9.39%	9.34%

Not only was the average heifer's milk a shade richer than that made in the next two lactations, but the latter is richer than that made in subsequent life.

These results are contrary to the commonly-accepted notions. Most people think a heifer's milk is poorer in fat and solids not fat than it will be after she becomes mature. The author concludes, "That heifers practically strike their gait, so far as the quality of the flow is concerned, in their first lactation, and that whatever the effect of advancing years upon milk quality may be, it is not profound enough to be of importance until old age is imminent."

#### RECORD OF VERMONT STATION HERD FROM JULY, 1905, TO JULY, 1906.

The average record of 52 cows in milk on the average 315 days was, 4,657 pounds milk, testing 14.58 per cent. total solids, and 5.14 per cent. fat; 239.1 pounds fat, equivalent to 279.1 pounds butter, per cow. The food cost was \$51.76; grain cost, \$21.48 (per cow). The cost of 100 pounds milk was \$1.13; of a pound of butter, 20.3 cents. The average income from butter was \$83.71, and the value of the manurial constituents of the feed, \$33.15 (per cow).

The foregoing figures are somewhat striking from an Ontario viewpoint, especially in the cost of 100 pounds of milk, and per pound of butter. However, the prices received for milk and butter are usually much higher in the New England States, as compared with Ontario. We need to bear in mind that profits are the difference between cost of production and price obtained.

H. H. D.

#### EASE OF DIGESTION A FACTOR IN FEEDING.

Bulletin No. 43 of Storrs Station deals with "The Facility of Digestion of Foods a Factor in Feeding." It indicates, from experiments outlined in the bulletin:

1. Six and a quarter pounds of corn meal, containing 4½ pounds of digestible nutrients, were required daily for maintenance when animals were fed exclusively on corn meal. The same two animals required 13.15 pounds hay, containing 7.1 pounds of digestible nutrients, to maintain them. Stated in another way, 57 per cent. more digestible nutrients are required in the form of hay than when fed corn meal. The author argues from these tests that the food requirements for maintenance and for production (milk or growth) depends not only upon the composition and digestibility of a ration, but also upon the facility with which it is digested and assimilated. The practical lesson to be learned from the foregoing is that cows must be supplied with easily-digested material in order to produce milk. We saw recently a good example of this. A herd was on a fairly good timothy pasture, but the timothy had become dry and woody. The cows were apparently filling themselves on the pasture, but the milk flow was decreasing at an alarming rate. When corn silage was added to the ration, the drop in flow was arrested, and the herd maintained a fairly good yield of milk afterwards. The results showed that there was needed some easily-digested matter in order to produce milk. This is another illustration of the value of corn silage as a soiling crop. We know of nothing cheaper and better for supplementing dry pasture than good corn silage. Every man who keeps cows should have a summer silo. It undoubtedly facilitates digestion and increases the milk flow.
2. An increase in the proportion of grain to roughage in a ration for milk cows tends to facilitate digestion, and is followed by increased production.



Bloomer.

First-prize Ayrshire cow in milk, Highland Show, '07.

Many feeders of cows are altogether too much afraid of giving their cows meal. Except in the month of June, when grass is usually luxuriant, cows are the better off for some meal. Don't be afraid of giving a good cow from two to four pounds of meal daily nearly all the year. It pays to feed cows concentrates, in order to make digestion easier and the milk flow greater. Especially when cows are dry does it pay to feed some meal. This is the time when most feeders withhold meal, yet it is the time when the cow needs it most. The task of building up the system and nourishing the calf from materials furnished in straw and hay is too great for the digestive apparatus of the cow, and, in consequence, she is unable to prepare for the great strain of producing 10,000 to 20,000 pounds milk during the lactation period.

3. For the young animal, a satisfactory substitute for milk must be capable of being easily digested and assimilated. Calf meal did not produce as good gains as skim milk when fed to calves.

4. When the ration for pigs consisted of skim milk alone, 230 pounds digestible nutrients were required for 100 pounds gain in live weight; 258 pounds were required from milk and shorts, and 294 pounds from shorts alone.

The general summary is as follows: The value of a feed depends upon its composition, digestibility, and ease and facility of digestion. The first two factors are considered in the formulation of rations. The third factor has only recently been recognized, and little definite knowledge in regard to it is at hand. In a general way, it is recognized that milk is more easily digested than meal; concentrates than roughage; early than late cut hay; silage than corn stover; oat than rye straw. A pound of digestible matter, therefore, should be more valuable in the former than in the latter.

#### TESTING COWS.

Bulletin 128 of the Vermont Station says: To determine annual milk and butter yields, with relatively little effort, and with a close enough approximation to accuracy to serve every purpose:

1. Weigh the milk of each cow for three days monthly. At the end of the year add these results and multiply by 10, making such corrections for time of calving and drying off as circumstances indicate. The factor 10 assumes there are but 30 days in each month.
2. Test the milk of each cow twice or thrice yearly, using two composite samples, taken as follows:

(a) For cows calving normally in the months of September to February, inclusive, and due to calve again in a reasonable time; in the third and fifth month; or in the third and seventh month; or in the second, fifth and seventh; or the second, fourth and seventh; or in the third, fifth and seventh months after calving.

(b) For cows calving normally in the months of March to August, inclusive, and due to calve again in a reasonable time: In the third, fifth and seventh months after calving.

(c) For cows calving normally and tending to go dry early: In the third and sixth months after calving.

(d) For cows which have aborted: In the third and fifth or in the third and sixth months after calving.

(e) For farrow cows which have not aborted: Fourth and fifth month, combined with thirteenth or fourteenth month, and linked with that of any month from the seventh to eleventh, inclusive.

In each case add the results and divide by the number of tests—two or three, as the case may be—for calculated average test for the year.

The foregoing conclusions are based on a careful study of nearly 700 year-records of cows at the Vermont Station, and are given by the author as an inducement to dairymen to start weighing and testing the milk from each cow. It is a short-cut to knowing the value of each cow. The author says, however, "It is doubtless better to weigh milk regularly at every milking, but it is not necessary. The results attained by the method outlined are so nearly accurate that every ordinary farm purpose is served thereby; yet, many dairymen adopting this three-day weighing scheme and finding it so slight a task, will get into the habit of weighing the milk regularly."

The writer concludes the bulletin with a recommendation to start a cow-test association. It is a co-operative effort on the part of neighbors to grade up their cows. The scheme is largely employed in the Province of Quebec, close by us, and to marked advantage.

H. H. D.

#### AN ENTHUSIAST FOR RECORDS.

Editor "The Farmer's Advocate":

I have kept individual milk records for about fifteen months. Two minutes each milking would be ample time to weigh and record for my herd of ten cows, and five minutes at the end of each week. I started records because, being a novice, I could yet understand its utility, and have learned that the cow most boosted in the town or by the seller is sometimes not equal to the scrub I own myself. I have learned that an animal which, at the time it fell into my hands, I was ashamed of, really proved to be the richest in butter-fat, and also that a cow cannot be valued properly by its shape, age or pedigree. Its record should be its true basis of value. One good-looking animal may be worth only \$25, another \$100. I have been told again and again, "That is a good cow: She gives a 12-quart pail of milk twice a day, and for richness can't be beat." Scales and test say otherwise.

When I am again settled (am moving to B. C.), if I keep cows, I shall certainly weigh each milking and test frequently; if I sell a cow, I will produce its record.

If I keep pigs, I will weigh them periodically, and every ounce of food will have to be accounted for.

If I keep poultry and sell eggs, they will have my name, date and stamp thereon.

Regina, Sask.

JOHN L. BARGE.

#### RECORDS A GREAT BENEFIT.

Editor "The Farmer's Advocate":

Have been keeping a milk record for the past three years. Six cows are all I want to keep, so started keeping a record to find out what ones were profitable, and must say this is the only way to do so. One of the best cows I had, apparently, gave, in the year, nearly 1,500 pounds less than the next poorest one, and she only tested 3.9. The time it takes to weigh milk is very small, not taking over five minutes per day for six cows. I think the records are a benefit, and also very interesting.

Hants Co., N. S.

G. B. McDUGALL.

Every farmer in Canada needs "The Farmer's Advocate."