

"How much grain can be fed with profit to cows?" This is a practical question which every feeder of dairy cows needs to ask, especially when grain meal of all kinds is so expensive as at present. The amounts fed daily per cow varied from two to four, eight and twelve pounds. The conclusion reached is: "Twelve pounds is excessive and unwise; 10 pounds may rarely pay its cost over a lesser amount; two pounds is too little, even with a full amount of roughage; four pounds, when roughage is good and plentiful, is likely to yield net returns nearly equal to those afforded by an eight-pound ration, and to prove the better, if skim-milk and manurial values are disregarded; but its residual effect on after-production may be unsatisfactory. When all the different factors are taken into consideration, from 6 to 8 pounds daily seem most advisable."

The addition of corn silage to a hay ration for cows produced seven per cent. more milk and butter, and the quality of the product was maintained. By substituting silage for one-third of the hay ration, the earning power of each cow was increased 12-3 cents daily.

Peas, vetches and oats made as good silage for milk production as did corn. The addition of soy beans to corn silage did not appear to increase the quality of the silage nor add to the yields of milk and butter when fed to cows.

Fresh fodder corn was not equal to corn silage made the previous year, when fed to cows early in September. Eleven cows shrank 5 per cent. in butter yield when fed the fodder corn, while nine similar cows gained 8 per cent. in butter production on corn silage.

Corn silage proved superior to potatoes for feeding cows. The effect upon the quality of butter by feeding potatoes was unfavorable.

Pumpkins are recommended for cows in the fall and early winter. Two and one-half tons of pumpkins are equal to one ton of corn silage. No harmful effects on cows or butter resulted from feeding pumpkins.

Grooming cows should tend to better the keeping quality of milk and the grade of butter, but does not seem to add to the milk flow or its fat content.

Water below 40 degrees was drunk as freely as that which was warmer. Less water was drunk when the barn temperature was about 50 degrees than when either higher or lower.

No change in quantity or quality of the milk given by eight cows during two seasons was noted when watered twice a day, as compared with water at will.

No advantage was found in warming water for cows during two winters. A net loss of 14 cents in 90 days occurred the second year, over and above the expense of warming the water.

DAIRY HUSBANDRY.

Variations in Fat Percentage of Milk.—Over 400 cows on early pasturage, from May 6th to June 6th, gave milk with highest and lowest fat percentages as follows: 3.63 and 4.03. A herd of thirteen cows, during the same time, varied from 3.63 to 4.62 per cent.; on successive days, 3.75 and 4.29 per cent., 3.88 and 4.62 per cent., were noted. Is it any wonder that tests at creamery and cheesery sometimes vary from one month to another. We receive a great many inquiries about this question of variation in the percentage of fat in milk and cream. Hardly any other question is so perplexing to the average farmer. He cannot understand why there should be variation in his tests. If he will but look around him, he will see that VARIATION is a great law of nature. The milk from cows is no exception to the rule.

Monthly Variations During a Lactation Period.—As a result of the study of a number of lactations, the Station concludes:

1. All cows shrink in milk flow as the lactation period advances. If farrow, almost no change in quality ensues from calving to drying off, provided they remain farrow. If in calf, the milk increases in quality as it decreases in quantity. This increase is very slight for six months, but becomes pronounced just before drying off.

2. Cows calving in the spring give more milk for three months after calving than those calving in the fall. This situation is reversed from the 7th to 9th months. Fall cows show smaller variations in milk flow than cows calving in the spring.

3. For a few weeks after calving milk is very variable in quality, being usually thinnest just after calving, and slightly richer during the next two weeks.

4. The spring cow rapidly increases the fat content of her milk, beginning about five months after calving; the summer cow starts in about the third month, while the fall cow maintains a fairly even quality throughout lactation, seldom improving it more than 0.5 per cent. The solids not fat content is most uniform, month by month, in the fall cow's milk, that of the milk of spring cows lessening somewhat in the summer time.

5. The fall cow held out better than the spring cow, and, as a rule, gave larger yields.

6. Most cows give about the same quality of milk year after year, beginning at the first calving.

ing. There is no general tendency for it to become either richer or poorer as the cow grows older.

7. Until seven years old, the general trend of the milk flow was upward, and, after the ninth year, downward. In the case of a study of 99 cows, comprehending 427 years of bovine life, the majority of the cows tended to decrease the percentage of total solids, fat, and solids not fat, as the cows advanced in years. (The author notes that this is not in accord with results got in previous studies, but says the differences are in no case large, comparing one year with another.)

8. Stripper milk is richer in fat and solids not fat, as compared with the average of milk given by cows in calf.

9. In a herd already giving a good quality of milk, the farmer is confined to selection as his method of increasing the richness of milk, breeding being used to preserve what has been gained by care, feed, and selection.

10. No poorer milk results from pasture feeding, even when the flow is considerably augmented.

11. Fatigue tends to lessen the flow temporarily, and to affect the quality for one or two milkings. The folly of testing milk before a cow has become accustomed to her new surroundings is clear.

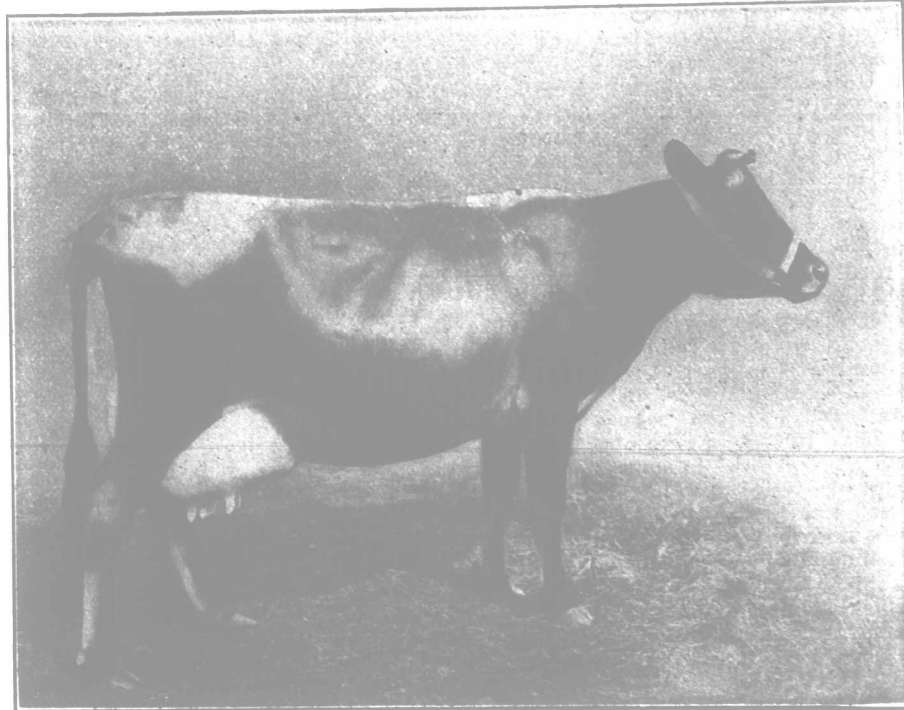
12. Milking three times a day did not pay as a regular practice, but might increase the flow temporarily, as compared with twice milking in 24 hours.

CREAMING MILK.

As a result of extensive tests comparing ordinary deep setting with adding hot and cold water to milk for creaming purposes, there was no advantage in varying the usual method of creaming in deep cans. The addition of one-fifth part ice-water to cold deep-set milk, was followed by poorer creaming and churning.

CHURNING EXPERIMENTS.

One hundred and twenty churnings seemed to warrant the following conclusions:



Brampton Primrose (imp.).

Jersey cow, four years old; bred on the Island of Jersey. Winner of first prize, senior and grand championship as best Jersey female, any age, at Canadian National Exhibition, Toronto, and Western Fair, London, Sept., 1908. Imported and owned by B. H. Bull & Son, Brampton, Ont.

1. The per cent. of fat in butter appears lessened by thinning the cream, by lengthening the time of churning, by increasing churning temperature, by increased acidity of cream, and by churning deep-setting, as compared with separator cream. The fat percentages of sweet and sour cream butter were closely alike.

2. The percentage of curd in butter did not seem affected by the length of time, or the varying temperatures of churning. The sweet-cream butters contained more curd than those made from sour cream, and the deep-setting butters more than did the separator-made goods.

3. The churnings were most exhaustive with thick and ripened cream at low temperatures, while varying acidities, length of churning and methods of cream separation showed little effect.

4. The conditions most favorable for exhaustive churning of a firm butter of high fat content are: A thick cream containing 10 to 16 per cent. of the original milk, ripened cream, unless churning at 51 degrees, or below; a low-churning temperature.

Aerating Milk.—As a result of several tests, it was found that aerating milk, without cooling, did not make the milk keep any longer. When

aeration and cooling were combined, the milk kept sweet for one-eighth longer time.

A larger surplus and a higher price per pound of fat is recommended for cream patrons who deliver cream at a whole-milk creamery. The extra "surplus" averages 3 per cent., and the extra price one-half a cent per pound of butter.

As a result of tests of cows made at fall fairs during two years, the author concludes: "The effect of worry and confusion on the milk flow is variable. Some cows made more at home; others seemed stimulated by excitement and nervousness, and made a better showing at the fair grounds. Nervous excitement tended, however, to lessen the quantity of milk ingredients, and variously to affect quality. The true butter test of a cow can hardly be made at a great fair as well as at home."

In comparing cows having well-balanced, fairly well-balanced and ill-balanced udders, the general results in milk flow agreed with the udder formation; i. e., those with well-balanced udders milked best, as a rule, and those with ill-balanced udders milked poorest.

Forty-six per cent. of the milk solids and fat were produced from the fore quarters of the udders of five cows, and 54 per cent. from the hind quarters.

Comparing score-card judgments with milk and butter records, the writer concludes: "The high-scoring, show-ring cows were really, in the long run, little if any better producers than their less-well-equipped sisters."

We wonder when the folly of the score-card, as applied to milk cows, will be fully realized.

H. H. D.

GARDEN & ORCHARD

MARKET FOR EARLY APPLES.

Ontario's early apples can be marketed at profitable prices in Great Britain. According to A. McNeill, Chief of the Fruit Division, Ottawa,

the efforts to encourage the shipments of this early crop have given results that should attract the attention of all who have apples of the early varieties, such as Astrachan, Duchess and Gravenstein. With a view to stimulating an interest in this way of disposing of the fruit, the Department guaranteed the freight on cold-storage chambers to London. The chambers were filled, and the returns were such as to show a possibility of a permanent market for all of Ontario's early apples. If this market were developed, the result would be that our apple-shipping season would be lengthened by at least three weeks, opening the second week in August, instead of the early part or middle of September, and placing on the market a fruit crop formerly practically wasted. It is pointed out by Mr. McNeill that all fruit

that was properly packed and in good condition on leaving, arrived in such condition to guarantee profitable prices. In some cases, where carelessness was the rule, and particularly where the fruit was packed in barrels, the apples were in bad condition. A warmer season and softer apples means that greater care must be exercised in picking and packing, as well as in the method of shipping. The ideal method was outlined as follows: Pick the apples when they are mature; put them in a cold room; pack at a low temperature; transfer them to a refrigerator car; have them reach the steamer at a temperature between 40 and 45 degrees; put them into cold storage on the steamer at a temperature of about 35 degrees.

As regards prices, it was claimed that the returns were entirely satisfactory for fruit properly handled. In barrels, good quality brought as high as 16 shillings, some lower grade went as low as 9 shillings. Some sent to Glasgow brought as high as 19 shillings. In boxes of 40 pounds, the prices ranged from 6 to 8 shillings.

Pears, also, have been shipped across the ocean in large quantities, and the prospects point to a permanent trade in that fruit as well. The