

all the wholesome, palatable and nutritious herbage she can be induced voluntarily to consume. Where pasture fails, use special crops like peas and oats, or oats alone, even though they may have been sown for threshing. Of course, where one has alfalfa or summer silage, the problem is easy. Alfalfa, by the way, will give excellent results if cut, cured and fed as hay. In this form it is less liable to cause bloat than if pastured or fed green, though it is worth noting that even the hay has been known to cause it. Whatever the feed, let it be furnished in abundance from spring till fall. Better fewer head kept well than a large number indifferently sustained. Cows which come into the stable night after night with a hollow appearance in front of the left hook-bone, are not likely to overflow the milk can, even though fairly well grained, but cattle which lie down two or three times a day, heaving the grunt of complacent fulness, may be depended upon to convert the cheap vegetation of the farm into its most valuable finished products, and leave their owner a liberal margin of profit on the transaction.

Variation in Butter-fat Tests.

Editor "The Farmer's Advocate":

I am sending a chart, which I have carefully worked out, it being a part of my fourth-year thesis. I find that a great many cattle-owners believe that a cow only needs to be tested once; that the butter-fat content is nearly always the same in the same cow. This chart shows clearly how much cows may vary.

The nine cows shown in this chart were in the College dairy herd at Guelph, Ont. Here the lowest, as well as the highest, butter-fat test of each cow is given.

By means of this chart, one can readily see how misleading an individual test may be, some cows testing twice as high at one time as at another. Hence, we should be careful in weeding out our dairy herd, lest we discard a good cow and leave a poor one.

Daily or weekly, or even yearly records, may not be a perfectly accurate and safe basis on which to weed out our dairy herds. It must not be forgotten that dairy cows have their off days, and their off weeks, and occasionally their off years, when their test for butter-fat will be found to vary considerably.

The scales and the Babcock test are essential requisites for every true dairyman. One dairyman's cows may produce twice the yield and return double the profit of those of another with the same soil and the same market, simply because he uses greater intelligence in his business.

R. H. C.

Production of Certified Milk at Massachusetts Agricultural College.

Of all the States in the American Union, none is more distinctly a dairy State than Massachusetts. There are only four smaller States, yet there are only six in the Republic which have as many or more dairy cattle. A dense population results in a vast demand for whole milk. Such conditions have shaped the whole course of animal husbandry, until it is directed largely toward teaching the methods of producing a high class of market milk, or, in short, scientific dairying.

The College herd consists of enough cattle to supply a specified milk trade throughout the year. To do this, about fifty cows are constantly in milk. This necessitates the maintenance of about sixty head of stock over two and one-half years of age; these, with the young stock, bring the total herd up to about 120 head. Representatives of the four leading breeds are kept for instructional purposes. The number of these pure-breeds at present does not constitute more than a quarter of the herd, but their number is being increased, and their standard improved upon. It is the departmental policy to develop the very strongest herd of each of the four breeds, thus largely eliminating the cattle now used.

A careful study of the cost of production is prosecuted. Daily milk records and careful breeding records are constantly kept. All star-boarders are eliminated quickly from the herd, and only the progeny of the highest producers are retained. Weekly tests are made for the percentage of butter-fat.

During the year 1911, on account of the disposal of some animals and the purchase of others, the total number of cows completing a year's work in the herd was 45. These cows produced an average of 6,156 pounds of milk, which has been the lowest record of the herd for some time, and has been the result of the unusually unfavorable summer season. While not an unusual annual yield, yet, considering the fact that there have been a goodly number of heifers with their first calf, and quite a proportion of animals over nine years of age in the herd, the result is very

satisfactory. There has been no direct effort made to develop a few phenomenal producers. The heaviest milkers in the herd have been producing around 12,000 pounds of milk year after year.

The College has placed at the head of its Ayrshire herd a son of Jeanie of Kelso, a high milk-producing, show type of Ayrshire cow, which, as a calf they have recently purchased from Alta Crest Farm, Spencer, Mass. At the head of the Guernsey herd is Earl of Fair Acres, by Dairy-maid's Glenwood of Pinehurst, and out of Jedetta. Thus, heading two of the breeds of dairy cattle are pure-bred bulls of as good breeding as may be expected.

The College produces certified milk entirely, which retails in Boston at 16 cents a quart. For this there is a growing trade. The very highest type of building construction, and the most careful methods of feeding, handling and management are demanded in the production of such a product. Therefore, every day the students and the people of the State have demonstrated the highest kind

on clean white-duck suits every morning, and they wash their hands after the milking of each cow. If any herdsman is indisposed, or has any sore on his hand, or in any way is in ill-health, he is laid off until he recovers. These are a few of the requirements in clean milk production.

The herd is tested annually for tuberculosis, and kept entirely free from this disease.

The stable is built of cement blocks. It is given a smooth, cement-plaster finish over the whole interior, and a rough-plaster finish exteriorly. The floor is a semi-rough-finish cement, and the cattle stand on cement. They are well bedded with shavings constantly, and the cement is laid upon a deep substratum of cinders, which obviates any tendency to either dampness or coldness from the floor. The longitudinal axis of the stable runs north and south, thus giving a maximum of continuous sunlight. A combination of the King system and the Sheringham valve system of ventilation is used. The Sheringham valve system of ventilation is simply window ventilation, in which the window drops inwardly from the top, and there is extending inwards from the wall a metal or canvas which prevents the air from floating inwards and downwards past each end of the window, but makes it necessary for the air to shoot upwards over the top of the window.

The young stock and the bulls are kept in a separate barn, in which are arranged box stalls, to which the cows are removed at calving time. This barn is of frame structure, with cement floors and tie-ups

similar to those in the larger barn. The Massachusetts Experiment Station occupies a leading position because of its long-continued investigational work relative to dairying. Cost of producing dairy cows, cost of milk production, economical feeding rations, the influence of feeds upon the content and quantity of the milk produced, are questions which have been and are being most carefully studied. Feed inspection and analysis is especially important in this State, since so much feed is bought by the cattle men, and so many kinds of feeds, different and indifferent, are offered in the markets. In this, the Station efficiently serves its clientele.

More closely associated with the work in animal husbandry than in most institutions is a study of dairying, and most of the students taking one set of courses, also take the other. Thus, a thorough study is made of milk and its products, and of the various grades of market milk, by every student of dairy and animal husbandry.

Mass. Agricultural College. J. A. McLEAN.

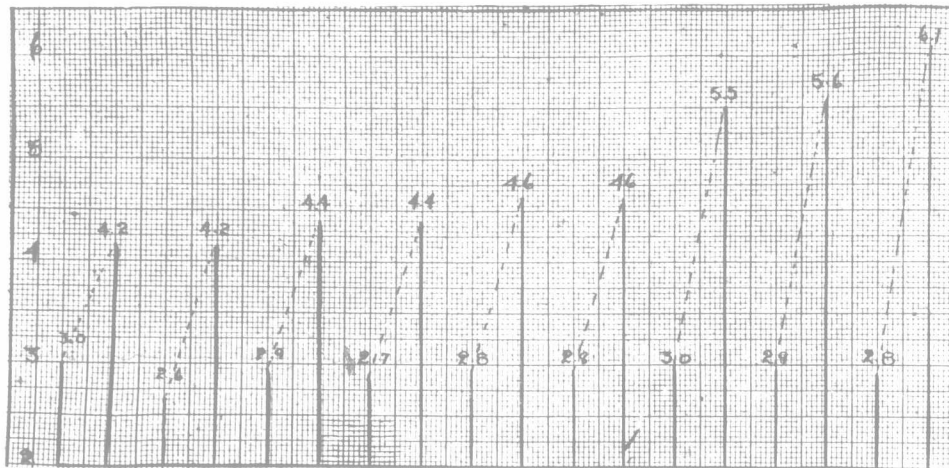
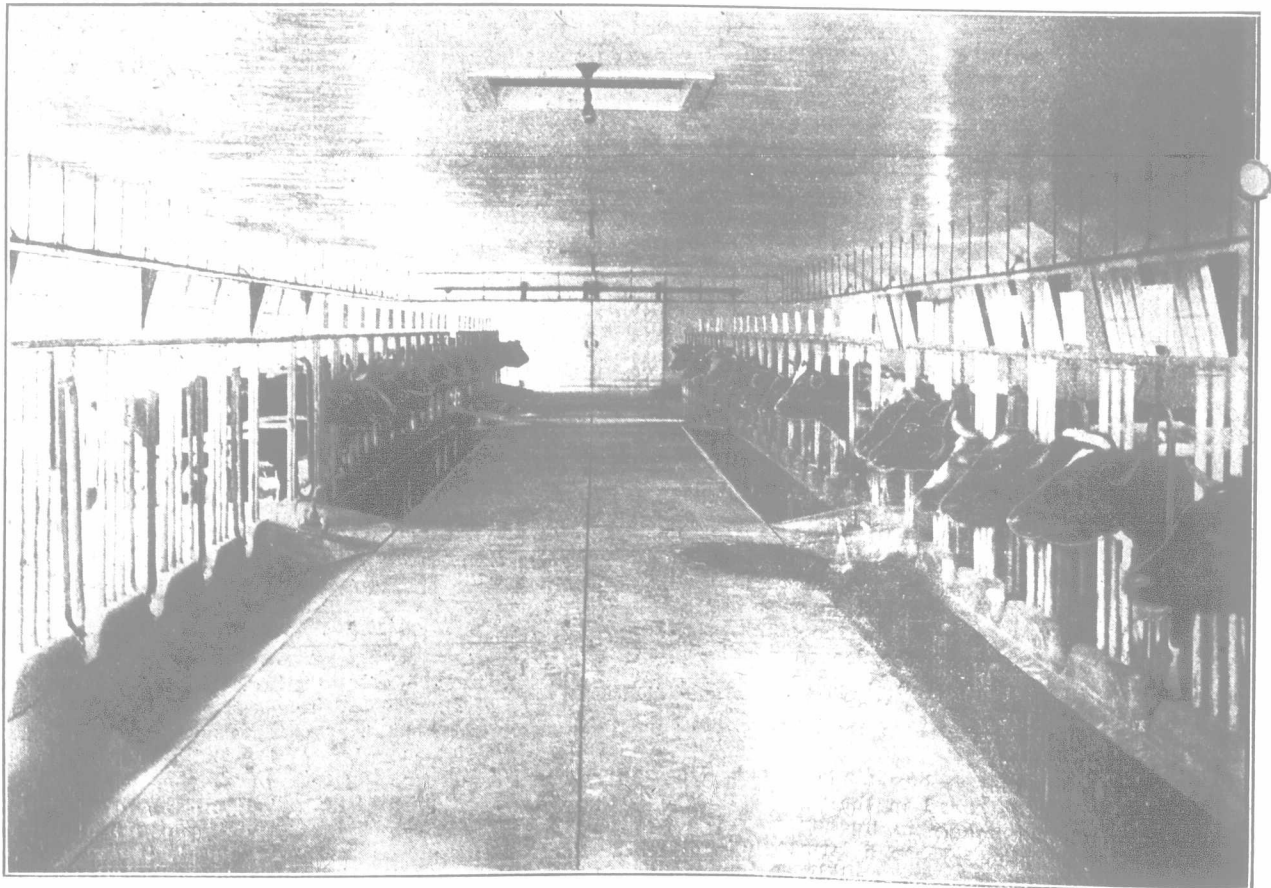


Chart Showing Variation in Butter-fat Test of Nine Individual Cows.

of dairying. From it they can make, and are taught to make such adaptations as are essential for the economic production of milk which retails for much less money. The production of the best exemplifies the essential features of profitable production of all desirable grades.

The cattle are grain-fed before milking. Hay, silage, roots, etc., are fed after milking. The cows are groomed every day; their udders, rear parts and tails are washed and rubbed dry before each milking, after which treatment the animals are so fastened that they cannot lie down until after milking. This is accomplished by a very simple device, in the form of a little chain, about the size of a dog-chain, which fastens from one side of the stallion to the other, so as to just touch the lower side of the neck as the animal is standing normally. This chain is permanently fastened to one side, and ordinarily hangs free, but when in use is hooked across as suggested.

The body, from the hip points and flanks backward, is clipped every week. The milkers put



Watering - time.

Showing the type of stanchions and mangers, and also the Sheringham valve system of ventilation.