

APPARATUS FOR DETERMINING THE MOISTURE IN DAIRY PRODUCTS.

Whenever a strong demand is made for any manufactured article, that demand is bound to be met sooner or later. At the time the Babcock test came out there was a very strong demand for a cheap, rapid and accurate method of determining the fat content in milk and cream.

During the past two or three years there has been a strong demand for a short and approximately accurate method of ascertaining the amount of moisture in the products of creameries and cheeseries. In Canada this has been more marked since the passing of the "Butter Act of 1903," in which the legal limit for moisture in butter was placed at sixteen per cent. A number of Canadian buttermakers have been trying to see how near the legal limit they could go. As they had no means of knowing how close they were to the "dead line," some stepped over. We heard recently of a firm who last year purchased butter from a Canadian creamery and exported the same to England. The party who bought the butter in England found it was adulterated with over 20 per cent. moisture. It took a good many shillings and a strong effort on the part of the representatives of the Canadian firm in England to hush the matter up and prevent it getting into the English courts. Had it gone to the courts, it would have been a serious matter for the reputation of Canadian butter, which is none too good now in England.

Circular No. 100, from the Bureau of Animal Industry, Washington, U. S. A., gives a description of "A Rapid Method for the Determination of Water in Butter," by C. E. Gray, Assistant in Dairy Division, Department of Agriculture.

The method is being patented, and may not be used by anyone except officers and employees of the United States. Users in Canada must pay a royalty for the right to use the method.

The apparatus consists of a balance, 5 and 10 grain weights, a 6-c.c. graduate, gas-burner or alcohol lamp, parchment butter paper 5 x 5 inches, special apparatus for collecting the moisture, and an amyl reagent.

To make the test, prepare a sample of butter by melting it in a jar at about 100 degrees F. Weigh ten grams of the butter on a piece of parchment paper, and transfer to the flask. Add 6 c.c. of the amyl reagent to the butter, connect the apparatus, and fill the condensing jacket with cool water. Place the apparatus over a flame, and apply heat to the bottom of the flask for 5 to 8 minutes. When the mixture in the flask becomes a brown color, and all the crackling noises in boiling cease, all the water has been driven from the sample. At this stage disconnect the flask, pour the water from the condensing jacket, invert the graduated part of the tube, with stopper in, and separate the water from the amyl reagent by swinging the tube sharply downwards from a horizontal position. Read the contents as soon as cool, by reading to the lower part of the meniscus. To make a determination, including weighing sample, requires from fifteen to twenty minutes.

One advantage of the Gray method over the Beaker method, as described by Richmond, in which a given weight of butter, say 20 grams, is heated directly over a flame, is that the actual amount of moisture in the sample is collected and may be seen and measured by the operator, whereas in the Beaker method the moisture is determined by difference in weight after heating. The Gray apparatus appears somewhat delicate for average creamerymen to operate. Whether or not either of these methods will meet the demand, remains to be seen after actual trial in a creamery.

H. H. D.

BECAUSE OF PROF. GRIDALE'S IMPORTUNITY.

Editor "The Farmer's Advocate":

I cannot give an experience of value, but might say that I was induced to start weighing by the importunity of Prof. Gridale, who would give no peace until we started weighing. Once started, we would not think of giving it up, as the herd is improving rapidly by the proper culling which the records make possible. For a record of the cows' work, we weigh once a week, which makes the work almost nil, while the results are as accurate as necessary for practical work. When testing cows to find their profitable feed-consuming capacity, we weigh every day, and find the interest in the work lightens the labor. When possible to do so, weighing the milk daily throughout the year is the best course to follow, as it increases interest in the work of the cows and insures better treatment and more profitable returns; but, as a help in culling out the boarders, weekly weighing is satisfactory. Experience has shown me that it is unjust and useless to pass judgment on individual cows without keeping a record.

CHAS. A. MAXWELL.

Pictou, N. S.

HOW TO MAKE DEVONSHIRE CREAM.

A leaflet by the British Board of Agriculture is clipped from the Dairy World, in which the art of making Devonshire cream is set forth, so that every dairy farmer may prepare the delicacy if he will. The writer remarks that Devonshire cream is strongly recommended by the medical profession as an excellent fatty food, and is displacing, to some extent, the use of cod-liver oil amongst invalids. Devonshire cream is very rich, containing from 50 per cent. to over 60 per cent. of fat, and this fat is of a more digestible kind than any other, being present in the cream in a finely emulsified condition. In the preparation of clotted cream, it is desirable to use rich milk, such as is produced from the Channel Island breeds of cattle; but this is not essential, and the evening's milk from Shorthorn cows will produce very good cream indeed. In Devon and Cornwall clotted cream is largely made from the milk of Devon cattle, which are admirably suited for the purpose. Crosses with Channel Island cattle are also commonly employed.

The cream is prepared as follows:

1. Whole milk, warm from the cow, is carefully strained into setting pans. The pans most suitable for the purpose hold about six quarts of milk, measuring 15 inches across the top, 7 inches in depth, and 11 inches across the bottom; they are, in fact, similar to shallow pans, only deeper.

2. The pans of milk are left undisturbed in a cool dairy for the cream to rise. In summer, twelve hours or less is the time allowed, but in winter twenty-four hours is usual.

3. The pans should now be carefully removed and scalded, great care being taken not to disturb the cream on the top of the milk. Scalding is carried out by placing the pans on a hot-



Comely Lass.

A typical English pedigreed dairy Shorthorn, and a well-known winner.

water stove, and allowing steam to play upon them until, in not less than half an hour's time, they have attained a temperature of 175 to 180 degrees F., when they are removed, and either allowed to cool naturally, or are cooled by placing them in a stream of cold running water. The scalding should not be done too quickly, otherwise the characteristic scald flavor is not produced. The heating may be carried out by placing the pans on a kitchen range or hob, but the hot-water method is preferable.

4. When cold, the cream may be taken off in a thick, clotted condition, and is ready for sale. In summer it is especially advisable to cool the pans as quickly as possible after scalding, as this insures extra keeping properties.

The cream is generally sold by the pound. One pound of cream may be obtained from 1½ gallons of Jersey milk, or less, whereas nearly two gallons of Shorthorn milk may be required to produce the same quantity of cream.

KEEPING INDIVIDUAL MILK RECORDS.

Editor "The Farmer's Advocate":

I kept individual records of the milk of each cow we were milking during the years 1901, 1902 and 1903. I commenced keeping them at the request of Mr. Gridale, of the Experimental Farm at Ottawa, and reported monthly to him for the first year the quantity of milk from each cow per month, also the kinds of grain we were using; and, as long as the conditions were favorable, kept up the taking of individual records. It was interesting, and at the same time it was a profitable way of knowing exactly what each cow was doing, and the only reliable way of building up a dairy herd. The last year we kept the records, 1903, we milked twenty cows, and received \$930 for the milk for eight months; and the first year,

1901, milked the same number of cows, and received \$452.37. Of course, milk was worth more, but not enough to account for that difference. Prince Edward Co., Ont. LEWIS P. HUBBS.

POULTRY.

THE POULTRY SESSION AT OTTAWA.

Mr. A. G. Gilbert opened the poultry session at the Eastern Live-stock and Poultry Show with an address of an hour's duration, devoted largely to reminiscences and experiences of his twenty odd years' supervision of the Poultry Branch of the Central Experimental Farm. He recalled the commencement of winter-egg production at the Station, and the difficulties which had to be overcome in building up winter-laying strains, which he claimed were necessary in addition to intelligent housing and feeding. In order to get winter eggs, highly artificial conditions were resorted to, the effect of which was found to be the weakening of the vitality of the stock to such an extent that good hatches in early spring were found impossible. The lessons were quickly learned, and the scratching-shed, with abundance of fresh air in the houses, were brought into requisition. These, with flocks of habitual winter layers, retained the vigor of the birds, with the result of strong germs in the eggs and good hatches in March. For ventilation, Mr. Gilbert recommended cotton-covered forms above and below the glass sashes. This admitted a constant diffusion of fresh air without draft, while the glass admitted the sun's rays, which were very necessary in a cold climate. The scratching-shed, Mr. Gilbert affirmed, is going out, its place being effectively taken by the screen-ventilated houses having their floors littered with straw during the winter season.

The feature of the poultry session was an address by Mr. F. O. Elford, former Chief of the Dominion Poultry Division, and now manager of the Poultry Branch of the Macdonald Agricultural College at Ste. Anne de Bellevue, Que. His subject was "How many hens may be profitably kept on the average hundred-acre farm?" Mr. Elford placed the number at one hundred, which, if profitably selected and cared for as they should be, would bring to the farmers of Canada twice as much revenue as the entire wheat crop of 1905, if sold at one dollar per bushel.

The flock, the speaker contended, should consist of 75 pullets and 25 hens of the previous year's hatching. It was claimed that for egg production, ten pullets were about equal to seventeen two-year-old or twenty-five three-year-old hens. Mr. Elford recommended breeding from yearling hens that as pullets had proved themselves satisfactory winter layers. To find out the good layers he used a trap nest and leg bands. As he liberates each hen from her trap nest he marks her leg-band number on the egg with a lead pencil. Twenty-five of the best-shaped hens that were good winter layers as pullets are selected by Mr. Elford as the breeding flock.

Discussing the question of feeding, Mr. Elford stated that the use of common sense was of greater importance than the balanced ration. A winter layer invariably possesses a good constitution, and can make good use of food if not balanced in accordance with the laws of science. Hopper feeding, the speaker stated, must be introduced gradually and with judgment. He is using it to some extent this winter, but bran is the chief feed fed from the hoppers.

Mr. Elford has under his charge 250 hens in colony houses, 14x20x6½ ft. high. The walls are of single boards, lined with building paper. It has a double roof, the space between being packed with straw. Many of the hens laid since the middle of November from 40 to 60 eggs each, even though the temperature went as low as 18 degrees below zero. About a score of the flock had not commenced to lay by March 1st, and these will lose their heads as a penalty. On cold nights a curtain is let down in front of the roosts. He has had no sickness in the flock during the entire winter. In reply to a question by Mr. Wm. McNeil, of London, Mr. Elford attributed the good health of the birds to the vigorous condition of the stock when selected in the fall, to wholesome food, and to abundance of fresh air.

Mr. W. R. Graham, of the Ontario College, referred to a few investigations at the College in 1906. He tried rearing late-hatched chickens on dry feed without water to drink, and found great success with the system. The chickens hatched in July were enclosed in wire runs in a field of growing corn, and fed by the hopper system on dry wheat. All the moisture they received was from the vegetable matter growing up among the corn. The chicks at eight weeks old weighed 2 lbs. each, and cost less than four cents per pound of