

be satisfied with the returns this year from honest milk, but it seems that there are still a number who are too anxious to get rich fast. Let this be a warning to them that they are known by the Instructors and makers.

On Saturday morning the Instructors had the pleasure of visiting the celebrated dairy farm of Geo. Rice. Mr. Rice drove us around the farm, and we saw some of the finest corn and potato crops to be seen anywhere. His dairy cows are a fine sight. Some of them were seen milked and the milk weighed, several giving from 30 to 34 pounds at the morning's milking. Before leaving the farm we were treated to a feast of strawberries and cream, and all agreed Mr. Rice was a good fellow.

The balance of the day was spent at the Courtland cheese factory, which is ably managed by Mr. Frank Travis. The Instructors took off their coats and went to work, and as the work was going on, details of making the cheese were thoroughly discussed and worked out. It was a real pleasure to spend a few hours in such a well-equipped and clean factory. To see Mr. Travis and his three assistants dressed in white was a sight some of our Instructors do not see the like of in a long time. All left for home feeling that they were better able to do their work, and also that it was one of the most profitable and pleasant days they had ever spent.

These meetings are of great value to the instruction work, as the Instructors are able to do more uniform work after meeting and talking over the work with each other, and other meetings will be held during the season. GEO. H. BARR, Chief Instructor.

Determining Moisture in Dairy Products.

Editor "The Farmer's Advocate":

There is a strong demand at present for a practicable method of knowing the moisture in dairy products, especially in butter. We have been working on such a method for some time, and give our experience up to date, in the hope that it will stimulate further work by others and bring out practical experience by dairy workers. (Incidentally, we may mention that the bottles to be used in Babcock testers for determining moisture, but which really did not determine moisture, but fat, in butter, we have not found satisfactory.)

First. We had a steam oven, made by a local tinsmith, of the following inside dimensions: 6 x 8 x 10 inches. There is an inch space between the outside and inside part all around the oven, except on the front side, where is hung the door. There is an opening on the top about one inch in diameter, which opening passes through both parts of the oven, and allows a thermometer to be suspended in the oven through a cork, which makes a close connection, and enables the operator to see the inside temperature of the oven without opening the door. The oven is connected to one of the steam pipes in our creamery by 1/4-inch pipe. There is a regulating valve on the pipe, and also a steam gauge near where the steam enters the oven at the top. There is an outlet for condensed steam on the opposite side at the bottom, also of 1/4-inch pipe, with a valve, and this leads to the outside of the creamery, to allow steam and water to escape. The oven is made strong enough to withstand 10 pounds steam pressure, though we usually run with 6 to 8 pounds, which is sufficient to maintain a temperature of 100 degrees to 105 degrees C. (not Fahr.). There are two perforated movable racks in the oven, about three inches apart, and the bottom of the oven makes a third shelf. The oven will hold 12 to 18 samples, and requires very little attention. The cost was about \$5, complete.

For drying the samples, we purchased a dozen of what are called "patty pans." These pans are about 2 1/2 to 3 inches in diameter, and 1/2 inch deep. It would be more convenient if all were exactly the same weight, but a person soon gets to know the weight of each. We number the pans, and have the weight in grams marked on each for reference.

In sampling butter from a churning, we take 2 to 4 ounces from different parts of a churning just before packing in boxes. If butter is already in boxes, then draw two or three tules from the tub or box. The samples are put in a tightly-stoppered bottle having a capacity of about twice the volume of sample—i. e., if taking a two-ounce sample—which is sufficient from a churning of 100 to 200 pounds butter, and in the same proportion for larger churnings, then have a four-ounce sampling bottle. This bottle should have a rather wide opening for putting in samples easily.

The plan chiefly followed by us is to melt this sample by setting the bottle in a dish of warm water. When liquid, shake thoroughly, and measure about 3 c. c. of the liquid butter (using a 6.01 c. c. pipette) into each of two of the "pans," which have been previously weighed. Note the weight of the "pan" and butter; subtract the weight of "pan" from weight of

"pan" and butter, and you have the weight of butter in each pan. Now transfer to the oven, and allow to remain for 5 to 6 hours. Then weigh, and return to oven for 1 to 2 hours, and weigh again. If the second weighing is the same, or nearly so, as the first, the water has been all evaporated. It is now a simple mathematical calculation to determine the percentage of moisture in the butter, e. g.: Weight "pan," 16.45 grams; weight "pan" and butter, 18.78 grams; weight butter, 2.33 grams; weight "pan" and butter after drying, 18.45 grams; percentage of moisture in butter, $18.78 - 18.45 \div 2.33 \times 100$, or 14.16 per cent.

For accurate work, it is better to have a balance that will weigh to the second or third decimal place, although we doubt not that for ordinary creamery practice, weighing to one-tenth of a gram will be near enough. It is also better to duplicate samples, and take the average.

We are working along similar lines for determining the moisture in curd and cheese, and hope to have a practicable method, whereby cheesemakers may know approximately the percentage of moisture in curds at dipping time, thus ensuring more uniformity in cheese.

The foregoing is to be understood as a method whereby the creameryman and the cheesemaker may know approximately the percentage of moisture in dairy products, and does not claim to be scientifically accurate. It is often advisable to sacrifice a measure of scientific accuracy in order to secure practicability.

Hoping this may tend to relieve the anxiety of some of the boys who are unable to sleep nights for fear of the Revenue Officers or Dairy Authorities swooping down on "over 16 per cent. moisture in butter," I am, H. H. DEAN, Dairy Dept., O. A. C. Prof. Dairying.

Cow-testing at Brockville.

The Brockville Cow-testing Association maintains its good record in the fourth test, under the Dominion Department of Agriculture. Thirty-four cows gave over 1,000 pounds milk, all but five of them testing over 3.0 per cent. fat. The average yield of fat per cow is again the highest of any association. The contrast between two of the herds tested was very striking: five cows gave almost as much milk as the twelve. The number of cows tested was 146; average yield of milk, 891 pounds; average yield of fat, 30.2 pounds; average test, 3.3.

APIARY.

A Norfolk County Apiarist's Homestead.

The accompanying engraving shows a group taken at the quarterly meeting of the Norfolk (Ont.) Beekeepers' Association, held on May 31st, at the farm of Chas. W. Challand. In the background is shown a glimpse of Mr. Challand's apiary, and behind this, again, part of the orchard which produced prize-winning fruit, exhibited at the Fruit, Flower and Honey Show, Toronto, in 1904 and 1905. In 1905 it took five firsts with seven entries, and in 1903 three firsts on as many entries. This is the farm, by the way, on which a great mastodon skeleton was found seven years ago; the tusks were 9 feet 5 inches long, and weighed over 300 pounds; the teeth measured 4 1/2 x 8 inches. Thirty years ago this was solid beech and maple woods; to-day it is a fine steading, with 14 buildings, all told, including a building he has recently completed for extracting honey, and also for a store-room. The idea of social gatherings of beekeepers and persons engaged in other branches of agriculture, to discuss in an intelligent, friendly way interests in common, as our friends in Norfolk do, is very much to be commended.

More Fruit-growers Should Keep Bees.

It has long been the writer's opinion that fruit-growers ought to keep more bees than they usually do, and this impression was very materially strengthened by a recent trip through one of the best fruit sections of King's County. The evidence in favor of beekeeping was along two distinct lines, each of which is well worthy of careful consideration. In the first place, we drove, in the course of the afternoon, past hundreds of acres of orchards, all in full bloom; the whole country seemed white with apple blossoms. Not only was every tree in the orchards full, but every old roadside tree was a veritable bouquet, and, in looking at them, I couldn't help thinking what an immense amount of labor was involved in the carrying of the pollen from the stamens to the stigmas of all these blossoms, for repeated and careful experiments have shown that, to a very large extent, indeed almost exclusively, this transfer of the pollen is done by insects, and not by the wind, with the ordinary orchard fruits of this region. And if all this labor must be done by insects, what countless numbers would be required to do the work, even under the most favorable conditions; that is, with continual fine weather, while, with a good deal of cloudy, rainy weather, during which bees work but little, there must be a large increase of workers, or else some of the work must go undone, and I believe the latter is what very often happens. And, very naturally, when any work goes undone it is that which is farthest from the hives which is neglected; so that the man who keeps the bees right alongside of his orchard is the one who would profit most from their pollenizing during rainy, catchy weather, which would be just the time when it would be most important. For although it is well known that bees will often go miles from the hive in search of honey, yet it is certainly reasonable to expect that, for the most part, they would work near home, and that, particularly when showers came frequently, they would stay near the hive. So much for the pollenizing side of the question; and while I have made no careful comparison of orchards where bees are kept with those which depend on wild bees or the neighbors' for pollination, and while such a comparison would be very difficult to make, since bees are only one requisite, yet it seems to me only reasonable to accept the view that I have just set forth.

The other argument in favor of beekeeping is, of course, the value of the honey produced. On the drive I speak of, we stopped for tea at the home of one of King's County's large fruit-raisers, who last year sold in the neighborhood of \$5,000 worth of apples, and among the other good things on the supper table was a square of honey



Norfolk Co. Beekeepers in C. W. Challand's Apiary.