

BABCOCK'S MILK TEST AT THE NORFOLK AGRICULTURAL SHOW.

The following appears in the *Norfolk Chronicle*—

The object of Babcock's machine, which is an American invention, is to test the butter-fat in the milk. By this means, if the whole quantity of milk given by a cow for the year is known, the quantity of butter she will produce can be almost exactly ascertained; or even if the whole quantity is not known, it can at once be found whether a cow is good for butter or not. In a herd kept for butter production, bad cows for this purpose can be got rid of, and so great is the variation shown, that cows giving half the quantity of milk will sometimes be found to give more butter than those giving the larger quantity. But it does not follow that small yield give more butter. Nor, in short, without a test can the butter yield be ascertained, unless the actual cream of each cow is churned separately. The Committee of the Norfolk Agricultural Society arranged with Mr. Thomson, steward of the Necton Hall home farm, to take tests of the cows at the show and exhibit the machine, in which great interest was taken. The following were the results:—

Per cent of Butter-fat.

1 Shorthorn (pedigree)	3.7
2 " " (not pedigree)	4.9
3 " " (not pedigree)	3.6
4 " " (not pedigree)	3.6
1 Red Polled (pedigree)	4.2
2 " " (not pedigree)	4.7
3 " " (not pedigree)	4.0
5 " " (not pedigree)	5.0
1 Jersey, winner of dairy cows	7.7
2 " " (not pedigree)	6.2
3 Jersey	7.0
4 " " (not pedigree)	6.0
5 " " (not pedigree)	10.0
6 " " (not pedigree)	10.0
7 " " (not pedigree)	5.8
8 " " (not pedigree)	10.3
9 " " (not pedigree)	7.8
10 " " (not pedigree)	7.3
11 " " (not pedigree)	6.2
12 " " (not pedigree)	6.2
13 " " (not pedigree)	7.0

The standard quality is 3 per cent, and, therefore, all the cows may be considered good butter yielders, so far as quality is concerned, as they all exceeded the standard. The Jersey No. 8 gives a record, and to show how cow-keepers, without any test, proceed in the dark, the owner of Jerseys No. 6 and No. 2 exhibited No. 2 in the dairy competition and lost the prize. He should have put in No. 6, and would probably then have won it by the points given for butter-fat.

The actual machine used was purchased of an American gentleman, who came to Necton to buy cows for Chicago, and would not buy any unless they tested over 4 per cent. He found several that did that and more, and finally took away three with him, a practical application of science which should show English cow-keepers the way to buy value for money.

FEEDING COTTON CAKE.—We are giving our dairy cattle best cotton cake. A few cows we bought last month will not eat it without soaking, so our plan is to pour some hot water on it at night, and give them the cake-mash cold in the morning. We feed once a day the lot this way now. Is it a good plan or not? Does the cake

lose anything of its feeding value for milk by cooking? We are told so, but fancy not. (2) Would the cooked cake be a safe, regular feed for young calves? We began a fortnight ago giving a little to them, and they seem to be doing all right, and have just as nice a bloom on them as previous lots had on linseed cake?—J. G. [Your system of using the cotton cake is a safe and correct one. Such cooking as you give the cake improves it rather than otherwise. Why use cotton cake for milk production? A mixture of oats and beans ground together, soaked in hot or boiling water in the way you name, and fed in a sloppy state at a temperature of 60 deg., would produce not only a larger yield, but a richer quality of milk at a saving of £2 per ton in the price of the food. (2) If you continue to use cotton cake for your calves, let the cake be reduced to meal, then cook or soak it with hot water, and allow it to stand twenty-four hours before being fed. Your calves would do much better on the following mixture.—One of wheat, one-half of white peas, and one eighth of linseed, grind together, soak well in boiling water as before, mix with some chop or dried grains; use one or two pounds per day according to the age of the animals.—G. M.] (1)

DAIRY TEST, AT CHICAGO.

The general exhibit of live stock will not take place until August, and in this Canada will be largely represented. Ontario will likely furnish the bulk of the animals, and not only so, but I should not be surprised to see a good many of the awards which go to American stockmen taken by cattle and other stock purchased from our breeders.

In the meantime a test of dairy cattle has been going on, which commenced on the first of May, and so severe were the conditions that only three breeds would face the music—Jerseys, Guernseys and Shorthorns; twenty-five cows of each breed are in the test, Ontario showing up only in the Shorthorn class, where she has five cows selected from the best milking herds. No doubt some results of these tests have already been published in the *Farmer's Advocate*. They are given to the world by means of intricate tables, which, when completed will be the most valuable record of the relative merit of the various breeds ever compiled. The object is to ascertain which cow gives the most profit to the farmer, every item being taken into consideration. There is no pampering or feeding of specially rich foods, but all are treated alike. The ration is of the same quality, is regulated by the superintendent in charge of each section, and each cow is debited with what she eats. It has been the intention to approach, as nearly as possible, the conditions attainable by the average farmer, though I hardly think any farmer in Canada or the United States stables his cattle all summer, giving them only an hour for outdoor exercise, as has been in this test. Nor is it usual to continue the use of ensilage and dry feed so late in this season, but that was unavoidable. The first test, for cheese only, ended on the 26th May, the second, for butter only, began on the 31st May and will last

(1) We should be very shy of giving calves cotton-cake in any form. Sir John Abbott will remember the loss of Guernsey calves from this cause ten or twelve years ago.—Ed

till the 28th August. Without going into figures to any extent, I will just say that while the Jerseys led throughout the first test in quality and richness of milk and weight of cheese, the largest quantity of milk, 50 lbs. per day and over, has been given by two of the Ontario Shorthorns. The very strongest endorsement of the Babcock test as a means of ascertaining the value of milk for cheese-making is also given. There will be two more dairy tests after the butter test is finished, but that is a good way in the future.

CHEESE AND BUTTER.

The most interesting novelty shown at the dairy was the "New Era" Disc-churn. It will be remembered that at the last Dairy Show some sensation was caused by the exhibition of a churn which consisted of a large tin disc revolving vertically in a tin pan. The absence of friction of course reduced the labor to a minimum, and—though it seemed surprising—the butter came in not more than the average time—and frequently less—and in good condition. The invention has now been taken up by a company and submitted to exhaustive tests, with the result that the original form has been considerably modified. Tin has been discarded for wood, both in the churn and in the "disc," and a cover has been put on, which bears an important part in the operations. In point of fact, while in the original form it was not easy to see how it was that butter came at all, it is now evident that the old principle of concussion is adopted. The wooden "disc," in fact, which is of substantial thickness, but bevelled all round to a fine edge, is really a "dasher" of a new and very ingenious shape. The churn, as shown at Gloucester, consists of an oblong wooden vessel, with a circular bottom, in which a disc of hardwood revolves vertically in the cream. Over this disc is a hood or "splash-guard," so that when the disc is revolved the cream picked up by it is dashed into this cover, and then returned to the churn at the other end of the vessel. The speed of the disc is multiplied by gearing, so that very considerable concussion is given to the cream, and the butter is brought in a remarkably short time. Butter has been brought in ten minutes with fresh cream at 50 deg., in five minutes at 58 deg., and in still less time with cream, at 70 and 80 deg., without spoiling the grain of the butter. Practically, indeed, butter can be brought in first rate condition at any temperature, and in less than one fourth the time usually taken. This was proved by the churnings which took place at the show. Of course, other forms of churn sometimes bring butter very quickly, but this is only by accident—as it were—and always at the cost of injury to the grain. The "principle" of the churn is thus explained by its exhibitors, the "Disc," Churn Company, 39, Coleman Street, E.C.:—"Unchurned cream, as is known by every one, is characterised by a great amount of 'viscosity'—a gluey consistency which retains and envelops the butter globules and prevents the butter from 'separating' until that viscosity has been got rid of by churning. Now, this viscosity is the feature which has been utilised in the Disc churn, for by reason of it the disc revolving perpendicularly, half in the cream and half out, gets coated with a layer of cream which is thrown off by the tangent force of the revolving disc. Thrown violently into the hood which covers the disc, it receives its concus-

sion there, and immediately returns to the churn. When, however, that change takes place which the 'dairy-maid' knows as the 'breaking of the butter,' the viscosity of the cream disappears and the disc immediately cleans and shows the bare wood once more. This is the sign to cease working; but prior to this, as the churn is open and the whole operation is under the eye of the dairymaid, she gets ample warning of the moment when, in the ordinary churn, over-churning so often sets in.

BUTTER-MAKING COMPETITIONS.

THE agricultural show season is fast approaching, and with it the butter-making competitions, which, during the past two or three years, have attracted much attention. The question I wish to ask is: Have these competitions and the money spent on the technical teaching of butter-making benefited the ordinary tenant-farmer, whether he is the owner of four or forty cows? I have no complaint against the teachers, many of whom are clever adepts in the manipulation of butter. Any person of ordinary intelligence can master the details of manipulation in a few lessons. I maintain that if butter-making is ever again to become a successful farm-house industry, those in authority, and who are responsible for the teaching, must see that this is carried out on correct principles. The public want fact, not opinions. Is it not a fact that in many butter-making competitions the teacher of the class has been selected to award the prizes? The judge, though actuated by the purest motives, is nevertheless open to suspicion. Frequently the principle on which the prizes have been awarded is open to debate. For instance, the weight of butter produced from a given quantity is a thoroughly fallacious test. It has been proved on undeniable authority that the quantity of water remaining in the butter when made up varies from 8 to over 30 per cent, whilst it is no unusual occurrence to find one-half to three-fourths of 1 per cent of butter-fat left in the butter-milk. This is a most important consideration to the farmer, and although anxious to encourage by every practicable means the extension of butter-making and stock-rearing on every farm, I cannot support the present system of teaching. A new departure is much needed and if carried out on correct lines, would not only strengthen the hands of teachers, but it would enlist the sympathies and gain the confidence of the dairy farmers. Under present circumstances the only prospect open to the holders of tillage farms is the butter dairy and the rearing of stock. Let future competitions be carried out on different lines. The competition should extend over three days. On the first day each competitor receives 12 gallons of new milk, which he or she passes through a hand separator. Each competitor is furnished with the use of a hand separator and an earthenware vessel to contain the cream. A common dairy is provided for the competitors, the dairy is kept at a normal temperature, and each competitor exercises his or her own judgment in ripening the cream for churning. On the third day each sample, both of separated milk and butter milk, is tested by the Babcock machine, in order to ascertain the residue of butter fat left in the by-products. Then each sample of butter is submitted to a chemist to