from Canada, and for the future quality must be its strong point. He urged corn growing both for green feed and the silo. Mr. D. Derbyshire, of Brockville, President of the Ontario Creamery Association, predicted higher prices for cheese next season. Inspectors Purvis, Grant, and Eager all spoke strongly in favor of the use of the Babcock tester in paying for milk for cheesemaking. Out of 27 factories in Mr. Eager's district, 25 use the tester, and paid for the milk by fat percentage. An interesting feature of the convention was the spirited debate between Prof. Dean and Prof. Robertson *re* the "straight butter-fat" and the "two per cent." plans of paying for milk.

Prof. Fletcher, of Ottawa, gave instructive addresses on "Grasses," "The Horn-fly," and at an evening session on "House Plants," giving also an interesting account of his trip to the Pacific Coast, and on the closing day dealt with insect pests. Addresses were also given by Hon. John Dryden, Prof. Dean, Prof. Robertson, John Gould, Instructor Peblow, Mr. Jas. Whitton, S. L. Owen, and others.

The election of officers resulted as follows:—President, Henry Wade, Toronto; First Vice-President, E J. Madden, Newburg; Second Vice-President, John McTavish, Vancamp; Directors—Wm. Eager, Morrisburg; E. Kidd, North Gower; John R. Dargavel, Elgin; James Whitton, Wellman's Corners; T. B. Carlaw, Warkworth. Auditors—Morden Bird, Stirling; R. R. Craig, North Gower.

## Quality of Cheese Produced from Rich and Poor Milk in the Experiments made at the O. A. C. Dairy.

SIR,—According to promise, I submit the results of the "crucial point"—quality—in our experimental cheese up to date. The November and December cheese have not yet been judged, consequently they cannot be reported upon at present. I would say at the outset that I approach this subject of "quality" with a good deal of diffidence, largely for two reasons:—

1. Because of the great indefiniteness of what is meant by the term "quality" in cheese, and of the lack of uniformity in opinion as to what goes to make up this vague term "quality." I venture to assert that if six or more of the best judges of cheese in Canada, the United States or Great Britain were to come to the Experimental Dairy of the Ontario Agricultural College and score the cheese now on the shelves, there would be as many different results as to the "quality" of the cheese as there were judges of the same. In the first place, no two of them are likely to agree on a scale of points to be used. If space and time permitted, I am confident that I could give the readers of the ADVOCATE ten or twelve scales for judging cheese which have been used and which are still recommended by so-called experts. Then, again, tastes and markets differ. What one person would call a good cheese others would not like at all. Talking with a member of a Liverpool firm, who was in Toronto on December 31st, 1895, on the question of the wants of the cheese markets in Great Britain, he said, "Why, we have nine or ten distinct classes of customers to cater for. Some like a soft, moist cheese. Others want a firm cheese. Others want colored cheese; and some want cheese without any coloring. Some like mild cheese and some like sharp cheese, and so on. We have to cater to the tastes of our customers, as it is useless to try to convert a Britisher's tastes. This is a hopeless task."

If there is any man living who can tell us definitely just what is meant by "quality" in a cheese, and who would set up a standard for the world, the writer would like to see that person—and so would many others.

2. Another reason why the writer is backward about approaching this question is that there are so many things which influence the "quality" of cheese, between the food given to the cow and the cheese as finally placed before the consumer, that he is a bold man who will stand up and say that any *one* factor is *the* controlling element in the manufacture of fine Canadian cheddar cheese.

Allow me to give a few illustrations on this point—not theoretical, but actual experiences in connection with our experimental work this past season. To commence at the beginning: One of the persons from whom we bought milk commenced to feed some brewers' grains during my absence this past summer. Our maker did not know what was the matter with the milk for some time, as he had never experienced such a peculiar flavor before. A visit to the farm finally revealed the cause of the trouble. After my return on the 12th of September, the feeding of these grains was stopped, but the flavor continued through almost the whole remaining portion of the month.

Several times during the season we had gassy curds and fast workers. Sometimes they were found in curds from rich milk and sometimes in the curds from poor milk. These things influenced the "quality" of the cheese. I shall mention but one or two more. We have found that salt is a very important factor in the making of cheese. In some experiments on the effects of salt on curds, we divided the curd at salting time, and to one part we applied the usual amount, while to the other we applied various amounts varying from one-quarter of a pound to three and a-half pounds of salt per 100 pounds of curd. The small amount of salt produced a cheese weak and soft in body and texture, while the flavor was insipid—as much unlike the other portion of the curd properly salted as one could imagine. Too much salt made a cheese hard and dry, that no one likes. Lastly, the skill and good judgment of the worker have a marked influence on the "quality" of cheese. It requires a nice combination of skill and sound judgment, good milk, proper utensils and proper agents (rennet, salt, etc.) in order to make fancy cheese.

Leaving out all contingencies, and taking the cheese as we find them (except for September, 1895, on account of the flavor from brewers' grains), the table shows the scoring for the past two years up to date. In addition, the scoring for October, 1895, is given separately, as these cheese were scored by Mr. Alex. MacLaren, of Stratford (the only man in the world who can score cheese to *half a point*), and Mr. A. T. Bell, of Tavistock. (For the monthly scoring of all the cheese, I would refer readers to the College Report for 1895, which will be published shortly.) The cheese were all scored, when about one month old, by a number of experts, among whom were Messrs. MacLaren, Bell, R. M. Ballantyne, and Brill (of Guelph), on the following scale:—

| | |
|---|---|
| Flavor | 35 |
| Closeness | 20 |
| Even color | 15 |
| Texture | 20 |
| Finish | 10 |
| Total | 100 |

All cheese were given full points for finish. We thought that the judges were somewhat severe at times in their scorings. One judge remarked that if they gave the cheese full points we were not likely to make any improvements, so we endeavored to take their judgments with good grace.

The "possible score" in flavor is got by multiplying the number of cheese judged by the points given for flavor; *e. g.*, 43 experiments in 1894 would make a possible score of 43 × 35 = 1,505 for flavor; 43 × 20 = 860 for closeness; 43 × 15 = 645 for even color, and so on. The "points scored" is got by adding together the total points given by the judges for flavor, closeness, etc., in all the cheese made. No doubt the work might have been done differently, and readers may be able to suggest improvements for 18 6. These, if practicable, will be acted upon so far as possible. We invite suggestions, as our aim is not to set up any theory of our own and make our experiments conform to that, but to *know the truth in these matters*, and to allow theories to go to the dogs, if they are not consistent with practical results.

Table showing the score of the experimental cheese for 1894, the month of October, 1895, and the average of six months for 1895:—

| Year. | Av. % Fat in the Milk. | Flavor. Possible Score. | Flavor. Points Scored. | Closeness. Possible Score. | Closeness. Points Scored. | Even Color. Possible Score. | Even Color. Points Scored. | Texture. Possible Score. | Texture. Points Scored. | Finish. Possible Score. | Finish. Points Scored. | Total Scoring. Possible Score. | Total Scoring. Points Scored. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1894. 43 experiments. | 3.94 | 1505 | 1350.5 | 860 | 761 | 645 | 591 | 860 | 720 | 430 | 430 | 4300 | 3852.5 |
| | 3.37 | 1505 | 1354.5 | 860 | 758.5 | 645 | 606.5 | 860 | 746.5 | 430 | 430 | 4300 | 3896 |
| Oct., 1895. 13 experiments. | 3.99 | 455 | 389.5 | 260 | 236 | 195 | 185 | 260 | 233.5 | 130 | 130 | 1300 | 1174 |
| | 3.26 | 455 | 387.0 | 260 | 231.5 | 195 | 185 | 260 | 234.0 | 130 | 130 | 1300 | 1167.5 |
| 1895; average six months. 72 experiments. | 3.98 | 2520 | 2147.5 | 1440 | 1289 | 1080 | 1009 | 1440 | 1249.5 | 720 | 720 | 7200 | 6415 |
| | 3.17 | 2520 | 2133.0 | 1440 | 1278.5 | 1080 | 1017 | 1440 | 1251.0 | 720 | 720 | 7200 | 6389.5 |

Taking the total scoring of the cheese made in 1894, from milk averaging 3 94 per cent. of fat, we find that it has scored 3,852.5 points out of a possible 4,300. The cheese made from milk averaging 3.37 per cent. of fat, scored 3,896 points out of a possible 4,300—a difference of 43½ points in favor of the cheese made from what we may call average milk, as compared with fairly rich milk—practically four per cent. of fat.

In October, 1895, out of a possible 1,300, the score of cheese made from 3.99 per cent. milk was 1,174. The cheese made from 3.37 per cent. milk scored 1,167 5, out of 1,300—a difference of 6½ points in favor of the richer milk cheese. [Had the October cheese been riper, they would have scored higher. The scoring was made on some of the cheese the latter part of the month, before they were a month old.]

The total score of 72 cheese, made from milk averaging 3.98 per cent. of fat, for six months of 1895, was 6,4.5 out of a possible 7,200. The cheese made from 3.17 per cent. milk scored 6,399½ points out of a possible 7,200—a difference of 15½ points in favor of the richer milk cheese. Your readers may draw their own conclusions. H. H. DEAN.

## Why the Cream Will Not Churn.

SIR,—As I have received a number of letters from different parts of the country, asking for information how to churn cream, that many are finding so difficult to churn in fall and winter, I thought it would not be out of place to give your readers the benefit of my experience, and offer some suggestions that would benefit those who will follow the suggestions given. I have churned cream in all conditions and degrees of ripeness; and have never had any difficulty when the temperature was right. Some of the causes why cream won't churn are as follows:—

1st. Ninety-five times out of 100 the temperature is too low. There is no temperature that will suit all kinds of cream, neither will all kinds of cream churn at the same temperature.

In a dozen different dairies, as many different temperature may be required to churn the cream of each dairy in 30 to 45 minutes when all other conditions are the same. We were compelled to churn at 47° to 50° in the early part of last summer to get a good, firm body in our butter. But at the same time churning was done in many good dairies at 62° to 66°, giving equally as good butter, and with as good texture as ours. These are extreme temperatures for the season, as the usual churning temperature is about 58° in the summer months. I might say the only reason we have for our cream churning at such low temperature is that we had a good number of cows added to the herd in the spring, their cream being much easier to churn than any we have ever churned before. Our churning temperature is about 60° at time of writing, while some are forced to churn at 68° to 70°; so that no one temperature would suit all kinds of cream.

Our rule and guide to find the proper churning temperature is to note the time taken to churn. If it takes over 45 minutes, we churn at a higher temperature; and if less than 30 minutes, we churn at a lower temperature.

2nd. Churning in a cold room delays the butter. The churn should be warmed to overcome the low temperature of the room. The temperature of the room should be as warm as the cream.

3rd. Filling a churn half full and over is a very bad practice, as the cream swells while churning, leaving no room for concussion. Take a portion of the cream from the churn when trouble like this is met.

4th. The per cent. of butter-fat or skim milk in the cream effects the time required to churn. Cream containing 25 to 30 per cent. butter-fat will churn at a low temperature, but cream containing only 10 to 12 per cent. can hardly be churned at as low a temperature. There is no difficulty in churning cream containing 17 to 30 per cent. butter-fat or cream that will yield a pound of butter from less than 4½ pounds, if the temperature is right.

5th. The breed of cows will effect the time in churning, but the proper temperature will overcome the difficulty. Cream from Jersey and Guernsey cows is generally more difficult to churn than from some of the other breeds.

6th. The length of time cows are milking has very much to do with the trouble in some dairies. The churning should be done at higher temperature where the churn is filled one-third full and run at 70 to 80 revolutions per minute. The room as warm as the cream, the cream containing no less than 16 per cent. butter-fat, and can't be churned at any temperature, then the cause can be traced to some one or more cows in the herd that have been milking a very long time. The cream from the suspected cows should be used for some other purpose or churned by itself until the cows causing the trouble are found out.

There is no such thing as a witch in the churn, but a good cause can be found for all the troubles met with in so many dairies.

7th. Sometimes the butter comes in small granules, but will not gather. This is caused by too large a percentage of skim milk in the cream and churning at too low a temperature, or adding a quantity of very cold water too soon after the butter breaks. With a churning like this, it would be better to draw off about half of the buttermilk through a fine milk-strainer to catch what butter may come out. Return this butter to the churn and continue churning until the butter is gathered. The temperature of the water added to the cream should not be less than 5° colder than the cream, except in very warm weather.

Adding hot water to cream when churning is the worst of all practices, as the color and body of the butter is destroyed. This is the chief cause of the white, soft, spongy butter so common on all our markets.

*How to have trouble.*—1st. Run the dairy without a thermometer. 2nd. Have two or three times as much skim milk in the cream as there should be. 3rd. Churn without considering temperature. 4th. Fill a cold churn half full and over. 5th. Pour in an abundance of cold water at first appearance of butter; then the patience of any good man or woman will be sorely tried to get the butter.