

APPARATUS FOR MAKING THE TEST.

The casein test is comparatively simple—much simpler than the Babcock test for fat—and there are no dangerous or disagreeable acids to handle. The apparatus consists of a specially-prepared bottle, with a



graduated neck, holding not less than 35 cubic centimeters up to the neck. The neck is graduated into 10 spaces, each of which represents 1 per cent. of casein when the test is completed, and, in order to obtain closer readings, each of these spaces is subdivided into 5 spaces representing two-tenths of a per cent. each. The capacity of the graduated neck of the bottle is 5 cubic centimeters, and, when the directions are followed, and the conditions of the test observed, the casein, in a sample of milk containing 2 per cent. casein, will occupy a volume of 1 c.c.—i.e., two spaces—and read 2 per cent. In addition to this bottle, is a centrifuge somewhat similar to that of the twentieth-century hand Babcock test, the essential condition being that it must be 15 inches in diameter. The speed of the centrifuge is regulated by a metronome (an automatic instrument used by music teachers for marking time).

DIRECTIONS FOR MAKING THE TEST.

To make the test, put 2 c.c.'s of chloroform in the test bottle, which will fill it up to the 4-per cent. mark; add 2 c.c.'s of dilute (.25 per cent.) acetic acid, heated to a temperature of 70 degrees F. To this is added 5 c.c.'s of the milk to be tested, which must also be heated to a temperature of 70 degrees F. Place the thumb over the top of the bottle, invert, and shake for 15 seconds. The bottle is then whirled for about 8 minutes by the centrifuge, at a speed of about 2,000 revolutions a minute. To regulate the speed of whirling, the metronome is set to give 56 beats per minute, and the crank of the centrifuge is turned once for every beat, giving the bottle a speed of 2,000 revolutions per minute. The test must not be read until ten minutes after whirling.

EXPLANATION OF THE TEST.

The theory of the test is based upon the fact that, of the two proteids in milk, casein and albumen, the casein will be coagulated with rennet, or with a small amount of dilute acid, while the albumen is not. The acid coagulates the casein, the chloroform dissolves the fat, the whirling masses the casein into a pellet. After whirling, the chloroform, with the fat in solution, occupies the space up to about the 3-per cent. mark, and the casein comes above it in a mass, the percentage of which may be easily read, much the same as the fat is read in the Babcock test bottle; that is, if the fat and chloroform come up to the 3-per cent. mark, and the top of the casein is up to the 5.5-per cent. mark, the percentage of casein is got by subtracting 3 per cent. from 5.5 per cent., leaving 2.5 per cent. Above this is the acetic-acid solution, containing the sugar and albumen. It is necessary to emphasize very strongly that the directions be followed implicitly, for any departure as to temperature, speed, and time of whirling, will alter the density of the curd and give a wrong reading. A comparison of the results of this test with those obtained by the official methods used in the Department of Agriculture at Washington, shows that the results correspond quite closely. Following is a comparison of the results of seven tests, not selected with a view to obtaining the closest results, but rather giving the widest range of inaccuracies that were found in a large number of tests. Even at this, the comparison shows that the new method does not, in any case, vary from the official one by more than two-tenths of one per cent., while in a large number of cases it tallies almost exactly. The advantage of the new method over the official one is that it is much simpler, and would appear adapted to ordinary factory practice:

New Method.	Official Test.
2.50 per cent. casein.	2.45 per cent. casein.
3.20 " " "	3.31 " " "
3.10 " " "	2.91 " " "
2.08 " " "	2.10 " " "
1.88 " " "	1.88 " " "
3.70 " " "	3.50 " " "
2.55 " " "	2.61 " " "

RESOLUTIONS AND OFFICERS.

Resolutions were passed expressing:

Thanks to the speakers;

Appreciation of the kindness of the city in furnishing the use of the Opera House and Market Hall, together with the excellent musical part of the programme, free of charge for the convention and dairy exhibition;

The thanks of the convention to the Canadian Salt Co., of Windsor, Ont., through their general manager, Mr. Henderson, for the handsome medals and badges presented by the company to the members;

That we, as dairymen, feel that we are under great

obligation to the Department of Agriculture for the assistance they have rendered the dairy industry through the system of instruction that has been given, and, also, in providing speakers to attend annual meetings of cheese factories and creameries free of all cost to the dairymen;

The satisfaction of the Association with the work of the special officer appointed to take charge of the work regarding the adulteration of milk, and we recommend to the Board of Directors for 1908 the continuance of his services;

Appreciation and thanks for the courtesy of the press.

OFFICERS.

The following Board of Directors were elected: John Brodie, Mapleton; J. J. Parsons, Jarvis; J. H. Scott, Exeter; William Waddell, Kerwood; Geo. Boyce, Putnam; J. N. Paget, Canboro; S. R. Wallace, Burgessville; D. A. Dempsey, Stratford; W. A. Stokes, Listowel; J. B. Smith, Alton. Representatives to the Canadian National Exhibition: Robt. Johnson, Woodstock; to the Western Fair—Geo. McKenzie, Ingersoll. Auditors: J. H. Nelles, London, and J. C. Hegler, Ingersoll. At a Directors' meeting immediately following, a president and vice-presidents were elected as follows: President, John Brodie; 1st Vice-President, J. J. Parsons; 2nd Vice-President, J. H. Scott; 3rd Vice-President, William Waddell.

THE DAIRY EXHIBITION.

The annual exhibition of butter and cheese, held in connection with the convention, was a decided success in every way. There were, in all, 156 entries in cheese, or 13 more than last year; while the entries of butter numbered 32. The cheese, in particular, was of a uniformly high quality, there being many ties for prize money, and many excellent cheese that had to go minus distinction. Following is the list of awards:

September white cheese—1, Mary Morrison, Newry, 96; 2, Jas. Paton, Atwood, 95.08; 3, J. E. Stedelbauer, Fordwich, 95; 4, Alex. McCallum, Kintore, 94.91.

September colored cheese—1, C. Donnelly, Scottsville, 95.66; 2, W. A. Bell, Pine River, 94.50; 3, G. R. Stone, Curries' Crossing, 94.41; 4, M. Stevens, Carlholme, 94.33.

October white cheese—1, Mary Morrison, Newry, 95.16; tie for 2, W. S. Stocks, Britton, 95; tie for 2, J. E. Delmage, Trowbridge, 95; 4, J. T. Donnelly, Union, 94.83.

October colored cheese—1, E. Glinther, Winger, 94.83; 2, J. T. Donnelly, Union, 94.50; 3, J. E. Stedelbauer, Fordwich, 94.33; 4, F. McNeil, Listowel, 94.16.

Fifty-six-pound box creamery butter—1, Jno. Cuthbertson, Sebringville, 92.50; 2, R. A. Thompson, Atwood, 92.16; tie for 3, F. E. Brown, Petrolia, 92; tie for 3, R. C. Bothwell, Hickson, 92; tie for 3, E. M. Johnston, Innerkip, 92.

Twenty-one-pound prints creamery butter—1, R. Johnston, Bright, 94.16; tie for 2, J. B. Doan, Birnam, 93.16; tie for 2, R. C. Bothwell, Hickson, 93.16; tie for 2, W. Waddell, Kerwood, 93.16.

Fifty-six-pound box October creamery butter—1, F. E. Brown, Petrolia, 93.58; 2, W. Waddell, Kerwood, 93.14; 3, J. E. Wilson, Keyser, 92.31; 4, J. R. Almont, Welland, 91.67.

SPECIAL PRIZES.

Cheese Buyers' Trophy, for highest-scoring cheese—Mary Morrison, Newry.

Special, September white, by the Ballantyne Dairy Supply Co.—J. E. Stedelbauer, Fordwich.

Special, September colored, by C. H. Slawson & Co.—C. Donnelly, Scottsville.

Special, October white, by C. H. Slawson & Co.—(Tie) W. S. Stocks, Britton, and J. E. Delmage, Trowbridge.

Special, October colored, by the Ballantyne Dairy Supply Co.—J. T. Donnelly, Union.

Special, by the Heller & Merz Co., to the butter-maker securing the highest score on butter in classes three and four, colored with Alderney butter color—1, R. Johnston, Bright; 2, F. E. Brown, Petrolia.

Special, for the best finished cheese, by the J. B. Ford Co.—J. E. Stedelbauer, Fordwich.

Special, for the neatest and most attractive exhibit of butter, by the J. B. Ford Co.—Jno. Cuthbertson, Sebringville.

On Thursday practically all the cheese on exhibition was sold at auction, and realized the following prices:

September, white, 2,235 pounds at 12½c.	\$ 279 37
September, colored, 2,900 pounds at 12½c.	366 12
October, white, 2,536 pounds at 12½c.	317 00
October, colored, 2,963 pounds at 12½c.	374 07
Total.....	\$1,336 56

For the beautiful badges, donated to the Eastern and Western Association, acknowledgments are due the Canadian Salt Co., Windsor.

GARDEN & ORCHARD.

FILLERS IN APPLE ORCHARD.

I intend to set out a large orchard—12 to 15 acres—and would like all the information you can give me. I have decided to plant the permanent trees, McIntosh and Fameuse, and perhaps Alexander or St. Lawrence, every fourth row, to fertilize the McIntosh. I do not know how large the McIntosh tree grows, so do not know just how far the permanent trees should be apart. I want the permanent trees to be just as close as they can, and not be too close. I will, if I plant fillers, take them out just as soon as they ought to be taken out. Would thirty feet each way be too close for the permanent trees? R. T. W. Addington Co., Ont.

I approve of the plan of setting out a commercial orchard of Fameuse and McIntosh for your section. I cannot say, however, that I would recommend Alexander or St. Lawrence for fillers. Neither of these come into bearing any earlier than the other varieties, and make quite as large trees. The Alexander might, no doubt, prove profitable, but the fruit of St. Lawrence is too tender and bruises too readily to be a good commercial variety, nor is it as productive as it should be for first-class commercial variety. I would be inclined to recommend Duchess and Wealthy in preference to Alexander or St. Lawrence. Both of these come into bearing early, and bear heavily; in fact, often require thinning to give the best results. Some growers hesitate about planting Duchess largely on account of its season, but the experience of growers who are now handling it on a commercial scale proves that it is one of the most profitable varieties when picked in time and properly handled.

With regard to the distance apart for planting, this is a matter you can judge for your soil and neighborhood better than anyone at a distance. The largest trees I have seen of McIntosh are about the same size as Fameuse of the same age, so that I do not think it will much out-grow that variety. I would be inclined to plant at least thirty-three feet apart, rather than run the risk of being too close at thirty feet, and I would recommend planting on the hexagonal method rather than on the square, if you want to economize space. You will find this method described in bulletin on Apple Culture, by H. L. Hutt, of the Ontario Agricultural College, which may be had on application.

O. A. C.

H. L. HUTT.

HORTICULTURAL PROGRESS.

Prepared for "The Farmer's Advocate" by W. T. Macoun, Horticulturist, Central Experimental Farm, Ottawa.

RENEWING OLD ORCHARDS.

"Renewal of Old Orchards," by F. H. Ballou, Ohio Agricultural Experiment Station, Bulletin 80.—There are many old orchards in Canada which need renewing, and this bulletin describes how this is done, and gives the results of experiments which show the benefit of the system advised.

At the Experiment Station at Wooster, there is an apple orchard over 40 years old, where the trees had become too tall to spray easily, and from which it was very difficult to pick the fruit, as, like many a similar orchard in Canada, most of the fruit was produced far up on the topmost branches. It was decided to cut back these branches severely, so as to induce the development of branches lower down on limbs which were more or less bare, and where fruit never developed properly, owing to lack of light. The work was begun in the latter part of March, 1905. The large branches were removed with a sloping cut, in order to shed rain, and some days later the wounds were painted with a heavy coat of thick paint made of pure white lead and boiled linseed oil. This painting should be done after the wounds have become dry, otherwise it will not adhere well.

The results of heading back were soon apparent, and there was a heavy crop of fruit on the lower branches where before it fell off prematurely. Spraying could be done very effectually, at comparatively little expense. Not only was there a heavy crop of fruit, but a vigorous growth of new wood from the stubs of branches, and, before the end of the first season, the loss of the upper branches could hardly be noticed, as, in addition to the vigorous growth, the trees had, to a large extent, regained a well-rounded head. Before the second season's growth was over, one-half the new shoots were cut out, and those which were left headed back with pruning shears from one-third to one-half their length. This thinning and cutting back was done to keep the trees of a low, compact habit, and to encourage the development of fruit buds. The cutting back of these trees not only did not result in a decreased crop for the time being, but "the total product was materially increased by the treatment," and the individual specimens showed