

Prof. Dean on the Babcock Test.

In your issue of Dec. 1st there is an article headed "A Disturbing Bulletin," of which, with your permission, I would like to say a few things. The first statement that I would call your attention to is:—"The results of Prof. Dean's work seem to vary considerably from those obtained by Dr. Van Slyke," etc. If you will turn to Bulletin No. 65, new series, New York Station, published in January, 1894, where Dr. Van Slyke gives a summary of the work done during 1892 and 1893, on page 146, you will find that he says:—"The amount of green cheese made from one pound of fat in milk varied from 2.52 to 3.06 lb. and averaged 2.72 lb." He does not say in what class of milk the greatest yield of cheese per pound of fat was obtained, but the general results of the table on page 144 indicate that the greatest yield of cheese per pound of fat in the milk was from milk with the lower per centage of fat. There are exceptions to this, notably the third and fourth weeks of October.

"In Prof. Robertson's investigations, the quantity of cheese did not increase exactly in the same ratio with the fat percentage, but the differences were reported so small as not to be worth considering."

I presume the writer refers to the experiments made by Mr. Ruddick at the Perth Station, which were reported in the Dairy Association's Report for 1892. On page 21 of that report you will see the table giving the results. I quote:—

Per cent. of fat in milk.	Lb. of cheese to 1 lb. fat in milk.
3.9	2.58
3.8	2.56
3.7	2.57
3.6	2.63
3.5	2.67
3.4	2.71
3.3	2.78
3.2	2.83

In the same report, pp. 188, is the result of Mr. A. T. Bell's experiments at Tavistock. Although not given in the report, if you will figure it out you will find the relation somewhat as follows:—

Per cent. of fat in milk.	Lb. of cheese to 1 lb. fat in milk.
4.50	2.52
4.30	2.55
4.10	2.57
4.00	2.63
3.80	2.68
3.60	2.79
3.30	2.82

All these agree with the statement in the "Disturbing Bulletin" that the yield of cheese is not in exactly the same proportion as the fat, and "that a pound of fat in milk ranging from 3.2 to 3.7 per cent. will make more cheese than a pound of fat in milk ranging from 3.6 to 4.5 per cent. of fat." I think that the difference in yield of cheese is worth considering, and so do all practical men who have given the matter study. Mr. Bell, of the Tavistock factory, has divided the money among his patrons since July by adding one per cent. to the fat readings.

In reference to the statement that "expert cheese-buyers find that the finest quality of cheese is made in September and October, when the milk contains a larger percentage of fat than previously," from which it is to be inferred that the high per cent. of fat in the milk is the cause of the fine quality of the cheese, I hazard the opinion that it is not alone the high per cent. of fat in the milk that makes September cheese fine, but it is due to the fact that the milk is in better condition, and the weather more favorable for the manufacture of good cheese. Give the best maker in Western Ontario, during June, July and August, milk that averages as high in per cent. of fat as the September and October milk, and he can not produce as fine average cheese. Why? Because the conditions are not so favorable. The per cent. of fat may have something to do with our September cheese being of extra quality, but it is only a small factor in the question.

The article further speaks of the effect of this Bulletin as likely to result in the discontinuance of the system of paying by quality another year. I fail to see why this effect should be produced. It certainly shows that paying by weight is not correct, and it simply suggests a modification of the present plan of dividing the proceeds according to quality. If the matter be explained to patrons of factories, the more intelligent ones will readily see through the plan, and the others are likely to concur. I believe in crediting the patrons of factories with a fair amount of intelligence and common sense. Judging from the way some persons write and talk, one might conclude that patrons of factories have little of either.

In my opinion, the Legislature would be justified in passing an act making it compulsory for all factories to pay by test for a period of ten or more years, until the fellows who have been making money out of *quantity* milk, pump milk and skim milk, shall have paid back to the producers of good, honest milk the money which belongs to them. If factories do not wish to pay by test alone, then the system of adding on two per cent. to the fat readings will be found to be very nearly correct, so far as our present knowledge goes. If patrons who sent 3 to 3.5 per cent. milk have not been getting full pay by the test plan, they can very well afford to allow the men who have been sending in richer milk a little more than they are entitled to to make up for past losses. Usually the men who send in good milk are generous fellows, and they will be willing to make some change to satisfy the "kickers," though they may not be doing anything unfair by insisting that the milk be pooled according to test, for a while at least.

The paragraph about adding 2 per cent. to skim milk testing .1 of 1 per cent. of fat, and adding the same to 1 per cent. milk, and comparing results, is faulty, for the reason that "you cannot compare things which differ." When you compare results obtained from skim milk with whole, normal milk, it is a different question altogether. Let me state here that our work has all been done with normal milk, and it is normal milk—just as it comes from the cow, without the addition of skimmer or pump—that we need at the factories. Skimming, for the purpose of deteriorating or enriching milk for cheese factories, should be punished. Any system which encourages the sending of whole, normal milk, to the factories is one to be adopted, and the plan proposed has this element, as it recognizes the value of good milk, and at the same time discourages abnormally rich milk, obtained in many cases, no doubt, by adding cream or strippings.

While agreeing that bulletins should have sufficient data to warrant any conclusions that may be stated, I do not agree that "an official bulletin should have in it the essential element of finality." Let us see where this method of reasoning would lead us. Suppose that the Patrick, Short, Cochran, or any of the milk tests which came out before the Babcock or Beilmling test, had never been described in bulletin, or brought before the public, would we have the improved tests of to-day? No. It was by studying the weak points of these that present improvements were made. Had Dr. Babcock kept his method of testing milk stowed in his laboratory at Wisconsin until he had the machine part perfect, would we have the machines of to-day? While the essential parts of the test are the same, yet there are improvements being made every year. Does the ADVOCATE wish that the results of all work, which must necessarily extend over a number of years, be kept fled away until a question has been finally settled? If this policy were pursued, it means stagnation. Let the public know the results of investigations as soon as possible, and thus create interest. Progress will be the result of this policy if the work done is carefully and systematically executed and no unwarranted conclusions are stated, though it may not finally settle the question under consideration.

I may say in conclusion, that the results of the seven months investigations—May to November—bear out the indications of the "Disturbing Bulletin." These will be published shortly, either in bulletin form or in the annual report of the Ontario Agricultural College. In the meantime, a little agitation on the matter will do no harm. We shall thus hear the various sides of the question before the Annual Conventions meet in January, when the matter no doubt will be thoroughly discussed. While there may be a difference of opinion as to the wisdom of publishing this particular Bulletin at the particular time it was published (we shall not quarrel with any one on this point), one of the objects of the Bulletin, as stated in the last paragraph of it, was to induce a number of makers to conduct experiments at their own factories and send the results to the Dairy Department of the O. A. C. I am glad that we have a number of such experiments conducted by careful makers, the results of which will be published in due time.

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[NOTE.—Doctors differ, so do the professors. Some of us very well remember the days when Arnold and Willard used to cross swords at the old-time dairy conventions, long before the Babcock test was dreamed of.

Dr. Van Slyke's conclusion is that "the amount of fat in milk should be used as a basis in paying for milk at cheese factories, because it offers the most accurate, practicable and just basis we have for determining the cheese-producing value of milk."

At the close of an elaborate address by Dr. Van Slyke, at the last Western Ontario Dairymen's Convention, Prof. Robertson said: "I am glad, indeed, to know that the work of Dr. Van Slyke agrees almost mathematically with the work we have been carrying on for the past two years. . . . The results agree almost identically in establishing that the cheese-making quality of milk is in proportion to the butter-fat."

At a previous convention, Mr. Ruddick, of the Dairy Commissioner's staff, said: "My contention is that the man sending the rich milk is entitled to whatever extra he got, if any, for building up the quality of the pool."

Prof. Dean begins his letter with data to show the relation of cheese made to the fat in the milk, but the *real point* is the result or *conclusion* he reached, and which is to be applied in actual practice. His Bulletin says that "practical men feel that paying for fat alone gives the patron who furnishes rich milk more than his just share of the proceeds, and the patron sending poor milk less than he is entitled to," and he refers to his table as supporting that view. His Bulletin also states that the cheese was scored by "two competent judges" (names not mentioned), and those made from the rich milk (3.80 per cent. fat) in May scored 83 points, while cheese made from the "poor" milk (3.48 per

cent. fat) scored 84 points. The June cheese, from 4.18 per cent. milk, scored 91, and that from 3.60 per cent. milk, 93! Now, if the yield of cheese is somewhat greater in proportion to the fat from the milk containing a low per cent. of fat, the rich milk will make a cheese richer in fat, which is one of the great factors in determining its quality, as is shown by the wide difference existing between skim cheese and whole milk cheese. Prof. Dean remarks in his Bulletin that the losses of fat in whey from rich milk up to 4.5 per cent. need not necessarily be more than in poor milk.

He also takes the trouble to argue, in his letter above, that the extra richness of September milk is only a "small factor" in accounting for the extra quality of September cheese—which is more on account of the cool weather.

And yet Prof. Dean claims to be so anxious about quality that he would have the Legislature pass a law making it compulsory to pay by test for ten or more years, until "the fellows" who have been making money out of quantity will have paid back to the producers of good milk the money that belongs to them.

He also says that if adding two per cent. to the actual fat readings in apportioning the proceeds were "explained, the intelligent ones will see through the plan, and the others are likely to concur"—whether they see through it or not, we suppose. His Bulletin does not explain it.

The ADVOCATE has no other desire but that the truth be got at with as little outlay and trouble and as soon as possible. Prof. Dean intimates that his further experiments from May to December bear out the indications of the "Disturbing Bulletin." If his plan is right, and that of Van Slyke and others, wrong, we hope he will be able to vindicate his position so clearly as to leave no room for doubt in the minds of the skeptical. The sooner everybody settles finally down to a uniform plan of using the test in paying for milk, the better it will be, and whatever is done *quality* must be kept up.—Ed.]

Fancy Brands of Cheese.

BY S. P. BROWN.

In a visit to Wisconsin, to glean information in dairying (particularly relative to different kinds of sweet curd cheese), I found a great deal which was easily accessible, but a great deal more that, without some one acquainted with the foreign settlers to assist me, it would be next to an impossibility.

I first visited the University of Wisconsin, at Madison, where I found Dr. Babcock endeavoring to work out some way to overcome the evils of gassy milk in cheesemaking without material loss in the yield, flavor, etc. He had found it possible to sterilize it to such an extent as to make a solid curd (having no pin-holes), to introduce cultures of bacteria to develop the necessary lactic acid, but then flavor would be lacking. He had then found suitable culture to give the flavor, but had not carried it just far enough to indicate the necessary relative proportions of these cultures to use to insure desired results. However, I believe Dr. Babcock's sterling zeal will lead his work to some very valuable outcome in the manufacture of cheese.

I then went south to Green County, which I think, perhaps, is the home of the *sweet curd cheese* on this continent. Swiss, Limburger and Brick cheese are made here in quite large quantities; each kind ranks in quantity relatively from greatest to least, as named, but some brands of the Neufchatel are made in more limited quantity than these. Not a pound of Cheddar cheese is made in that county, and all that is consumed there is necessarily imported from neighboring counties.

The Cheddar cheese of that whole country, from Neenah, in the North, to Monroe, in the South, that I had an opportunity to examine, would rank as 2nd, 3rd and 4th class on a Canadian cheesemaker's shelves. A Mr. Aderhold, whom I met at Neenah, Wis., in speaking of his visit to the cheese exhibit in Chicago, at the World's Fair, said he had never seen so many as fine cheese in his life. This is a man who is handling cheese of all styles, by the ton, with Mr. N. Simon, of Neenah.

Canadian cheese has an excellent reputation, and it behooves us to keep that reputation *spotless* in every particular.

While our American cousins have not as good a reputation, for several good reasons, there are some things in reference to cheese which from them we may pattern with profit. They are catering for the demands of the markets at home; we are catering for the demands of foreign markets. While I would not for a moment think of slackening our advance in this direction, or abating the interest and zeal, still I think there is a field open for Canadians to supply their own markets. The export Cheddar cheese is an unquestionably good article, but there are thousands of tastes that prefer a softer, sweeter, richer or milder cheese, respectively. These may be supplied to some extent in the Twins and Young American styles, which are in reality only a modified form of the Cheddar cheese—the former, made as flats, and shipped two in a box; the later, made Stilton size, and shipped four in a box—both made a little softer and sweeter;