

Dairy.

Salt Test in Cheese.

BY PROF. L. B. ARNOLD.

At the Kinburn cheese factory, Aug. 22d, 1879, an experiment to test the effect of different brands of salt upon the quality and keeping of cheese, was made in the following manner: A vat of milk was made into curd as uniform as possible in quality, and when mature enough for the press three parcels of curd of 136 lbs. each were weighed out and each salted with 3½ lbs. of salt—one lot with Stapleton salt made at Clinton, a second with Higgins' Eureka, and a third with Coleman & Gowenlock's fine dairy salt. After being thoroughly mixed and left standing for half an hour for the salt to strike in, each lot was divided into two cheeses, and left standing in the hoops with the followers on for 20 or 30 minutes longer before pressing. A fourth lot consisting of 90 lbs. was salted at the same rate with the common coarse salt of C. & G., and enough of it taken to make one cheese, the balance being used next day without any note made of it. The long time between salting and pressing was given to secure as even salting as possible. To have pressed at once after applying salt would have been to give a greater effect to the coarser salt than the finer, because the latter, by dissolving more rapidly, would to a larger extent have been washed away by the expressed whey. As it was, a little difference occurred in the amount of salt retained in favor of the coarser salts. It would have been more exact to have pressed the curd and then ground it again before salting.

All the samples of salt used appeared clean and nice. The grain of the Coleman & Gowenlock common salt was the coarsest and was judged to be twice that of the Stapleton, and the Stapleton twice that of the Higgins, while the dairy salt, which is made from the coarse by grinding, was finest of all. A private mark, it was agreed, should be put upon each lot by the maker and the cheese kept for future examination.

The first examination was made October 25th, when they were 64 days old. There were present with me T. Ballantyne, of Stratford; John Murray, maker, and John McMillan, salesman. No one but the maker knew anything about how any of them had been salted till after all, by repeated tests, had agreed upon their comparative merits. Having been subject to considerable heat in the curing room, they had become well advanced, but were all in good condition and fine. They were probably in their best estate.

The cheeses salted with Stapleton and Higgins salt were pronounced alike and best, the flavor being purer and the texture more plastic and rich. One of those salted with Stapleton salt was harder and drier and less cured on one side than the other, owing to a little settling of brine from the upper to the lower side of the curd while standing in the hoop a half hour or so before pressing—a common occurrence where there is any brine to settle. The cheeses salted with dairy and common coarse salt were alike and a little inferior to the other two lots, the texture being less buttery and mellow and the flavor less pure, dying away in the mouth with a slightly acid and bitter taste, such as is known to be developed in butter and cheese seasoned with salt containing chloride of calcium or chloride of magnesium. In this case the peculiar flavor and less salvy texture are believed to be due to a small quantity of the latter chloride in the unclarified salt.

These points being settled, the maker was requested to preserve a sample of each lot for examination at the annual Convention in February,

which he did, and a committee was appointed to examine them. Upon that occasion, in company with Wm. Gillard, of Tavistock, one of the best experts in Canada, I made a careful inspection of them again, when they were six months old, and found all the samples more or less over-ripe, and none of them alike on both sides. The difference in the sides was occasioned by lying for a long time without turning. The upper side which was most exposed to the air had advanced considerably more than the one which was down, and the duration of all had doubtless been shortened by too wide changes in temperature while in the curing room. They were not in good condition for judging of the effect of salting, as very different conclusions might be arrived at by examining different sides of the samples. Taking both sides of each cheese into account, they were found best preserved in the order of the size of the grain of salt used. The cheese salted with common coarse salt was best preserved, that with Stapleton next, with the difference between the other two in favor of Higgins. The committee appointed came to quite a different conclusion, which is not strange under the circumstances, and has little or no significance in respect to the kinds of salt used. In one point the judges appointed agreed with us, namely, that the cheese salted with Stapleton salt was better preserved than the one salted with Higgins salt, but I do not attribute this unfavorable showing to any defect in the intrinsic merit of the Higgins salt. It is easily accounted for from its finer grain and greater waste—a circumstance which in fairness should be taken into account. Taking the condition of the several lots of cheese in their best estate, it was as clear as it could well be made by a single experiment that the Stapleton salt, as purified by the new patent process, is as pure and as good in all respects for use in the manufacture of cheese as the best foreign salt, a conclusion important to the general public as well as to the cheese makers of the country in particular.

Mr. R. G. Starnes showed samples of salt at the Kingston Convention, made, I believe, at Goderich, which promises quite as well as that made at Clinton. It was a very nice looking salt indeed, and was claimed to be chemically pure. I took a sample of it to Cornell University, and Dr. Babcock applied tests which indicated that the claim was pretty nearly correct, some traces of lime only being found. Between these two clarified brands of salt Canadian dairymen ought to find a supply in their home production which should satisfy the most critical tests, and at a cost below that of any imported article.

Management of Cream.

The London (Eng.) Agricultural Gazette gives the following extracts, among others, from H. Melward's Report of the Royal Agricultural Society of Ireland:

I think it of much consequence to the making of good cream butter that the milk should not be allowed to turn sour before skimming, and when ice is not used, we should be guided by the temperature of the air as to the time it should be left; but even when possible to do so, I do not advise that milk should be left longer than thirty-six hours before creaming, as by that time the greater part of the cream, if not the whole, will have risen. Although it may become thicker, it will increase in quality; but a very slightly sweet cream butter is made from cream of the best quality and churned as soon as possible after skimming. A fancy quality of butter is thus obtained, but in less quantities than from the same amount of sour cream. I think that much depends on the mode adopted in the souring of cream as to what the results shall be in the quality of the butter. The Danes appear to regard this as a stage in the process of very vital consequences, and one on which the uniformity of quality very much depends. I cannot do better than refer to the souring systems practiced in Denmark, as giving full instructions

as to what I should recommend. Where possible, it will always be found more satisfactory and productive of better butter to churn the cream every day when it has arrived at its proper stage of fermentation or souring, rather than to leave it to be done at longer intervals, when the different lots of cream put into a churning shall be of varying degrees of sourness. This cannot be done in small dairies, and it is one very important advantage that arises in the working of large ones. When it is impossible to churn every day, much care will be required, as is done in Normandy, to keep back the souring of the first lots of cream, to get the whole to a proper degree before churning. While souring cream imparts an agreeable flavor to butter that sweet cream butter is wanting in, if carried too far it is likely to impart a strong taste and to injure it in other ways.

Of one thing I am quite convinced, that it is possible, but not by any means probable, that small farmers—men of ten or twelve cows—can continue to make packing butter, and have it of such a uniform quality as is necessary; and I think the time is fully come, so far as they are concerned, for the adoption of a new method. The systems and appliances for dairy practice of the present day all point to carrying it out on a large scale; and, where it can be done, I am quite sure that it will pay the small farmer much better to dispose of his new milk to his more extensive neighbor, rather than to try to convert it himself; and without going so far as advising the factory system, I am of the opinion that much may be done by the men of twenty or thirty cows taking in the milk of their smaller neighbors to work with their own.

Washed and Unwashed Butter.

During the last dozen years there has been great improvement in the methods of butter making and the standard for butter of all sorts is considerably higher, while consumers are becoming every year more fastidious in their selections. The markets now demand that butter shall be not only fresh and rosy, but that it be properly worked so that the grain is unimpaired. Butter that has been manipulated until it is salvy or greasy, even though it be fresh and of good flavor, will always rank as secondary in all our leading markets, and of course must go at a much lower price than that which a perfect article will command.

A few years ago an earnest controversy was carried on among butter makers as to whether butter should be washed or unwashed, those advocating the latter claiming that by pressing or working out the buttermilk without the aid of water it served to retain more of the aroma and delicious flavor naturally belonging to butter, and which should not be removed by allowing the butter to come in contact with water.

It was claimed also that unwashed butter was of longer keeping quality than that which had been washed, and consequently that the practice of washing was very detrimental and ought not to be practiced by those seeking to make a fancy article. On the other hand, those who advocated washing argued that not one butter maker in ten could work out the buttermilk without seriously injuring the grain of the butter, and, moreover, that even the most skillful makers of "unwashed butter" were liable to injure, and did injure, the grain of their butter by overworking, and hence more poor butter was the direct result of this effort to get out the buttermilk without the use of water, than by washing. As to the keeping quality of butter, they claimed that the "washed butter" retained its flavor and goodness longest, because the buttermilk was more thoroughly expelled; the retention of the buttermilk in the butter being the main cause of decomposition and rancidity in the product.

On the whole, the advocates of washing butter were the most numerous, and as the art of butter-making had progressed, they have had rather the best side of the argument. Of course, it will be understood that good, clean, sweet water must be employed in washing butter, and that it never should come in contact with water having taints or odors of any description.

The best butter-makers of the present day endeavor to avoid working butter as far as possible, in order that the "butter grain" may be kept uninjured and preserved in all its integrity. To accomplish this object, the cream must not be over-churned, for the butter is often seriously impaired in the grain by too much churning. When the butter begins to form or is in small particles about the size of wheat kernels or a little larger,