

of an honored name, which was always a synonym for integrity and merit. The late Mr. Maxwell was a Presbyterian in religious faith, and a Liberal in politics, but took no active part in political or municipal affairs, devoting his energies to his chosen avocation and to the cultivation of the attributes of the quieter walks of life. His remains were interred at Paris on the Monday following his death.

DAIRY.

Ripening Milk and the Use of a "Starter" in Cheesemaking.

BY J. A. RUDDICK, SUPT. KINGSTON DAIRY SCHOOL.

The majority of Canadian cheesemakers follow the practice of "setting" the milk at a uniform degree of "ripeness." If the milk is too sweet when it is received, it is allowed to stand, after being heated to the setting temperature, until the desired stage of ripeness is reached. The exact point is determined by means of various forms of rennet tests, which are too well known to need description here. It is undoubtedly a fact that this practice has helped very materially to secure uniformity in our cheese, but there is one thing which has grown out of it that cannot be too strongly condemned. I refer to the habit of overripening the milk, which a great many makers have fallen into. They have been led to do this, believing that the longer they allowed the milk to stand before adding the rennet, the shorter would be the whole time occupied in making the cheese, counting from the time the milk was received. This is a mistake, however, as I have previously pointed out in these columns, and has been demonstrated time after time at the Dairy School, as all students will remember. There is no time gained by overripening the milk. It should be "set," if possible, so that whey will be removed in about three hours from the time the rennet is added.

THE "STARTER" IN CHEESEMAKING.

There are some who think it is a mistake to advocate the use of the "starter" in cheesemaking, because its use is attended with some danger, especially in the hands of incompetent or careless makers. I cannot accept this view, for I believe that with ordinary care and a proper understanding of the principles underlying the practice, the starter may be used at times with very beneficial results, and it is only by taking advantage of everything which has a tendency to improve, that we may hope to make any progress. The starter was first used with the object of hastening the ripening process, but of late years it has been found to be helpful in overcoming many of the taints and other "diseases" which are so troublesome in cheesemaking. Years ago cheesemakers recognized this principle, when they found that the development of acidity was a great aid in getting rid of "pinholes" in the curd. We have many things to learn about the exact nature of the changes which take place during the process of cheesemaking, but it seems pretty sure that there must be a certain development of lactic acid, or failure will be the result. Prof. Lloyd, in England, has given us some valuable information on this point. It will help us to understand the matter if we remember that these different fermentations are opposed to one another, and if one gets the advantage it has the power of keeping the others in check. Fortunately, the lactic acid fermentation usually has the upper hand, but sometimes, through carelessness or accident, the filth organisms get into the milk in such numbers that they keep the lactic acid in check to some extent, and produce various bad taints or other "diseases" in the milk or cheese. An example of the latter kind is given in the organism found by Dr. Connell in the red discoloration of white cheese, which he investigated and named *Bacillus Rudeusis* (fully explained in a bulletin on "Discoloration of Cheese," issued by the Dairy Commissioner, Ottawa). In England and Scotland they have been troubled with colored cheese turning lighter colored in spots, and the cause has been traced to bacterial origin. In experimenting with *Bacillus Rudeusis*, the writer found that there was almost no trace of the red color in cheese when a strong acid starter was used, while some of the same milk without a starter gave a cheese quite full of the red spots. In both cases the milk was inoculated with the germs which produce the red color. Mr. Drummond has found similar results with the discoloration mentioned as occurring in England and Scotland.

I may say in passing that it seems to me that the mottled cheese which some of our makers have been troubled with must be of the same nature as that met with in the Old Country. Last winter Prof. Dean gave Dr. Connell a piece of a cheese which he had made at the Experimental Dairy at Guelph, wherein a starter was used that had been prepared from a sample of mottled cheese sent in from one of the factories. Dr. Connell separated out a certain germ from this cheese, with which we inoculated some milk as it was made into cheese, with the result that mottled appearance came on, accompanied by the characteristic flavor when the cheese began to cure a little. The maker who sent the original sample to Prof. Dean afterwards saw these cheese which we made at the Dairy School, and pronounced them to be exactly the same in regards to mottles and flavor as those which gave him trouble at his factory. This proves the trouble to have been of bacterial origin.

The various taints of milk which are due to bacteria (not those due to feed) may be overcome in many cases by the judicious use of a good starter. This brings us to the question, What is a good starter? Theoretically a good starter is some milk as free as possible from all objectionable odors or taints, containing the largest possible number of actively growing lactic acid organisms. I believe a very common idea is that what is required is some very sour milk, and the more sour the better, providing the flavor is good. I would point out, that milk may be too sour to make a good starter, for it is a fact that after the sourness has reached a certain point the lactic acid germs are killed by the very acid which they have produced, and then the putrefactive germs begin to work. Acid does not produce acid; it takes the living germs to do that, so that milk may be very sour, but almost useless for a starter; indeed, it is very apt to be positively injurious if too old, and I think a good many have had difficulty with the starter in this way. In the preparation of a starter at a cheese factory, I believe the most practical plan is to select every day some of the best milk which comes to the factory, and put it in a thoroughly cleaned vessel where it can be protected from outside influence. Keep the temperature as low as possible, and yet have it sour enough by the time it is required for use. It will be better if it does not become quite thick. A starter will be most effective if warmed to about 80 to 85 degrees for an hour before using. If kept at a low temperature over night the germs become dormant, and it is only after they are warmed up for about an hour that they regain their vigor. Cheesemakers know that when they receive milk very cold in the fall that it does not change much for a while after it is first warmed. The reasons are the same in both cases. A starter should never be used if good results can be obtained without it. I do not think that first-class milk can be improved by the use of any starter, but where the milk is wrong the starter is useful to restore the proper fermentation. If difficulty is experienced in securing a good starter, get a package of Lactic Ferment from some dealer in dairy supplies, and follow the directions accompanying it implicitly.

Cheese and Butter Conventions.

The next annual convention of the Western Ontario Cheese and Butter Association will be held at Guelph on Tuesday, Wednesday and Thursday, January 17, 18 and 19, 1909. The following gentlemen are invited to deliver addresses: W. H. Jordan, Geneva, N. Y., (1) Commercial foods; (2) The present status of feeding standards. Geo. L. McKay, Iowa: Prof. Dean, Guelph, (1) How to improve the sanitary condition of cheese factories and creameries; (2) Sub-earth duct for curing rooms, method of construction, cost and advantages in curing cheese. J. A. Ruddick, Kingston, Some further notes on the curing of cheese. A. W. Campbell, Toronto, The economic value of good roads. Dr. W. T. Connell, Kingston, (1) Tuberculosis and its import; (2) Further studies and observations of cheese through bacterial infections. F. C. Harrison, Guelph, Bacteria. Arch. Smith, Beachville, Buttermaking. Prof. Robertson, Ottawa; Arch. Lewis, United States, Feeding of swine in connection with the dairy.

The Butter and Cheese Association of Eastern Ontario will hold its annual convention at Kingston on January 10, 11 and 12. Among the speakers invited will be ex-Governor Hord, of Wisconsin; Prof. Robertson, Ottawa; Dr. Connell and Mr. J. Ruddick, Kingston; Prof. Dean, Guelph; and the Minister of Agriculture.

Hints to Buttermakers.

A writer in the *New York Produce Review* makes the following suggestions to creamerymen who are operating on the gathered cream system: "I make bold to suggest two things: First, those makers of gathered-cream butter, who are not already doing so, will do well to put a chunk of ice about the size of a man's head on top of the float in each gathering can before the haulers start off in the morning, and continue to do so as long as this extremely hot weather lasts. The ice will then be on top of the cream and below the can cover, and you will be surprised to find how long a chunk of ice thus treated lasts. You will also find that your cream will come to the creamery in much better condition than it does without the ice. Don't put the ice under the float, for then it will melt too quickly from continuous contact with the cream and may otherwise injure the cream by being jolted over the road with the ice in it. I find that those gathered-cream buttermakers whose goods sell at western high prices right through the year, July and August as well as May and June, always send out ice with the haulers this way.

"Second: Those buttermakers who have elevated water tanks in their creameries, and use open butter-workers, can render their labor in creamery much more comfortable and their butter much more salable by the use of one of those brass instruments known as an electric fan. Said fan can be obtained at a nominal cost to the creamery, and by running a half-inch pipe from your water tank above to the turbine wheel of this fan you can by means of a globe valve turn on a very small stream of water (a small stream is sufficient if pressure is enough) and operate the fan over your worker anywhere in the working room you may desire. All the fans I have seen in operation in

creameries are operated by belts, and of course cannot be run without running the engine, and running the engine consumes coal. In this case you can pump the water into the tank while you are skimming and run your fan after your machinery is stopped without extra expense to the creamery. I saw such a fan in operation yesterday by water pressure and the stream of water required was very small."

Canada Loses Mr. J. A. Ruddick.

Mr. J. A. Ruddick, Supt. Kingston Dairy School, who declined the first offer of the New Zealand Government to be their Dairy Commissioner at a much larger salary than he has received in Canada, has got another bid of \$500 per year more than the first and his expenses there. This tempting proposal he has accepted, and will leave in about three weeks. We regret his departure. He is thoroughly practical, and one of the very foremost of Canadian dairy authorities.

POULTRY.

Practical Autumn Hints in Poultry-keeping.

PROGRESS AND NON-PROGRESS—CULLING OUT AND PREPARING FOR WINTER—FATTENING OLD AND YOUNG BIRDS—PREPARING BIRDS FOR MARKET—PACKING AWAY EGGS—A LIQUID FOR PRESERVING EGGS.

BY A. G. GILBERT, POULTRY MANAGER, CENTRAL EXPERIMENTAL FARM, OTTAWA.

Said a farmer to me not long since: "I see that there is a lot to learn about this poultry business before we can make it pay."

"Is there any department of farm work that you can make remunerative without thoroughly understanding the details of management?" I asked.

"No," said he, "I guess you have to know what you are at."

There is no dodging this fact. The up-to-date farmer must be expert in the lines of work he handles or he will not be to the fore. Live agricultural journals, agricultural colleges and experimental work are all valuable means to a profitable end. Coming back, then, to the trite remark of my farmer friend, you have certainly got to know "what you are at" if poultry is to be a successful branch of your farm work. In last issue we discussed the characteristics of certain of the standard breeds and their varieties. In this issue we take two farmers:

No. 1 makes his poultry pay. He keeps track of receipts and expenditure. His fowls are thoroughbred, of the proper age, well housed, and they laid well during last winter. As a result he had early sitters and his chickens were early hatched. At this date his cockerels are fit, or very nearly so, for market, and his pullets will make early layers. His hens are well into, if not well over, their moult and will begin winter laying in November when the price of eggs is going up.

No. 2 has a mixed lot of birds. He has kept no account of their operations and cannot say whether they pay or not. His hens had a cold habitation last winter and did not lay, but began to do so in the spring when everybody's hens were laying and eggs were at low figures. In consequence, he had late sitters and his chickens are late. Being nondescripts, his cockerels will not make the weight of thoroughbreds and his pullets will likely be caught by winter weather before they are matured. His old hens will drag through the winter moulting; his younger birds will moult late, and few of his flock will lay at the period of high prices. Ask him about his henhouse, he points to the corner of a shed or barn.

CULLING OUT AND PREPARING FOR WINTER.

Quite a contrast in the mode of operations of the two parties above, is there not? But what is No. 2 to do to improve his condition? His plan is to at once cull out his flock. Select his largest and best shaped hens of two years and under. If any are known to be poor layers get rid of them. Fatten up the old hens before they begin to moult and eat or market them. Sell them for such and nothing else. Feed the younger stock [as outlined in "Early Moulting" in your issue of 15th Aug.] so as to have them winter layers. House them fairly well and sell the winter eggs at the highest price to be obtained in the best market. I have not presumed that either of the above parties use incubators, as some progressive farmers do in order to have early chickens of the same age.

FATTENING OF OLD AND YOUNG BIRDS FOR MARKET.

I think I hear some one exclaim on reading the above: "Just fancy! He advises the fattening of the old birds to sell on the market. How dreadful!" Not so bad as you think. Take a properly fattened three-year-old Plymouth Rock hen and let it slowly simmer in boiling water for an hour for every year of its age. Then stuff it; let it brown for half an hour, and when dished up it makes a good dinner. After being boiled tender it may be preferred in the shape of pie. "Tried it yourself?" Yes, dozens of times, and so have many others who are up in poultry breeding. A friend came to me some years ago when I kept Plymouth Rocks on my own account and said in a confidential manner, "What do you do with your old Rock hens?" "Eat them," I replied. "Oh," said he, "I did not think you were so well up. When I want to enjoy the fully developed poultry flavor I have