

your butter reaches the foreign market, it will be bad, when you fancied you had made superior butter. But this is another question I will leave to Mr. Nagant, who, I believe, has made a special study of it.

*M. Nagant*—I think that the theory of ripening cream by the aid of a ferment may have both friends and enemies. If the ferment's action could be kept under control, the results might be satisfactory, though Mr. Barnard was quite right when he stated that fermentation is a kind of decomposition. Still, in studying the fermentation that takes place in cream in producing in consequence ferments like those used by Mr. Leclair, it has been discovered that some of them impart a good flavour to the cream, but that it is necessary to isolate others that are able to impart a bad flavour to the cream, and in a very short time cause it to become putrid. Now, in the ferment prepared by allowing the cream to ripen when exposed to the air, good ferments may be produced, but it is also possible that a hundred times more bad ones may result from the practice. So that, in employing it, for ripening the cream, the cream is impregnated with microbes of unknown kinds, and one is never sure of the results that will be obtained.

Certain bacteriologists in Germany and Denmark say that they have succeeded in isolating the ferment or ferments which ensure to the cream both uniformity and the desired quality. Among others, MM. W. Storch and H. Weigmann have succeeded in preparing ferments that are now used in certain creameries. This ferment is composed of microbes all of the same species; so that, if a little of this ferment is introduced into the cream, the fermentation obtained is always alike. Thus, uniform products ensue.

There are, too, nowadays, men who make a business of isolating such ferments as are thought to impart a good flavour to cream; but the commonly followed process at present, one that will probably last a long time, is to take a ferment prepared from ripe cream: this is wrong; for if the cream to be churned is thus impregnated with useful ferments, injurious ones also find their way into it.

*M. Taché*.—Before the subject is closed, I will add a word. It has often happened, during the existence of the Dairyman's Association, that persons reading our reports with a desire to get the greatest amount of good from them, have taken what they find in them too literally. A crowd of novel subjects are discussed before the meetings, not so much to persuade those to whom they are submitted, to change their methods of working all at once, but for the purpose of drawing their particular attention to changes that may possibly supervene. If, for instance, a maker, who hears us talking about making butter from sweet cream instead of ripened cream, take this literally, because he hears the lecturer say that he makes his butter from sweet cream and if he, from hearing this, change his whole system of butter-making, this is the result he exposes himself to: shopkeepers have customers whose known tastes they consult when they are making their purchases; now, these customers would very likely refuse any novelty. If you want to retain the custom of those, in fact, of all the consumers of the goods you make, you must give them the article they like. Hence, as M. Gigault said just now, after Mathieu de Dombales: "we must always, when working, keep one eye on the

market." When, then, you observe some novelty in the dairy business, you must not change your old methods of working all at once. Should you believe that your method is the better one, continue to follow it; but if you intend to make a change, consult the inspector or the managers of the dairy-school; consult them before you make the slightest change, for, if you have obtained good results with your usual practice, you would be very wrong indeed to forsake it for any other that you know nothing about.

It is within my knowledge that cheese makers have completely risked the quality of two or three months' manufacture, after the visit of an inspector, simply because they changed their mode of working all at once. This should not be done. The makers should begin by trying experiments on a small scale on the methods recommended to them, and never try practically, without consideration, the advice given them, though, certainly, this was not offered them from a desire to make them lose money.

All that is said here must be carefully weighed. To return to the subject of butter making and the treatment of the cream, I may state that Mr. Robertson, after having been engaged for two or three years with the question of creameries, is now on a tour through England, where he is trying to find out the sorts of butter best suited to the different markets of that country. There are the London, the Bristol, the Gloucester, the Liverpool markets, and in these different markets, there are probably five or six different classes of consumers. Some like butter with a high flavour, others with little flavour; some like butter without salt, others with 2 oyo of salt, others, again, with 6 oyo or 7 oyo of salt. There will be a most interesting report to be made on his return; and during the winter, at the Dairy-school at St. Hyacinthe, there will be practical illustrations of Mr. Robertson's advice as to the demands of the various markets of England.

Our Montreal buyers are capital judges. They know what suits their customers. If they tell you that your butter has not enough flavour, try to give it more. If they say its flavour is too high, try to reduce it, and make use of the means that will produce these results.

Above all, be cautious; because the future of a factory may be risked by one day's bad work; and it is clear that if this bad work take place, it is not that, but many better results that were in view. Above all, be cautious.

(From the French.)

#### OFFICE OF THE DAIRY COMMISSIONER.

CENTRAL EXPERIMENTAL FARM.

DEPARTMENT OF AGRICULTURE,

OTTAWA, CANADA.

#### Notes for Cheesemakers for October.

By JAS. W. ROBERTSON,  
Dairy Commissioner.

A few years ago "October cheese" of Canadian make were deservedly in bad repute in the English markets. Their soft, porous body made them liable to go off in flavour quickly;

they did not possess the keeping qualities, combined with that richness of body and flavour, which are so much desired by English merchants and consumers. During the last two or three years a decided improvement in the quality has been effected, and with the finer quality has come a better reputation in the markets. By the exercise of due care on the part of the cheese-makers throughout the remainder of this season, the reputation of our "October cheese" may be so well established that hereafter they will be counted equal to "September." Cheese can be made as firm and fine during October as at any other time of the year. Suitable conveniences for controlling the temperature of the curd from the milk vat until the cheese is ripe are required.

#### MILK.

The milk delivered at factories during October has a higher per cent. of fat and other solids than during the summer months. Its flavour will be equally rich and nice, when the cows are stabled during the cold nights and fed liberally on fodder corn or any other suitable succulent nutritious food. Turnip tops and rape should not be fed to cows whose milk is furnished to a cheese factory. After the milk is drawn it should be strained immediately and forthwith aired as thoroughly as during the hot weather of July. The aeration will improve its flavour and prepare it for the manufacture of a finer quality of cheese than it will be possible to obtain if that treatment is neglected. The milk should not be cooled below 60° Fah. A milk house or the farm kitchen will be a more suitable place for keeping it over night than the open milkstand when the temperature of the outside air goes below 50°.

#### CHEESE-MAKING.

The construction and equipment of the making rooms of some factories are still defective. At the cost of a little labour and building paper, almost any room can be made so close in its walls that the inside temperature may be regulated at will by the use of a stove or steam pipes. Thorough ventilation once every day should be secured. The following paragraphs will be of service in refreshing the experienced cheese-maker's memory and in instructing the others in the best practices.

1. Let the milk be ripened by the application of heat before the rennet is put into it. The ripening should be allowed to proceed to such a degree that not more than three hours will be required between the addition of the rennet and the development of acid perceptible to the taste or discernible by the hot iron test.

2. The use of sour whey to hasten the ripening should not be resorted to. Old milk which has become nearly sour to the taste may be added, but loppered or thick milk should never be used.

3. Rennet should be added in quantities sufficient to coagulate the curd into a state firm enough for cutting in from 45 to 35 minutes at temperature of 86° or 88° Fah. It should be diluted with water to the volume of at least one gallon of liquid for every vat.

4. After coagulation is perfect the curd should be cut finer than during the summer. The application of heat should be delayed for 15 minutes after stirring is commenced; and the temperature should be raised to 98° and maintained at that point until the whey is drawn off. After the middle

of the month a temperature of 100° will be preferable.

5. Care should be taken to so apply the heat and perform the stirring that the curd particles will be so dry before the development of acid is perceptible, that after a handful has been pressed into a lump they will separate readily.

6. The curd should be stirred before and after the removal of the whey until the whey is so well separated out of combination with its particles that they produce a squeaky sound when bruised between the teeth or otherwise.

7. After the whey is drawn off the curd should be kept at a temperature above 94°. If it becomes colder than 94° the development of acid will be hindered and excessive moisture will be retained in it during the souring process. The presence of such extra moisture in the curd at this stage will leave the cheese with a weak "pasty" or "tallowy" body, according to the degree of acid development permitted.

8. A cover over the vat or a curd sink with steam pipes seems a simple and effective provision for keeping the curd warm. Where no rack is used, the putting of a few pails of hot water in the lowered end of the vat will maintain the temperature.

9. Just after the removal of the whey, the curd should be handstirred until after the whey that will run has been drained off. After the curd is dry and firm it may be allowed to mat into one mass, but not before that condition is reached. All stirring should be performed so as to avoid wasteful bruising of the grain of the curd.

10. It may then be frequently turned and packed close, till the layers of curd are four or five deep. Whey should never be allowed to collect in small pools on it at this stage. The close packing in layers four or five deep, with frequent turning, prevents the outside of the matted pieces from becoming chilled or more deeply coloured by the action of the air than the rest of the curd.

11. The hot iron test is almost indispensable for determining with certainty, from day to day, the exact stage of acid development at which the whey should be drawn off. The filaments—thread-like processes—should be about one quarter of an inch long. The proper degree of change for the cutting and salting of the curd has taken place when it feels mellow, velvety and "slippy," and shows a texture passing from the flaky or leafy into the stringy and fibrous. If it be too moist or soft, it should be cut or ground at a rather earlier stage and hand-stirred until dry enough, before the addition of salt. The most of the hand-stirring should precede the salting.

12. Not less than 3 lbs. of salt per 1,000 lbs. of milk should be used, and when the curd is on the soft or moist side, 3½ lbs. per 1,000 lbs. of milk should be added; the 3½ lbs. rate is also preferable during the latter part of the month when cold weather prevails.

13. Immediately after the application of salt, the pieces of curd become harsh and gritty on the surface; then in from 15 to 25 minutes the harshness gives place to a mellow condition. At the second stage—and the temperature should not be under 88°—the curd should be hooped and pressure applied. Delay at this point or coldness of the curd destroys the desirable rosy flavour, and imparts to the cheese the bitter taste of the salty white whey.

14. Particular care should be taken to use only pure warm water when