

LIST OF PUBLICATIONS

OF THE

DAIRY AND COLD STORAGE COMMISSIONER'S SERIES.

Date Issued.	No.	Title.
1905	1	List of Some British Importers of Farm Products.
1905	*2	Care of Milk for Cheese Factories. } Superseded by Bulletin
1905	*3	Care of Milk for Creameries. } No. 22.
1905	*4	Some Phases of Dairying in Denmark.
1905	5	Improvement of Dairy Herds.
1905	6	Chemical Investigations Relating to Dairying in 1904.
1905	7	List of Exporters of Some Canadian Products.
1906	8	Some of the Factors that Control the Water Content of Butter.
1906	*9	Instructions for Testing Individual Cows, etc.
1906	10	Creamery Cold Storage.
1906	11	The Inspection and Sale Act, Part IX, as amended in 1907-8. (The Fruit Marks Act and Fruit Packages.) Revised Edition.
1906	12	Cow Testing Associations, with Some Notes on the Sampling and Testing of Milk.
1907	13	Sweet-Cream Butter.
1907	14	Apparatus for the Determination of Fat and Water in Butter.
1907	†15	Gathered Cream for Buttermaking.
1907	*16	Subsidies for Cold Storage Warehouses. (Superseded by Bulletin No. 23.)
1907	17	Buttermaking on the Farm.
1907	*18	Co-operation in the Marketing of Apples.
1907	19	The Packing of Apples in Barrels and Boxes.
1907	†20	The Use of Ice on the Farm.
1907	*21	Report of the Cow Testing Associations.
1909	†22	The Cooling of Milk for Cheesemaking.
1909	23	Cold Storage and the Cold Storage Act.
1906		Report of the Dairy Commissioner, January, 1905, to March, 1906.
1907		Report of the Dairy and Cold Storage Commissioner, 1907.
1908		Report of the Dairy and Cold Storage Commissioner, 1908.
1909		Report of the Dairy and Cold Storage Commissioner, 1909.
1907		Map Showing the Location of Cheese Factories and Creameries in Canada.

Any of these publications will be sent free of charge on application to the Dairy and Cold Storage Commissioner, Ottawa, Ont.

*Out of print.

†A sufficient number of bulletins 15, 20 and 22 will be sent to the manager of any cheese factory or creamery to supply one to each patron.

DEPARTMENT OF AGRICULTURE

Dairy and Cold Storage Branch.

OTTAWA, CANADA

COULOMMIER CHEESE

SOME NOTES ON ITS MANUFACTURE

BY

JANET McNAUGHTON, N.D.D. (GREAT BRITAIN)

Instructor in Home Dairying

Macdonald College, Que.

BULLETIN No. 25

Dairy and Cold Storage Series

LETTER OF TRANSMITTAL.

OTTAWA, June 27th, 1910.

To the Honourable, The Minister of Agriculture.

SIR,—I have the honour to submit for your approval, a short description of 'Coulommier Cheese' with some notes on its manufacture, which has been prepared at my request, by Miss Janet McNaughton, Instructor in Home Dairying at Macdonald College. In view of the demand for information of this kind, I beg to recommend that it be printed and distributed as Bulletin No. 25 of the Dairy and Cold Storage series.

I have the honour to be, sir,

Your obedient servant,

J. A. RUDDICK,

Commissioner.

INTRODUCTION.

Canada offers an excellent field for the introduction of a simple and inexpensive process for the manufacture of a cheese, on a small scale, which will be ready for use in a few days. There is a large and growing demand for cheese of this class, a demand that would be enormously increased if the cheese were offered to the public in any quantity.

There are many people keeping one or more cows, who could, if possessed of the necessary information, furnish their own tables, at least, with a wholesome and nutritious article of diet at slight cost and with very little trouble. This should appeal particularly to those who are so situated that supplies of fresh meat are hard to obtain during hot weather.

There is no better substitute for meat at any time of the year than mild flavoured, well matured cheese, and the cost of cheese, nutritive value considered, is at present very much less than the cost of meat.

That some of the small soft cheese of the French type can be successfully manufactured in Canada, has been amply demonstrated by Miss McNaughton and her assistant, Miss Bagnall, at Macdonald College. The *Coulommier* made during the past two years has met with a ready sale and has given the highest satisfaction.

Believing that there are many people in Canada who would appreciate some information concerning the process of making Coulommier cheese from such a high authority, Miss McNaughton was asked to prepare the material contained in the following pages.

J. A. RUDDICK.

COULOMMIER CHEESE

SOME NOTES ON ITS MANUFACTURE

BY

JANET McNAUGHTON, N.D.D., (GREAT BRITAIN)

Instructor in Home Dairying

Macdonald College, Que.

The making of soft cheese has been carried on in France for a great number of years by the thrifty occupiers of small farms, and the trade in these has developed till it is now one of their staple and most profitable industries. Soft cheese are specially adapted for the manufacture where the supply of milk is limited, because the cheeses are small, weighing from a few ounces to one or two pounds each. Small quantities of milk can be utilized to advantage in this way, but soft cheese may be manufactured on a large scale also. The output of some of the largest French dairies averages from one to two thousand cheeses per day during the season. The term 'soft cheese' includes a great many varieties, differing from each other in name, in method of making, in size, in shape, in consistency and in flavour, but resembling each other in being subjected to little or no pressure during the process of manufacture and being, therefore, of a more or less creamy consistency when ripe.

The process of manufacture of some of these cheeses, as for instance, Camembert, is difficult, and excellence in the art can only be obtained after much experience, while in some cases, success depends to a great extent on special atmospheric and bacteriological conditions. On the other hand, some are so simple and so easy to manipulate that their manufacture can be undertaken with fair prospect of success, even by the novice in cheese making. Coulommier cheese, called after the district in France where it is chiefly made, belongs to the latter class. It is one of the simplest to make of these cheeses, as well as one of the daintiest and most delicious to eat, and at the same time, one of the most profitable. It is a flat, round cheese, five and a half inches in diameter and from one to one and a half inches thick, and weighing from twelve to sixteen ounces. It is creamy white in colour. Artificial colouring is seldom added, though a few drops is considered an improvement by some makers. In consistency it resembles cream cheese, but it is not so rich in flavour. It may be eaten fresh at the end of three or four days from the beginning of making, but many people prefer it one or more weeks old. If kept over a week it will be more or less mouldy on the outside, the curd will be more mellow and the cheesy flavour much stronger. If it can be kept in a sufficiently moist atmosphere to keep it from drying up for six or seven weeks, it will begin to liquefy through bacterial agency and certain connoisseurs consider them most delicious at this stage. The majority of people, however, prefer them in the earlier stages.

Reasons for Encouraging the Making of Coulommier Cheese in Canada.

1. It is profitable. There is a good return for both milk and labour and the return stands well compared with other methods of disposing of milk and milk products, as the following table will show:—

One gallon milk, retail average price, 25 cents.

One gallon milk, wholesale average price, 20 cents.

One gallon milk, yielding $\frac{1}{2}$ -lb. of butter (a generous estimate), 12 cents.

One gallon milk, yielding 1 pound of Cheddar cheese (retail price), 18 cents.

One gallon milk, yielding 2 lb. Coulommier cheese (15c. each), 30 cents.

2. There is a speedy return. The cheese are ready for market within a week of making and this, while saving storage room, enables the maker to get the benefit of his profits at once.

3. No expensive appliances or equipment are necessary. The initial outlay is small where the cheesemaking is begun on a small scale, as most of the appliances required are already in use in the average home, at least those already in the home can be improvised to do duty, if need be, till experience sanctions the expense of buying new appliances specially for the cheese. The only things really necessary to buy are the tin moulds and they are only a matter of some thirty-five cents each.

4. The process of making is not complicated or difficult to understand. As already stated, this is one of the simplest cheeses to make. The cheese is soon ripe and should any mistake have been made in the process of manufacture, it is soon found out, and can be rectified in the next batch, and the loss would be small, as only a few should be made by the beginner at a time.

5. Demand. There is a considerable demand for small cheeses. Cheese is one of our cheapest and most nutritious articles of diet and a good deal of it is made in this country. One cannot but regret that so much is exported while such a relatively small amount of this wholesome and economical food is used at home. There seems reason to believe that if cheese were put up in attractive packages of convenient size, it would appeal more to the taste and requirements of the average household. In proof of this, one has but to consider the popularity of Imperial Cheese, Cream Cheese, Neufchatel and Camembert. We import cream cheese and Neufchatel from the United States, while Camembert comes from France. Coulommier does not lend itself very well to transportation, because of its perishable nature.

The question naturally arises, why should these varieties which cost so much more than the native product, not be manufactured at home and the money retained in this country? By all means, let us make the expensive and most profitable cheese first and then if it comes to a matter of importing less, import a cheaper variety. Camembert, as we have already seen, is one of the most difficult of the small cheese to turn out in first-class shape, but why should we not begin with a simple one like Coulommier and make our experience with it a stepping stone to more ambitious efforts.

Further, we have already proved that the demand for Coulommier can be created. It has been made and sold at Macdonald College during the past two years and it is still steadily rising in popular favour. It seems reasonable, therefore, to suppose that, given a first rate article, its introduction would create a demand in other districts also. Of course, the beginnings must be on a very small scale. It takes time to get it before the public and to get a good market.

Accommodation.

Any clean room with good ventilation and where a fairly even temperature can be maintained will do to make the cheese in. The cleanliness, however, is very important. Perhaps a clean, airy cellar is best of all, because there a fairly even temperature can be maintained and it is cool in summer. It must, however, be free from dust and smells, as cheese, like all milk products, is very easily tainted and very readily absorbs surrounding odours. The best room temperature is from 60° F. to 65° F. If the room gets overheated, the cheese is apt to drain too quickly, there is loss of fat and a hard dry cheese is the result. If, on the other hand, the room is too cold, the cheese does not drain quickly enough and it may develop a bad or bitter flavour.



Fig. 1.

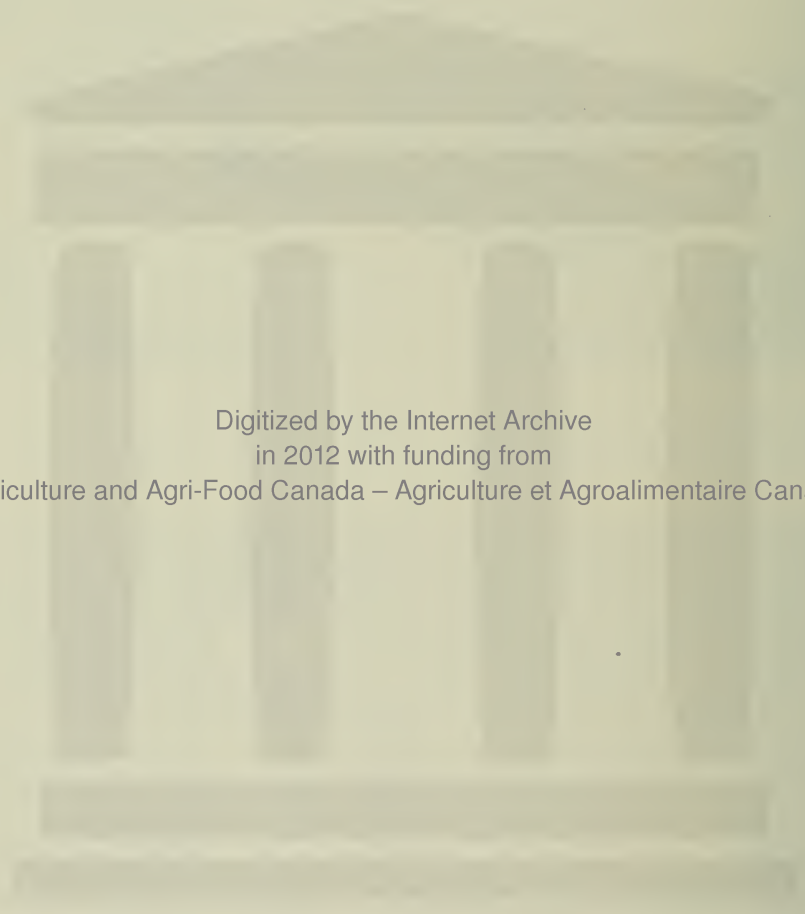
1. Draining table. 2. Bottle of rennet extract. 3. Board covered with straw mat. 4. Upper half of mould. 5. Lower half of mould. 6. Mould complete—upper and lower half together. 7. Ladle. 8. Thermometer and cup. 9. Straw mat. 10. Enamelled pail.



Fig. 11.

Ladling curd into moulds.

N.B.—The large ladle on the left contains the curd set aside for tops.



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Fig. III.

Method of Turning Cheese.

1. Curd sunk to lower half of mould. The upper half has been removed and set towards the edge of the table.
2. Same moulds as No. 1 with fresh mats and boards on top in position for turning.



Fig. IV.

1. The finished cheese.
2. Showing one cut through the middle.
3. Grooved draining table.

Milk.

Sweet and clean new milk of good quality makes the best cheese. All the fat or cream should be left in the milk. Skim milk makes a very hard, dry, unpalatable cheese. Acid milk also makes a harsh, dry cheese.

Rennet.

Rennet may be used in either the extract or tablet form. Where only small quantities are used, the tablets are best, as they are easier to obtain fresh in small quantities and keep better. Rather less should be used than that recommended in the directions for junket, as in this case, a soft curd is wanted, which will take from two to three hours to coagulate.

Salt.

Pure dairy salt with a fine grain which will dissolve readily, should be used. It may not be generally known that salt absorbs surrounding odours almost as readily as milk. It should, therefore, be kept in a pure atmosphere.

Appliances—Vessels to Hold Milk.

Wooden tubs with lids are best, but are by no means absolutely indispensable. Wood is a poor conductor of heat and we want to maintain an even temperature of the milk after setting, for two reasons. In the first place if the temperature of the milk falls much before ladling, the curd will not drain so well in the mould. And in the second place, cream always rises best on the milk in a falling temperature. If we let the temperature fall much during coagulation, we will have a thick layer of cream on the top of the curd. The consequence of this will be that some of the fat will pass off in the whey and be lost, while what remains in the curd will not be evenly distributed, but will appear in streaky masses throughout the finished cheese. Oak is the best wood, as it is most desirable and, being hard, it is easily cleaned. If tubs are not convenient, pails of either tin or enamel may be used instead.

Draining Table.

The table on which the cheeses are set to drain should slope slightly and should have an outlet at the lower end for carrying off the whey. A pail should be placed under the outlet to receive the whey. Wooden tables are often made with a ridge round the edge and covered with galvanized tin, as in fig. 1. This is the most suitable style for the early stages of making where there is a large amount of drainage.

Another style of table is shown in fig. 4. It is made of hardwood with grooves leading to an outlet in the centre where the whey drains off into a pail. This table is more suitable for draining the cheese the second day after it is turned. A shelf may be fitted up in the same way. To begin with, however, an ordinary table may be tilted a little at one end, so that the whey will drain to a given corner where it can be caught, or a board may be laid in a sloping fashion on the table and the cheese moulds set on that.

Moulds.

Moulds for holding the curd are round and made of tin in two pieces to facilitate the turning of the cheese. They are 5½ inches in diameter and 5 inches in height. The lower half is two inches high and the top half or collar is three inches high. They cost about thirty-five cents each and can be bought from the Canadian Dairy Supply Company, Youville Square, Montreal.

Boards and Straw Mats.

These are required to lay the cheese on. No pressure is given to the cheese. The straw mats are placed on the boards underneath the moulds into which the curd

is ladled, and the whey drains off through the straw. Each board and mat holds two moulds. The boards are fourteen by eight inches and half an inch in thickness. These can be easily made at home. The straw mats are the same size as the boards and can also be made at home in spare moments. They are usually made by the peasantry in the North of France of wheat or rye straw very neatly and evenly threaded together. They cost about five cents each. Where, however, time is too scarce to make them and there is difficulty in obtaining them ready made, a double fold of coarse, open linen may be used instead. After using, the mats should be rinsed in cold water, then in warm water and scalded or boiled, and placed, if possible, in the sun to dry. If washed carefully, they will last a long time.

Ladle.

A ladle is necessary for transferring the curd from the pails to the moulds. This ladle may be of tin or enamel. The edge should be sharp, so that it will make as clean a cut as possible. If it is thick or rough, it will tear the curd and there will be loss of fat.

Thermometer.

A reliable floating dairy thermometer is a necessity. They can be got for twenty-five cents each. No uniformity can be obtained by rule of thumb, and a mistake of a few degrees in temperature may make a considerable difference in the character of the cheese.

Measuring Glass for Rennet.

When rennet extract is used, it is well to invest in a small drachm glass for measuring the rennet. These glasses can be got from any chemist, graded to show the number of drops. They cost twenty-five cents each.

Paper and Boxes.

Grease proof parchment paper will be required to wrap the cheese in, if it is to be sent to market. It can be obtained from any dairy supply house. Cardboard boxes can be had from any of the folding box manufacturers and cost from three to five dollars per thousand.

METHOD OF MAKING.

Requirements for two cheese:—

- One gallon new milk.
- Fifteen drops rennet extract.
- One ounce of pure dairy salt.

1. Strain the milk into a clean pail or other suitable vessel.
2. Get the milk to a temperature of 80° F.
3. Dilute the rennet with about ten times its bulk of water, in order to get it evenly mixed and more easily distributed. Add it to the milk and stir gently to bottom of the pail for three minutes.
4. Cover the pail with a clean cloth in order to retain heat. Four folds of butter muslin will do nicely. If the temperature of the room is low, it is advisable to set the vessel containing the milk in another containing water two degrees higher in temperature than the milk. If the temperature of the water falls below 80° F. a little warm water may be added to it. 60 to 65° F. is the best room temperature.
5. Stir the surface of the milk gently with the end of the thermometer to keep the cream from rising. Do this every ten minutes or so for the first half hour. Do not stir after the milk has begun to coagulate.

6. Lay the board with the straw mat on it and the two moulds with collars, where they can drain undisturbed in as even a temperature and as free from draughts as possible. The time the curd takes in draining will depend to a considerable extent on the temperature of the room and on the manner in which the curd is ladled. If the temperature falls much below 60° F. the curd will take too long to drain and may have a bitter flavour. If kept at too high a temperature, or if ladled roughly, there will be a loss of fat and the result will be a harsh, dry cheese. If ladled in thin slices, it will drain more quickly than if ladled in thick slices. When a nice soft coagulum has formed, which ought to be in from two to three hours, take out a large ladleful of curd and set it aside to form smooth tops for the cheese. Then gently ladle the rest of the curd into the moulds in thin slices, putting on last of all the curd from the ladleful which was set aside. If the tins do not hold all the curd to begin with, the remainder may be added as soon as that in the tins has sunk sufficiently.

7. When the curd has sunk to the lower edge of the collar, which should be in from twenty to thirty hours, remove the collars gently, place a clean mat and board on the top of the moulds and turn them over. Care must be exercised in removing the first mat, as the curd is apt to adhere to it. It is best to roll it backwards gently like a roll of paper.

8. Sprinkle the top of the curd with good salt, about $\frac{1}{4}$ -oz. between two cheese.

9. Wash the draining table, replace the cheese on it and let the cheese drain for another twenty-four hours.

10. At the end of that time, turn as before and sprinkle the other side with a similar amount of salt. In twenty-four hours after this the cheese should be ready for eating, if they are used fresh, but if not disposed of, the moulds may be removed and the cheese turned daily.

11. Wrap neatly in grease-proof parchment paper, pack in cardboard boxes and send to market.

