

THE WINTER CREAMERY.

BULLETIN ISSUED BY THE ONTARIO AGRICULTURAL COLLEGE.

of special interest to the dairymen of this country—Very Valuable Hints and Notes on Winter Dairying Which Should be Read and Considered.

WINTER CREAMERY.

The winter creamery offers many advantages to dairymen, with few or many cows milking during the winter. The chief of these are a better average quality of butter, which is sure to bring a higher price, and the extra yield of butter per 100 lbs. of milk which is got by using the cream separator. Either of these advantages will pay the cost of manufacturing the butter, which ought not to exceed three and one-half cents per pound where the milk is delivered at the creamery. Again, the labor is very much less for the farmer's wife, where the milk is sent to the winter creamery. In addition, the farmer and his wife feel much better when going to town to buy household necessities, if they have five to ten dollars in a pocket as a result of the sale of creamery butter, than if they have twenty to fifty pounds of butter in a basket.

WHERE TO LOCATE THE WINTER CREAMERY.

The creamery may be located in a summer cream-gathering creamery, in a summer separator creamery, in a summer cheese factory, or in a place where there are none of these. If an average of 15,000 lbs. of milk per week can be relied upon during the winter season, it will pay to purchase winter creamery apparatus and hire a butter-maker. There is no reason why our cream gathering creameries and cheese factories should hang out this sign about October 15th each year—Come out of Business until May the first. Patrons must make Dairy Butter and trade it at the Corner Grocery until we open up again, or else manage a "dry" Dairy for the winter.

THE MACHINERY AND BUILDING.

The building should be made as warm as possible with paper and dead-air spaces, and should, where practicable, be heated with "live" steam or with "exhaust" steam from the engine. A room 20x30 to 30x30 is required for making the butter, also an office, boiler and engine room, a refrigerator and an ice-house—say 600 square feet of ground space for these latter.

The cost of the building will be from \$1,000 to \$2,000. The machinery to handle 15,000 to 25,000 lbs. of milk weekly will cost about \$1,000.

The leading makes of separators used in Canadian creameries are: "Alpha de Laval, sold by The Canadian Dairy Supply Co., Montreal. "Alexandra, sold by J. S. Pearce & Co., London, Ont. "Russian, sold by D. Derbyshire & Co., Brockville, Ont. "Danish Weston, sold by Richardson & Webster, St. Marys, Ont.

These separators cost from \$350 to \$550 each, depending upon the make and size. They all have their good points, and we do not care to recommend any one of them in preference to another. The agents will explain the good points of each and quote prices on application.

Next to the separator, the most important part of the machinery is the boiler and engine. The boiler should have a capacity of from twelve to twenty horse-power; and the engine from six to eight. A "half-trunk-lid" churn made of whitewood or pine is convenient. A narrow cream vat with plenty of space at the sides and ends for ice is needed to cool the cream rapidly where a cooler is not used.

Where the cream vat is not adapted to rapid cooling, one of the various coolers on the market may be used; or a coil of galvanized iron pipe having cold water running through it may be placed in the cream and be worked by the engine. This will cool the cream rapidly.

A Babcock tester for dividing proceeds among patrons and for detecting losses of butter fat in skim-milk and buttermilk, is an essential part of the machinery in every creamery.

A complete list of all machinery needed, together with their prices, may be obtained from any of the Dairy Supply firms.

TO THE PATRONS.

Aim to have about half of the cows fresh for winter creamery. Feed them liberally. Give the cows plenty of salt and water. Care for them regularly, treat them kindly, keep them clean, and you will have your reward. We find that corn silage, mangolds, clover hay, bran, peas, oats and some oil-cake, if it can be got for \$20 per ton or less, give us good results in the milk flow. Swede turnips or rape should not be fed to cows giving milk for butter or cheese-making.

Finally, help the buttermaker by supplying him with first-class milk and you have your reward.

TO THE BUTTERMAKER.

Be on your guard against stable, turnip, potato, brewers' grains, or other flavors which taint milk and injure the quality of butter. If the milk is frozen or very cold, you will have difficulty in detecting these flavors, and it will be safer for you to heat a small portion of such milk separately, where you suspect bad flavor. Where a can has much ice on the top, remove the ice before weighing and sampling; or else melt it before sampling as the frozen part, containing an undue proportion of water, will not allow you to take a fair sample.

To preserve the milk for testing use in each composite bottle about what will lie on a ten cent piece, a mixture of seven parts bi-chromate of potash and one part corrosive sublimate. Once a month is often enough to do the testing. Test very carefully and exactly so as to render each patron his just reward for labor done in caring for his cows and milk.

CREAMING THE MILK.

Look over the machinery each evening to see that it is in good condition for the morning run and thus avoid delays to patrons.

Heat the milk from 100 to 130 degrees before separating. The higher temperature will increase the capacity of your separator, and enable it to skim more closely. It will also give smoother cream with some separators. Speed the separator to its full rate and maintain it at full speed during the whole skimming. It is economy to use the exhaust steam for heating the whole milk or the skim-milk. Use hot water for heating, rather than "dry" steam, and the milk will not cook on your heater so much. To remove cooked milk from heater or vat, add some washing soda to warm water and allow it to stand in the heater some time before washing. Aim to have about 25 to 30 per cent. of fat in the cream. If the milk requires to be lifted to the separator use a pump which may be easily cleaned, in preference to an ejector.

PASTEURIZING THE CREAM.

To insure a uniform flavor of good quality, we recommend the system known as Pasteurizing. Either "Pasteurize the whole milk before separating, or heat the cream and skim-milk after separating. For heating the whole milk a channel heater about eight or ten inches deep with six or seven channels, about four feet long and three to four inches wide would answer the purpose after a portion of the heating has been done in the receiving vat. Place this channel vat in a tank or pan with a steam pipe under it for heating the water. The milk or cream enters one side and passes out at the other having been heated to 160 degrees on the way. Keep the cream covered by means of a tin cover placed over the channel vat.

THE CREAM.

The cream may be Pasteurized in one of four ways:— 1. By using ordinary shot gun cans 8 in. diameter by 20 in. deep, set in a tank of water kept at about 180 degrees. Keep the cream stirred all the time it is heating and when it reaches 160 degrees remove the can from the water. Allow it to stand for 20 minutes, then empty into the cream vat and begin cooling.

2. By the use of a smaller channel vat, similar to the one described for Pasteurizing whole milk. Size—3 ft. long, 20 in. wide, 3 in. deep, with six or seven channels. This is the least labor and expense.

3. By heating the cream in the ordinary cream vat.

4. By means of a Pasteurizer, which is a machine specially built for the purpose of heating milk or cream.

For ordinary creamery work, Pasteurizing the cream is likely to be more practicable than heating the whole milk.

The next step is the cooling of the cream. It should be cooled to about 90 to 95 degrees, after Pasteurizing, and then the "Starter" should be added. We recommend making the starter from Pasteurized skim-milk, and using the same cultures as far as possible during the winter, thus insuring uniformity of flavor during the whole season.

Use from 10 to 20 per cent. of starter when ripening in 24 hours, and about 5 per cent. when ripening in 48 hours. If Pasteurizing is not practised the starter may be added to the cream vat as soon as, or before the cream is put in. Continue the cooling until the cream reaches a temperature of 65 to 70 degrees, when it should be allowed to stand until it begins to develop quite strongly and churning commences. The cream should then be cooled to churning temperature, which will be from 50 degrees to 55 degrees. This may be done in the evening and during the night. To insure good grain and body in the butter, be sure to cool the cream to churning temperature for two to four hours before churning, to allow the fat to harden. When ripening at a high temperature, 70 degrees, allow the cream to remain over night at churning temperature, if at all possible.

Use the alkali test for determining the acidity of the cream the first thing in the morning. If there is from six to seven-tenths of a per cent. of acid present, the cream is ready for churning. Do not allow over eight-tenths of a per cent. of acid in the cream if you wish the finest flavor in the butter.

CHURNING, SALTING, AND WORKING.

The square box churn, or the combined churn and worker, will give good results. If the butter is for export to Great Britain, use little or no coloring in the cream. Have the temperature of the cream such that the butter will come in granular form in 40 to 60 minutes. After drawing off the buttermilk, wash very lightly for quick consumption, and once for the regular trade. Salt at the rate of about one half ounce per pound of butter for export, and three-quarters of an ounce to one ounce for home market. Work the butter until the salt is thoroughly mixed through it, the color is even, and until the water is not more than 12 per cent. of the finished butter.

PREPARING FOR MARKET AND MARKETING.

For the home market there is no

form more suitable than the oblong print, wrapped in good parchment paper which is stamped with the name of the creamery. For export, use the square box, lined with paraffin wax and parchment paper. Pack the butter in the box firmly, so that when emptied it will look like a solid cube of butter, without holes into which gather the brine and buttermilk, giving the butter an unsightly appearance.

Ship the butter weekly to a reliable commission house, or directly to exporters or importers of the finest Canadian creamery butter, thus building up for our butter branch of the dairy industry a reputation similar to that which Canadian cheese has acquired. The winter creamery is a branch of dairying which needs and is capable of almost unlimited extension.

ENGLISHMEN AND DRESS.

A Tailor's Point of View Regarding Statesmen and a Bishop.

We all recollect that the Duke of York while in Ireland incurred the reproach of the "Tailor and Cutter" because he put on one frock coat which was rather "crowded" about the breast. There was a pocket where a pocket ought not to have been—so our sartorial autocrat declared. Then later this autocrat has been praising the crease of Sir William Whiteway's trousers.

Indeed, writes a London "Chronicle" interviewer, the "Tailor and Cutter" has become a real personal entity—a being with the most interesting confidences. That being so, I was anxious to make his acquaintance, and my opportunity came yesterday. I found him an admirable fellow, thoroughly diverting, and in fine, I enjoyed my talk with him.

"The House of Commons, I think, has been a happy hunting ground with you?"

"Oh, yes. Of the front bench men Mr. Chamberlain is perhaps the best tailored—smartly dressed would be the phrase in regard to him. Indeed, he is so smartly tailored that he lacks that ease and grace which less draconic fitting would secure. It is possible to be too trim—so trim that the observer notices the fact."

"That is something which Mr. Chamberlain must learn to avoid?"

"It is a small fault, after all. If you turn to another leader on the government bench, I mean Mr. Balfour, you will find that he has a trick of catching hold of the neck of his coat when speaking. This is apt to spoil the line of a coat at the neck, because the cloth gives a trifle under pressure. A 'step' hemmed inside to prevent any extension of the material is often desirable. It is to be hoped that such a 'step' is put inside the neck of Mr. Balfour's coat. Certainly he needs it."

"I'm not going to take you all over the House of Commons in a sartorial sense; but what would be the broad verdict upon it?"

"Some members dress admirably, some don't; the average would be very fair. You may get many different types, and you must judge each on its merits. Mr. John Burns would not look well in Mr. Chamberlain's frock coat, and Mr. Chamberlain would be rather a guy in the d. b. reefer of Mr. Burns. One must add that the blue reefer quite suits Mr. Burns—it appears an appropriate part of the whole picture and what better praise would you have?"

"Then the House of Lords—have you been there?"

"Not yet, but there is still time to go, and there also the results ought to be interesting. Recently we have had the London editors under observation and in due season shall express an opinion as their manner of dress."

"You won't be hard on them?"

"No, no. Besides they have time to reform if you are to warn them, because the observations are not yet completed. Perhaps you could give us a few hints? No! Then you must just do your best."

"Have the bishops any sartorial points, or is a bishop's dress always the same?"

"A great deal depends on the gaiters—whether they are an absolutely neat fit. A tailor was telling me the other day of having to put whalebone into a pair of clerical gaiters."

"Surely that was a most unepiscopal proceeding?"

"Perhaps; but if the gaiters would slide down over the good man's calves they had to be kept up somehow."

This revelation—whalebone to keep up a bishop's gaiters—made me dumb and so there ends the interview. I didn't even have enough thought to ask the name of the bishop.

HIS IDEA OF IT.

Pa. questioned little Willie Green, who was listening to the inspiring strains of the village band, what do they call that funny-looking horn? Which of them? asked his father.

That one answered the lad, pointing to the trombone; the one that makes that bitter sound.

A BASE CALUMNY.

Fuller Boose—I have been accused of drinking like a fish, but that's false on the face of it.

EDISON'S GREAT TRIUMPHS

GREAT MAGNETIC ORE SEPARATOR IS AT LAST PERFECTED.

The Mammoth Iron Plant at Edison New Begin Operations—Five Thousand Tons of Ore Will Be Handled Daily—Marvelous Machinery of the Plant—Its Economic Importance.

Thomas Alva Edison is generally known as a man who has the faith to move mountains. He is now not only proving that he possesses this faith, but, having a few mountains on his hands, he is actually moving them. One often reads of earthquakes which, when they have finished their fell work, leave peaks and valleys where once lofty peaks reared their heads. When Mr. Edison and his successors to remote generations get through with their operations now projected in midland New Jersey, there will be a hole in the ground worthy of a Sumatran redistribution of geography on catastrophic lines. The most gigantic piece of mining ever dreamed of has been begun at Edison, where large concentrating works have been created, and when the veins of ore there are exhausted, a yawning chasm, a mile deep, will be left to bear witness to the boldest of all the enterprises of the great inventor. For four years Mr. Edison has been bending his energies to the perfection of his magnetic ore separator. The process is now available; the buildings for its exploitation are completed, the machinery is in place and the great steam shovels have received the signal to begin scooping 5,000 tons of low-grade ore a day out of the mountain side. A visitor to the works sees stretched out before him the most chaotic and bizarre collection of buildings ever conceived that look as if they had been shaken up in a cyclopean bag and flung out over the landscape. There are

FIFTY OF THEM.

of all sorts and sizes, from the mighty crushing plant and the towering milling plant, in the center, to the unpretentious office of the wizard himself. There are 16,000 acres under the control of the company working the mines. In this area they have six large veins and several small ones. The six veins alone run for twenty-five miles, with an average width of 750 feet. One deposit alone close to the works contains over 200,000,000 tons of ore-bearing rock, which will last, mined at the full capacity of the plant, over 100 years. The mining, like everything else at Edison, is done on a mammoth scale. The steam shovels, of sixty and ninety tons, respectively bury their jaws in the face of the cut, and at a mouthful lap up three or four tons of rock, which is swung around and shot right into the skips waiting on the loading car. An ordinary hour's work for one of these excavators is 250 tons. The cars are drawn by locomotives to the crushing mill, where electric cranes pick up the ships and land them, ready for discharge, over the "giant rolls." These huge masses of iron and steel, which appear when at rest too ponderous for rapid movement swallow up the rock as fast as it is fed to them. The size of the rock makes no difference. A chunk of five tons is gripped by the steel bosses with which the surface of the rolls is studded, and in an instant disintegrated and dropped in pieces weighing a few pounds in the rolls below for a finer crushing. There is seventy tons weight in the revolving metals, whose peripheries have a velocity of nearly a mile a minute. They can never be choked or broken, for, as the electrician provides against the destructive effect of a sudden rush of excess current by a "safety fuse," Mr. Edison has fitted them with "breaking pins," which allow the machinery to bear the full strain for which it is intended, but snap and bring things to a standstill as soon as the limit is reached. These breaking pins, graded to the one-thousandth of an inch, are attached to every piece of pressure-bearing mechanism in the works and it is through their employment that in all the years of incessant experimentation at Edison, the damage done by accident has amounted to only

A FEW SCORE OF DOLLARS.

After the ore has undergone further reductions in size had been dried in 50-mesh, and in the form of powder is taken by a conveyor to the stock room. Conveyors are seen in various forms all over the Edison works. They are an important part of the general scheme of economy of labor which is rigidly carried out. In fact, it is Mr. Edison's boast that from the moment the rock is mined to its shipment as a finished product not a hand touches it, every part of the process being automatic. The arch economist of labor is never so pleased as when he can say, "I've saved another man."

From the stock house the ore goes to the magnet tower, on the inside of which are ranged a series of magnets 12 inches wide and 6 feet long. The top plates are the weakest, the middle somewhat stronger, and the lowest the most powerfully energized by the current influencing them. The ore is dropped in from the top of the tower. As it falls the metallic particles are deflected by the magnets and turned to one side, while the "tailings," in

the form of sand, fall to the bottom of the tower, whence they are removed to the sand house. To every ton of ore there are three tons of sand, which constitutes a valuable by-product. In the sand house it receives special treatment, according to the purpose for which it is intended, building, cement or lime work, foundries, locomotive and electric car sand boxes, sand-blasting, etc. That air which no use can be found is thrown out on the sand heap, which bids fair to soon need a small county to itself.

The "concentrates" are subjected to a second and then a third series of magnets, which give them the finishing separation. At this point they will assay 67 per cent. metallic iron, 30-100th per cent. phosphorus and 15-100th per cent. sulphur. They are passed into a stock house, and are ready for mixing with the binding material, which gives cohesion and other necessary qualities to the briquette. Mr. Edison made over

700 EXPERIMENTS

before he discovered a suitable medium for this purpose. It is told of one of his trusty superintendents, who had come for a few days' visit from a distant laboratory, and was taking a hand in the briquette experiments, that Mr. Edison, each evening gave him a number of tests to determine, man of which were obviously unpromising. One evening as he received his assignment of tests, he exclaimed, pointing to one of them: "Why, that's no good. I can tell 'right' now that it won't work." "Oh," said Edison quietly, "it's come at last. I've been expecting that. Now, I don't mind telling you that I look for only one out of every 100 experiments I try to be successful, but I always expect that in every one of the other ninety-nine there is one chance of success. Still, I try them all."

From the "mixers" the blended material travels on a rubber belt 500 feet long, which has a carrying capacity of 150 tons an hour to the briquetting building. Here it is passed through machines and compressed into briquettes of about 1-1/4 inches thick and 3 inches in diameter, each weighing about a pound. From here it is taken to the furnaces, dried and loaded into the shipping cars.

There are only 250 men employed in the works, including the executive staff. But for the innumerable labor-saving devices, which, as before mentioned, are a distinctive feature of the plant, the force for the same schedule of results would run into the thousands.

The trial of the briquette in blast furnaces has shown an increase in output from 25 to 50 per cent. over the mixture of ore ordinarily used, with a limited consumption of limestone and fuel. Mr. Edison's idea is to give a high grade ore to the Eastern furnaces, so that they can compete with their Western and Southern rivals. The erection of

SIMILAR PLANTS.

elsewhere is already in progress and it is believed by those who are likely to know that in a very short time there will be regular and heavy shipments of briquettes to England. At present the demand of the furnaces is insatiable.

Mr. Edison holds that the iron ore question to-day is a geographical one. While the Lake Superior mines of almost pure ore are 1,500 miles from their market, he is only 100. He had unlimited confidence in his great enterprise. Some time ago, one of the stockholders in the undertaking called at Edison and protested against the interminable and lavish laying out of money while the fruition seemed as far away as it had been a twelve-month before. "How much stock have you?" asked Edison. "Forty thousand dollars," was the reply. Edison walked to his desk and drawing a check for the full amount, there and then bought in the stock.

Notwithstanding the intense and continued mental and physical strain incident to the creation of this new industry, Mr. Edison is cheery and hearty, and his robust physique seems to have lost but little of the spring and vigor of youth. The secret of this is what he himself would call "bi-polar"; he has the extraordinary faculty of getting more rest out of one hour's sleep than most men can out of six, and he is absolutely without nerves. Not long ago, when what were expected to be the final changes and improvements in the plant had been made and he was about to order the long-deferred starting of the machinery, Mr. Mallory went to report to him a budget of obstacles that had arisen. The last of these involved quite a serious issue, and meant, perhaps, weeks of delay. Edison heard it all with unmoved face, and slowly nodded his head. Mr. Mallory was astonished that he showed no concern, and told him so. "No," said Edison, "why should I? You are doing worrying enough for two."

HIS MISTAKE.

I adore you, he cried, bending and pressing a passionate kiss upon her hand. But she drew back and put him from her, a look of surprise and reproach upon her beautiful face. "Forgive me if I have offended you, he implored. I am surprised and grieved at such conduct, she said, her cold gaze fixed upon him. You are a young lawyer with flattering prospects; you are ambitious; you expect to rise in the world and I must say that I— But I only kissed your hand, he broke in. As I was going to say, she went on, I expected you to aim higher. When he recovered from the shock he was standing at the gate alone.

ACCOUNTED FOR.

Did your wife have access to your clothes the night the money disappeared? asked the man who had gone to the Judge for a warrant against the hired man. Durned if she didn't. I guess I'll just drop the case, Judge.