

State Afforestation.

The second report dealing with the subject of afforestation, of the British Royal Commission on Coast Erosion, the Reclamation of Tidal Lands, and Afforestation, has been issued as a Bluebook. The Commissioners, after considering at length the present condition of British forestry, arrive at the conclusion that a national scheme of afforestation would contribute to the solution of the unemployed problem, and that the immediate taking in hand of such a scheme would be in the highest degree in the public interest.

The report recommends a loan of £2,000,000 for the creation of a national forest estate. The net deficit, it claims, according to the London Times, will rise from £90,000 in the first year, to £3,131,250 in the 40th, when the forest will become more than self-supporting. In 80 years the State will find itself in possession of property worth £562,000,000, or £170,000,000 more than its cost, calculated at 3 per cent. interest. The approximate area available for afforestation, without encroaching on farm land, is 9,000,000 acres. The national forest lands would be entrusted to special commissioners. One member of the Royal Commission thinks certain parts of the reports are too optimistic.

The Indispensable Corn Crop.

J. H. Grisdale, Agriculturist, Central Experimental Farm, Ottawa, speaking at the Dairymen's Convention, held in Valleyfield, Que., said no successful dairyman in that part of Canada considered he was producing milk cheaply without a silo and a good crop of corn. The experimental stage of the silo was past, the lagyards were getting into line, and siloes were being erected on every hand. The silo was now a factor in summer feeding, as well as winter feeding, for no cheaper soiling crop could be raised than corn. With land well manured, drained and cultivated, the corn crop was assured, and he advised for the section in which he was speaking, Early Leaming, Longfellow and White-cap Dent. Secure the seed early and test it, so there will be no loss of crop.

THE DAIRY.

Care of Milk for Cheesemaking.

The following article is the text of a splendid address, delivered on various occasions this winter by G. H. Barr, of the Dairy and Cold-storage Commissioner's staff, Ottawa, who, with the assistance of J. G. Bouchard, also of the Dairy Commissioner's staff, conducted last summer a remarkably valuable and illuminative series of experiments with the care of milk under average farm conditions. His conclusions go to show that prompt cooling and exclusion from the air is what milk needs if it is to keep well, aeration, either by means of an aerator or by dipping and pouring, doing actually more harm than good.—Editor.

Although this is an old topic, and one which has been discussed in the press and at dairy meetings probably more frequently than any other, it is still a subject in which all dairymen should be deeply interested, for the very foundation of successful cheesemaking lies in the production of clean, sweet milk.

It is the general opinion that milk for cheesemaking should be aired in some manner after it is drawn from the cow, and for many years patrons of the cheese factories were advised to use some special style of aerator, or expose the milk to the air by dipping it.

A few years ago Professor Dean reported some experiments on this subject. His conclusions were that there was no advantage in aerating milk for cheesemaking. Many dairymen at the time thought such a statement almost rank heresy, and that his College experiments were scarcely applicable to factory conditions, but there has been a growing conviction in the minds of dairymen that aeration is of little value.

In order to throw some further light on this important, if somewhat threadbare, subject, Mr. Ruddick, Dominion Dairy and Cold-storage Commissioner, decided to have some experiments conducted last summer under factory conditions.

It was my privilege to carry out this interesting and instructive work, with the able assistance of J. G. Bouchard, also of the Dairy staff. Our object was not to secure information from a bacteriological standpoint, but rather to discover what effect different methods of handling the milk at the farms would have on the quality of the curd and cheese.

The principal points we had in view were to ascertain the advantages or disadvantages of aerating, of cooling and aerating, and of cooling the milk without aeration, under ordinary farm conditions, and, if possible, discover a simple, convenient, inexpensive and effective method of

treating the milk, so that it might be delivered at our cheese factories in such a condition that our cheesemakers would not have to contend with gassy and other undesirable fermentations during the process of manufacture, or suffer losses from unclean flavors in the cheese.

We made a very convenient arrangement with John McEwan, proprietor of the Rideau Queen Cheese factory, Smith's Falls, whereby we had the use of his creamery room for the season, and also a number of his patrons were willing to allow us the privilege of going to their farms to arrange for the care of their milk. At first we thought of taking the milk from six or eight patrons, but we found it would be difficult to get all the details in connection with the treatment of the milk received at the farm from so many, and finally decided to use the milk from two patrons, Walter Hyslop and D. Condie. These two gentlemen had the largest herds convenient to the factory, and also had ice stored for summer use. Mr. Condie's farm lies on the west, and Mr. Hyslop's on the south side of the town of Smith's



Mr. Hyslop's Milk Stand.



Mr. Condie's Milk Stand.



An Easy Method of Cooling Milk.

Falls. Part of Mr. Condie's farm consists of drowned land from the Rideau Canal, and the cows pastured a good part of the summer on the flats around this swampy section. Mr. Hyslop's farm had some low land, as well as high and stony soil. One could scarcely call either farm ideal pasture land for the most delicate-flavored milk, but we were very glad to have these conditions, thus giving an opportunity to see results from what may be considered about average farm lands.

Mr. Condie's herd of 17 cows consisted of 8 grade Ayrshires, 4 grade Holsteins and 5 grade Shorthorns. Several of these cows had aborted during the winter, but were milking fairly well all season. One cow had been milking over a year.

Mr. Hyslop's herd of 18 cows consisted of 1 pure-bred Holstein, 2 grade Holsteins, and 15 grade Ayrshires. A number of his cows had also aborted during the winter. These cows were fed silage for several weeks in July, which kept up the flow of milk well, with no detrimental effect on the milk for cheesemaking.

The cows were always milked in the stable at both places.

Mr. Hyslop's stable was frame, and Mr. Condie's a stone basement under the barn. Both had wooden floors, which could not be considered by any means as sanitary as cement. The walls, ceilings and floors were dusty.

The milking was done at Mr. Hyslop's by his four sons, and at Mr. Condie's by himself and two hired men.

At both places, bright tin pails were used to milk in. No special regulations were asked for in regard to milking or feeding the cows, our object being to take the milk as they gave it to us, and see what result different treatment at the farm would have on it when manufacturing it into cheese.

The milk was delivered to the factory in the usual way, each patron delivering his own milk. Mr. Hyslop usually came to the factory about seven o'clock, and Mr. Condie about eight o'clock, each morning, which gave us ordinary factory conditions for delivery.

The equipment used at each farm consisted of two Champion aerators, a box for dividing the milk equally in the cans, a shotgun can for ice and water, a dinner, a thermometer, and two half barrels for setting the milk cans in cold water.

Only the evening's milk was treated. The morning's milk was not aerated or cooled.

Mr. Bouchard and myself were always present at the farms when milking commenced in the evening, to take charge of the milk as soon as it was drawn from the cow. At Mr. Condie's, as the cows were milked, the milk was strained into shotgun cans sitting behind the cows, and then carried to the milkstand. At Mr. Hyslop's, the milk was poured into a strainer pail in the stable, and carried to the milkstand and strained into the milk cans.

The milk was divided by pouring it into a square tin box placed on top of the aerators or milk cans. An outlet at each end of this box allowed the milk to flow quite accurately into the two milk cans marked A and B. The morning's milk, when mixed with the evening's, at the farm, was divided in the same manner. The different lots were treated as nearly alike as possible at both farms. At the factory, two small vats were used, the A lots of the evening's milk from each farm being put into Vat A, and B lots into Vat B. The morning's milk was divided equally into each vat.

Curd tests were made of each can of evening's milk, and also of the morning's milk. Babcock tests were made of the milk in each vat after it was received, and during the whole season only four times was there any difference in the per cent. of fat, showing that the different methods of handling the milk had not much effect upon the per cent. of fat. The per cent. of fat in the milk from the two herds was practically the same.

The per cent. of acid was determined in each lot of evening's and morning's milk by the acidimeter or alkaline test.

Milk from the Hyslop farm nearly always showed a higher acidity than that from the Condie farm.

The average tests for the season were as follows:

	Evening's Milk.		Mixed Milk.		Morning's Milk.
	A	B	A	B	
Hyslop	.169	.174	.170	.171	.165
Condie	.160	.162	.166	.168	.160

When the milk was cooled in the evening, and the morning's milk delivered in separate cans, one-half of one-per-cent. starter was added as soon as the first milk was received (about seven o'clock) and often the milk would not "set" until about ten o'clock.

We had to use a starter all the time, in order to get the curds in condition to leave them and go out to the farms to look after the milk in the evening, and in many cases its use gave better conditions in the curds from gassy milk than if no starter had been used.

No effort was made to do experimental work regarding methods of manufacture. All the curds were handled carefully, as nearly alike as possible, and according to the best methods in practice in our cheese factories.

The cheese were kept in the factory curing-room from 12 to 15 days, then shipped to the Ottawa cold-storage. The average temperatures in the curing-room were, in June 71, July 72, and August 68 degrees. The cheese were scored for flavor just before being shipped, and again on September 21st, in the cold-storage.

Although we have considerable information relating to the number of pounds of milk required to make a pound of cheese in the different experiments, we feel it is scarcely reliable, on account of the small quantities of milk we used.

Flavors in the milk, and flavors and texture in the curds and cheese, may be secured equally as well from small quantities as from large, but to get reliable results in regard to the losses in manufacturing, we believe it is necessary to do the work in the large factory vats. This we hope to do another year.