

Moisture	60 per cent.
Carbonate of lime	80.87 "
Carbonate of magnesia.....	.75 "
Oxide of iron and alumina.....	1.50 "
Clay and sand (insoluble in acid)...	3.62 "
Organic matter (by difference).....	4.66 "
	100.00 "

Phosphoric acid	Traces.
Nitrogen in organic matter.....	3.24 "

"It will be at once apparent that this so-called 'mud' is marl of very good quality. It consists essentially of carbonate of lime, and its agricultural value undoubtedly depends on this fact, though the nitrogen present in its organic matter (.324 per cent.) is assuredly an element of some worth, especially on soils poor in humus.

"Marl is an extremely valuable form in which to apply lime, as excess thereof does no injury to the soil, and in this respect is unlike quick or caustic lime. Of course it cannot in any sense be regarded as a substitute for barnyard manure, nor can it be used in the place of commercial fertilizers—the function of which is to furnish nitrogen, phosphoric acid and potash. It is to be considered as a useful amendment rather than as a fertilizer. Improving the tilth, neutralizing acidity and promoting nitrification are among its chief functions, though it has a distinct value as a supplier of lime (an element necessary for plant growth) for soils deficient in that constituent. It can be used on all classes of soils, but its best results are more commonly obtained from heavy clays and peaty loams."

The digging begins after the New Year, and continues as long as the ice is good, usually till the end of March. Sometimes as many as fifty horses are busily engaged in hauling the sediment. Many domestic animals have been drowned in the lake, being unable to swim on account of the sticky bottom. Moose skeletons have also been dug up.

The mud is chiefly found at the lower end of the lake on the bars. Of the six mud-diggers, three are in operation.

A number of years ago a movement was on foot to use this mud in the manufacture of cement, but hitherto nothing has been done in that direction. Year after year the farmers spread this valuable manure upon their land, reaping the rich crops which have made this locality known as one of the best farming sections.

Every boy knows that large trout are found in Goose Lake: some weighing as much as two pounds have been taken.

Goose Lake is drained by Lake Brook, a winding stream which empties into the Little Caspédia River, and thence finds its way to Bay Chaleur.

More Experiences from Temiskaming District.

Jas. Scott, of Hill View, Township of Dymond, went into New Ontario eight years ago from Renfrew County, with \$700 cash, a team and a sleigh. His homestead experience commenced with the purchase for \$230 of 160 acres, with no improvements to speak of. He now has twenty acres chopped, and sixteen acres stumped, and values his property at \$2,000.

A. D. Hermeston, of Uno Park, went to New Ontario in 1896 from the County of Bruce. He had followed the milling business formerly, but was burnt out, and struck Liskeard with \$3.00. He took up 320 acres in Harley Township, at the usual price of 50 cents per acre. The cost of clearing green bush he estimates at \$40, having kept track of the labor thus expended on one acre measured out. He now has 50 acres cleared, with a bank barn 40 x 24 feet, and a two-story house 16 x 28 feet. He had 100 bushels of fall wheat this year from 3½ acres; expected 1,000 bushels of oats from 15 acres. He has no debts of any account, and would take \$10,000 for his property.

Lightning-rod Erection.

Will you please quote directions for putting homemade lightning-rods on a barn 72 feet long? Will six strands of No. 12 coppered-steel wire be heavy enough, or would it need more? Also, directions how to twist the wire with wagon wheel. I have pure copper wire for uprights. Also let me know if I will have to run rod down both ends of the barn to the ground, and how deep in the ground should it go? How can I get the uprights to stand? Will I have to get supports made by blacksmith, or will it stand by twisting six inches of the uprights on the cable on the ridge? How many uprights will I need on a barn of 72 feet? D. M.

Ans.—Both ends. On all barns over 40 feet in length, we recommend that rods be run down the gables and into the ground at both ends.

Size of Cable.—Rods made of wire should be at least ¾ of an inch in diameter. Size No. 12 wires would be much too light; sixteen would not be too many. Wire is cheap. Better err on the safe side.

Depth in the Ground.—Rods should reach permanently moist earth. From 5 to 7 feet down will answer, usually.

Twisting.—First get proper length. Fasten ends of wires firmly to spokes of wagon wheel. Attach the other ends to a stake driven into the ground at the right distance, and braced. Allowance must be made for a 6-inch shrinkage per 100 feet in twisting. Raise the wheel off the ground as if for greasing. Brace wagon firmly. Turn the wheel. Twist only enough to make cable hold together.

Points.—Points may be made of pieces of cable 6½ feet long, cut off the main rod. Open out 1½ feet at lower end for wrapping around and connecting with rod. A few inches of upper end should be opened out and spread in all directions. Blacksmith-made standards should be got to hold points upright. Points should be not more than about 22 feet apart. There ought to be four on a 72-foot barn.

The Bureau of Statistics of the United States Department of Agriculture estimates, from reports of its correspondents, that of the area planted to spring wheat this year, about 2.9 per cent. in Minnesota, 2.6 per cent. in North Dakota, and 2.4 per cent. in South Dakota, was not cut for its grain.

THE DAIRY.

The Casein of Milk.

AND ITS RELATION TO PAYING PATRONS OF CHEESERIES.

Considerable difference of opinion exists among scientific men as to the nature of the nitrogenous substances (muscle-formers) in milk. Some say there are as many as seven of the so-called albuminoids, while others argue there is but one. The weight of evidence points to the fact that there are at least two of these, viz., casein and albumin, while Fleischmann says it is highly probable that milk contains three albuminoids, casein, lactalbumin, and globulin, the casein being very much in excess of the others, and forming about 80 per cent. of the total nitrogenous compounds (Book of the Dairy, pp. 14 and 15).

Nearly all students of plant and animal physiology are agreed that the nitrogenous compounds in both plant and animal tissue are the most expensive to produce, and are the most valuable parts of plants and animals. This being so, we have often wondered why scientific men have so long neglected the nitrogenous portions of milk when discussing relative values of the different compounds found in milk. For the past twenty years there has been a veritable fat craze with reference to milk. Scientifically and commercially, milk fat has been overestimated in food value, while the more valuable casein has been practically neglected.

That the casein of milk is coming to its own in the estimation of dairy scientists, is indicated by the fact that, on the front page of a bulletin, issued by one of the most progressive of the American Experiment Stations, and written by three of the leading dairy scientists of America, we read:

"THE TRUE VALUE OF MILK FOR CHEESEMAKING CAN ONLY BE DETERMINED BY TESTING FOR BOTH FAT AND CASEIN."

This thought ought to settle the question as to the best method of paying patrons of cheeseries in Canada. For the past twenty years, we have practically stood alone in our contention for a proper recognition of the importance of considering casein in any system applied to the equal division of proceeds from sales of cheese among co-operative cheese factories.

Among the conclusions of the experimenters at the Station referred to, based upon results obtained at nine different factories located in various parts of the State, we should like to call attention to the following:

1. The data resulting from the testing of milk from many herds show that there is a variable content of casein in herd milks.

Our own experience is similar, and we have found that the extreme variation is more likely to occur in the fall of the year, when the cows are more or less advanced in lactation, and when milk is usually highest in price; consequently, more injustice is likely to occur at this time, when paying patrons according to weight, or fat content, of the milk, alone.

2. There is no constant and close agreement in the proportional relation of the fat and casein content of all herd milks. Consequently, milks of the same fat content may not produce the same quantity of cheese.

Not only is this so, but the yield of cheese is not always proportional to the fat and casein content in the milk. We can readily see how this may be the case, when so many factors, such as skill of the cheesemaker, losses during handling, amounts of moisture and salt incorporated with the curd, etc., all have an important bearing upon the yield of cheese. However, we consider the foregoing conclusion as knocking the last prop from under the fat method as a basis for dividing money among those supplying milk to cheese factories.

3. As if this were not sufficient to melt all the enthusiasm of the fat theorists, the temperature was raised to such a point in the fifth conclusion as to cause the fat to exude through the cheese bandages and swim over the floor of the curing-rooms, endangering the life and limb of the "fat" men. Hear it! "The quality of cheese made from milks ... stood in no direct relation to the quantity of fat in the milk from which they were manufactured." This is enough to cause certain men to wish they had never been born, when they see their "fat" child choked with casein—or, to change the figure, see it swimming in grease, like a cool's doughnut, largely hole.

4. Finally, "An allowance of equal values for the pounds of fat and casein delivered by the patron is a simple and equitable method for distributing dividends."

This is what we have contended for during all the years of the controversy with reference to this question. Up to 1908 there was no simple method of determining casein in milk. With the advent of the Hart casein-tester we now have a simple and inexpensive method of ascertaining the exact content of casein. This, together with the Babcock test for determining fat, enables the



Invernia's Queen of Kirkfield (870).

First-prize three-year-old Jersey cow, Canadian National Exhibition, Toronto, 1910. Imported and exhibited by William Mackenzie, Kirkfield, Ont.