

Some wheat and oats were being plowed up, but the crop may safely be estimated at 12 to 20 bushels per acre. South of Souris showers have been fairly regular, and the crops are good.

Oak Lake was our next stop. It is some 32 miles west of Brandon, and is surrounded by good wheat land. High hills were crossed on the banks of the Assiniboine River in a drive some 14 miles north. This is quite a new district, and bears excellent wheat crops this season. Among the good lands here are alkali flats, which are not broken but left for pasture. We found many old Ontario acquaintances here who are all "built up" in Manitoba. The land is somewhat rolling, and among a range of shale hills are situated some productive hay flats, besides occasional wet sloughs which are year by year drying up. Our visit to this district was cheered by a swim in Salt Lake, which is strongly alkali. It occupies some 90 acres, and on its bosom swam a large number of wild ducks. It is said that no animal life exists in its water. From here we proceeded to Virden, and visited its first summer fair. It may be compared to an Ontario township fair in point of exhibits and attendance. The stock was, as a rule, thin and rough, with the exception of a few well-brought-out Shorthorns and Barkshires, and two or three horses. This is a sandy district, but within a short distance north and east good rich soil and good crops are the rule.

We are about to take the train through the Territories and into the ranching district near the foot of the Rockies, of which you will hear later.

J. B. S.

DAIRY.

Discoloration of Cheese Investigation.

As far back as 1893, Mr. J. A. Ruddick, now Supt. of the Kingston (Ont.) Dairy School, observed reddish-yellow spots or streaks in white cheese in a Huntingdon Co. factory, P. Q., and discolored samples of cheese were received by Dairy Commissioner Robertson in 1894 from Mr. H. J. Foster, Knowlton, P. Q., and A. A. Ayer & Co., Montreal, but the cause of the discoloration was not discovered, owing to deficiencies in apparatus at the Central Experimental Farm laboratory. Subsequently a report of discolored cheese was received at the Department from the Escott factory, in Leeds Co., Ont. At this time Mr. W. T. Connell, M. D., M. R. C. S., pathologist and bacteriologist at Queen's University, Kingston, was delivering a few lectures at the Dairy School, and, in conjunction with Mr. Ruddick, was requested by the Commissioner to conduct a thorough investigation and make a report thereon. This has been done, and the following is a summary:

1st. An outbreak of discoloration (reddish-yellow) in cheese occurred in Escott factory, in May and June, 1896. In the discolored areas, a bacillus, which has been termed the bacillus Rudensis, was constantly present and has been isolated in pure culture.

2nd. This bacillus Rudensis was found in vast amounts in the gutter leading from the factory, and all the evidence points to the fact that the discoloration arose from the milk being seeded by these bacilli during manufacture within the factory itself.

3rd. Bacillus Rudensis has been experimentally proven capable of producing the typical discoloration of cheese as noted in Escott factory.

4th. Making and keeping the factory thoroughly clean has stamped out the discoloration by destruction or removal of the cause, viz., Bacillus Rudensis.

Dr. Connell was not able to identify the micro-organism with any described species, hence he named it *bacillus Rudensis* (after Mr. Ruddick). It is found as short, straight rods, though at times somewhat curved. The ends are rounded, occasionally somewhat pointed; may be joined in twos, but do not grow out into long filaments. Experiments with several small animals proved that the bacillus did not produce any disease processes in them, and it is regarded as highly probable—in fact, practically certain—that it would produce no inflammatory disturbance in man.

By experiments it was most clearly and positively shown that bacillus Rudensis, obtained from cheese in Escott factory in June last, grown in the laboratory for over five months, and then reintroduced into milk during its process of manufacture into cheese, could produce in all particulars with those noted in the Escott cheese. This definitely establishes the casual relationship between bacillus Rudensis and this reddish-yellow discoloration of cheese.

The following treatment was adopted in the Escott factory and was followed by disappearance of the discoloration in the cheese:

1st. The slime was removed from the sides of the gutter. The gutter and the earth immediately surrounding it were then disinfected with boiling water to which one pound crude carbolic acid to ten gallons of water was added. Copperas, one half pound to one pound to ten gallons water, might be

used. This disinfection of the drain and surrounding parts was continued for several days.

2nd. The defective wooden drain was taken up and replaced by an iron one, communicating directly with the gutter in the factory floor. Orders were given to flush this drain daily with several gallons of boiling water.

3rd. The floors, presses, vats and other utensils were disinfected by washing with water to which one pound carbolic acid to ten gallons water had been added. This washing was followed by washing with boiling water, and this last was ordered to be repeated daily.

4th. The walls were thoroughly brushed down. A coating of whitewash was ordered to be applied to the walls.

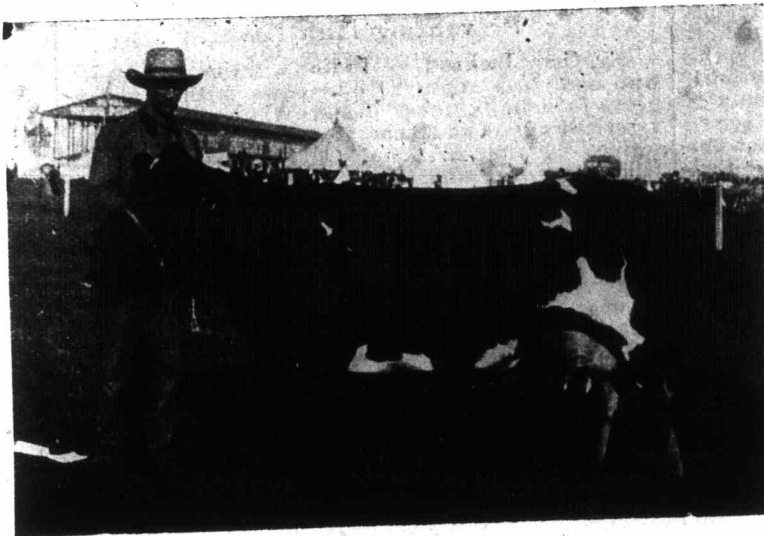
As will be seen by these details, the treatment consisted entirely in making and keeping the factory and surroundings CLEAN. Cleanliness meant in this case the removal and the prevention of further formation of the vast amounts of bacterial life hitherto flourishing unchecked except by the amount of food supplied. Thus by cleanliness the discoloration in the cheese has in the factory been completely stamped out. There can be but little doubt that by cleanliness many other "evil" conditions in cheese (bacterial or fermentative in nature) could also be eradicated. Cleanliness should be as essential to the proper making of cheese as it is to the proper making of bread, and more so, for in the former we have complicated fermentative processes to control.

Co-operative Creameries.

BY J. F. PERTH CO., ONT.

When we consider the great attention that has been given to the dairy industry in this country during the past decade it is no surprise that our dairy products have reached their present standard of excellence; but a visit to the towns and cities on market day will lead any person to believe that

A Prize-Winning Ayrshire Cow.



MAUD, OWNED BY JAS. S. COCHRANE, CRYSTAL CITY, MAN.

The handsome Ayrshire cow, Maud, portrayed above, is the property of Jas. S. Cochrane, Crystal City, Man. She was bred by Mr. Jos. Yuill, Carleton Place, Ont., and was winner of first prize in the Ayrshire class for aged cows and the sweepstakes prize of \$25.00 for the best milch cow of any breed at the Winnipeg Industrial Exhibition, 1897.

considerable improvement can still be made in the way of producing an article that will find ready sale. The time-worn custom of each farmer manufacturing the surplus milk from his herd into butter and trading it at the grocery stores for household provisions, or spending half a day every week in going to the nearest market town with from ten to twenty pounds of butter, must very soon sink into oblivion.

Now, I would not discourage private dairying where it can be carried on profitably, but, as a matter of fact, private dairying has been carried so far that it has ceased to return a good profit to those who are engaged in it. In order to produce an article that is fit for export we require a uniform grade. It makes very little difference how much care has been given to the milk, what pains are taken to raise the cream, what attention is given to have it at a proper temperature for churning, or what trouble is taken in preparing it for market, unless we produce a sufficient quantity of a uniform grade for shipment to the large markets the cost of manufacturing must be taken into the consideration. In the average farm dairy the system has been to raise the cream either by deep-setting or shallow pans. This plan is becoming unpopular on account of the loss of fat in the skim milk unless great care is taken to keep the temperature right. The hand separator has been introduced in a few dairies, but it is doubtful if it will prove a success, as it is tiresome work to operate this machine. Of course, it may be attached to a tread power or windmill, but where only ten or twelve cows are kept it must raise the cost of

production so high that very little profit is left for the dairyman.

If we, as Canadians, hope to have as good a name for our butter in foreign markets as is now held by the cheese manufactured in this country it will be necessary to resort to the same method of co-operation, at least for the bulk of the butter. In a number of cheese factories throughout the country appliances for the manufacture of butter have been placed, and it would be well to adopt this plan wherever it is practicable. Butter can be manufactured cheaper by this system of co-operation than by the individual farmer providing himself with his own appliances. The work would be done by practical men who make a specialty of the business and a superior product manufactured. Farmers coming in contact with those engaged in the export trade would become more interested in the business, especially where factories are owned by joint stock companies, and we may add that with few exceptions these companies are in a flourishing condition.

In dairying, as in other industries, method is one of the chief features essential to success, and as there never was a time in our history when competition was so keen as at present, it necessitates the Canadian people to use every possible means to secure a reputation for their products in the markets of the world.

A Fault of the Udder.

The most common fault of the cow's udder, as commonly seen, is its inferior development in front. Often the hind part is well rounded out and carried well up behind, while the fore quarters are small and poorly developed, and instead of being carried forward a distance along the line of a circle, the front line is carried up to the belly quite vertically, as it were. While quite generally the fore teats hang on a little higher line than those behind, when the fore quarters are inferior in character, sometimes these teats are so much higher than the hind ones that the udder seems to terminate with the front line of the teats.

In order to obtain some specific information as to the relation of the yield of milk to the conformation of the udder, sixty-five different cows, representing several types of udders, were milked under supervision, and the general yield from the hind parts was found to be 10 1/2 per cent. greater than from the fore parts. With thirteen cows having defective fore udders the difference was about 57 per cent., whereas with nine cows having well-developed fore udders the difference was only about 4 per cent. Commenting on these figures the experimenter says:

The practical bearing of this matter lies here. The average cow has an inferior udder, and notably in its fore part. If now a judicious selection is practised in breeding, may not a material gain in milk flow be secured by developing the fore part of the udder? It will be safe to say that there will be. The greater the development of the fore udder, the more perfect will the entire organ be likely to be, and the larger the relative amount of milk it will yield.—*Farmer and Stock Breeder.*

That Kicking Cow.

Commenting on a letter from "W. O. D.," published recently in the FARMER'S ADVOCATE, *Hoard's Dairyman* says: "This is the way we do: Before beginning to milk put a strong rope or strap around the cow just up tight when she is standing naturally. Have this rope or strap close in front of the udder, passing over the back just back of the points of the hips. Remember, back of the hip points, not in front, for it would do very little good there. Now go to milking gently. She may try to kick, but she positively cannot. The rope is around her tight, it comes down her flank just in front of the stifle joint. The moment she raises her foot this joint pushes forward under the rope. It is like driving a wedge under it, making it so fearfully tight she can't stand the pressure and she will put her foot down before she has had it high enough to kick. She may now hop up with both feet at once, but she cannot get either foot forward. She will not try to kick but once or twice, because she punishes herself severely every time she does. Now be gentle with her and milk as carefully as possible, and the cow will be broken of kicking by the use of skill and strategy instead of brute strength."

Objects to Putting Milk Down the Well.

A reader takes issue with advice given on the subject of home dairying in a short article contributed by Mrs. Stanlake in our July 1st issue. "Reader" claims it is both filthy and dangerous to put milk cans in a well that is not used, as the water is sure to become tainted and would affect the milk. He considers it much better to have a vat or box made on purpose to hold the cans, and then have the water changed frequently. He also thinks that the lady would do much better if instead of putting sugar into her butter, where it is perfectly useless, she would put it in her cup of tea.