

furnishings and equipment supplied. What will happen at each step, if a digression be made from sound practice, is quite well known. The chemical and physical changes of cheese and their causes are not so well known, and it is possible that a scientific study of curd and cheese at each stage of the process, might enable us to make more cheese from a ton of milk than is possible at present. The so-called "yield" of cheese is becoming less each year—in other words, it is taking much more milk to make a pound of cheese than it did formerly. The old rule was, "a pound for ten," now it is "a pound for twelve"—in some cases "a pound for thirteen." The relative values of rennet, pepsin, rennet and pepsin mixed, and rennet in liquid and powder forms as coagulants of milk in cheese manufacture are questions which need more thorough investigation. The manufacture of whey butter, as a cheese side-line, is not to be overlooked in these times of high prices for all kinds of fats. Much milk-fat is still being wasted in the whey tanks of Canada. This ought all to be preserved for human food.

The manufacture of "cottage" cheese from skim-milk and buttermilk are new lines worth investigating as they are sources of cheap human food, that are being wasted at the present time, except as indirect sources of human sustenance through the feeding of animals.

Condensed and Powder Milks.

The astonishing fact in connection with these branches of dairying in Canada, is, that there is no one in Canada, other than the manufacturers, who is carrying on any investigations regarding these two important and growing phases of dairying. When the Dominion Dairy Conference was in session, November, 1918, the Committee appointed to suggest standards for dairy products, were obliged to call on the chemists of the manufacturers to give certain information which was needed in order to complete their work. It would seem as if there is need for independent investigations along the lines of: The relation of fat and solids-not-fat in milk, to the quality and quantity or weight, of condensed or powdered milks manufactured; the effects of feeds like silage and roots, as well as that of other feeds on the flavor and keeping quality of the finished article; what degree of condensation gives the best results, etc.

City Milk and Cream Trade.

The crowding of people into towns and cities, makes this branch of dairying increasingly important. The food value of milk as compared with other foods; methods of pasteurizing, clarifying, bottling, etc.; cost of distribution as affected by several delivery wagons passing over the same street; possible advantages of municipal control of milk supply same as for water, gas, electric light, and street railway; how to treat the surplus milk—condense, make cheese or butter, ice-cream, etc.—these are but a few of the problems for investigation.

The manufacture of ice-cream is considered to be the safety-valve of the city milk business. What effect will the lowering of the fat standard have, on consumption? What are the factors which give richness and smoothness to ice-cream? Why does some ice-cream lack "velvety" feeling under the palate? These are some of the problems which need investigation, because of their effects on the consumption of ice-cream, and because they indirectly affect the man on the farm who is feeding and milking cows.

Dairy Chemists and Bacteriologists Needed.

The late A. F. MacLaren and the writer, were appointed a Committee to wait on the Ontario Government, during the Ross administration, to request that a man be appointed who would devote all his time to research work in dairy chemistry. We were sympathetically received by the Premier, and a start was made, but not much came out of it—first because it was difficult to secure a trained man; and second, the dairymen of the Province did not stand behind the movement.

There is great need for at least one dairy chemist and one dairy bacteriologist in the Province of Ontario who will devote all their time to dairy research work. Questions of great importance to the dairy industry cannot be solved except by aid of the sciences of chemistry and bacteriology. Manufacturing firms in both Canada and the United States are leading the experiment stations in the matter of scientific investigations. When it comes to a matter of legislation affecting dairying, these large corporations are able to marshal facts which completely throw into the shade, data that the Governments may have.

There are several men overseas, or who enlisted and did not get over, who would make excellent men for this line of work on completion of their college course. But they would need assurance that their services would be required at paying salaries. This should be given by someone responsible for carrying out a forward policy in Ontario dairying.

If there were a central provincial organization, representing all branches of the dairy industry, pressure could be brought to bear on "the powers that be" which would result in much good. At present, there are too many small factions, and too many men throwing monkey-wrenches into the dairy industry, to accomplish very much in the way of scientific, hence permanent, improvements in dairying.

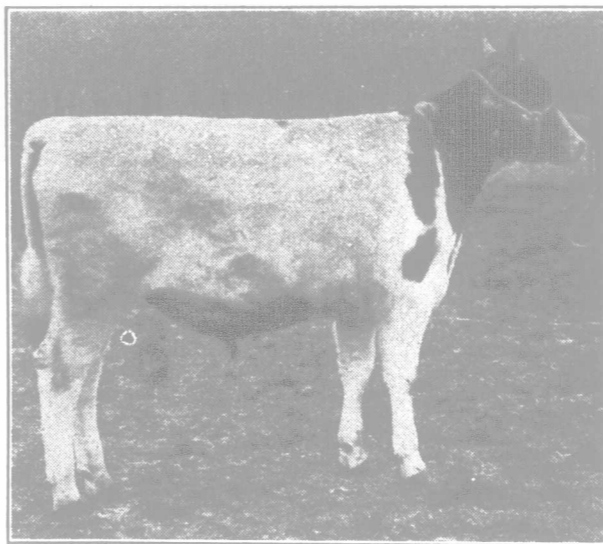
O. A. C. Guelph.

H. H. DEAN

Mammitis in Cows—Bloody Milk.

Mammitis—mastitis or inflammation of the udder—often called garget, may appear at any stage of lactation, but is more common shortly after parturition. In most cases, especially in heavy milkers, there is slight mammitis for a few days after calving. This may be considered as a normal result of the glands suddenly assuming activity, and will pass off without special treatment. In acute mammitis, a case in which the symptoms are more marked, there is constitutional disturbance, and a more or less well-marked alteration in the quality of the milk will be noticed, apparently from the same cause. It may appear at any period of lactation from various causes, as blows, kicks, or bruises to the udder from any cause; exposure to cold and dampness is also liable to cause the trouble. Probably the most fertile cause is irregular milking. If from any reason a cow in full milk misses a milking, mammitis is liable to follow. Some cows appear particularly liable to the trouble. Repeated attacks in one or more quarters of the udder, in some cases the same quarter each time, in others different quarters are involved, occur without appreciable cause. While in many cases the attacks yield readily to treatment, they recur frequently. Cases of this kind indicate tubercular disease of the udder, but there is no reasonably definite means of diagnosing except the tuberculin test, and even that does not locate the disease in an animal that reacts. When the udder is tubercular there is a strong probability that the milk will contain the bacilli of the disease, and this can be determined by an examination of the milk by a bacteriologist.

Symptoms.—The symptoms are not difficult to recognize. In most cases they appear suddenly, while in others the progress is somewhat slow. The quarter or quarters involved become swollen and hard, are warm to the touch and pressure causes more or less pain. If the whole udder, or even both hind quarters are affected, the patient will stand with her hind feet well apart and walk with a straddling gait. Sooner or later the appearance and quality of the milk becomes altered. It consists of small lumps or strings and a thin fluid, and in some cases contains a percentage of blood which has escaped from small blood vessels



Netherton Bloodstone.

An Ayrshire bull calf which sold for 430 guineas in Scotland.

which have ruptured. In quite acute cases there are well-marked constitutional disturbance, the principal of which are a loss of appetite and well-marked increase of temperature. The degree in which these symptoms will be marked will depend upon the intensity of the inflammation.

Treatment.—Constitutional treatment consists in giving a purgative of about 2 lbs. Epsom salt and 1 oz. ginger, followed up by 2 to 3 drams nitrate of potassium (saltpetre) three times daily for three days. This treatment tends to reduce plethora, temporarily checks secretion of milk and reduces fever. Local treatment consists in applying heat to the udder. This can be done by the application of hot poultices of bran, linseed meal, woolen cloths, spent hops or other material which must be kept in contact with the udder by a suspensory bandage with holes made for the teats, and fastened over the loins and croup. Lightness of the material used is important, as it is more easily suspended and kept in contact with the udder. Spent hops is probably the best, but these can be obtained only in localities where breweries are in operation. Whatever is used must be well suspended and kept warm by the frequent addition of warm water. If poulticing is not well attended to it is better not attempted, as the reaction caused by alternate heat and cold is harmful. Frequent bathing with hot water and after bathing rubbing well with camphorated oil gives good results. The affected quarters should be milked 3 or 4 times daily. If poultices are used they should be changed three times daily and the udder well rubbed with the oil before each fresh one is applied. Treatment should be continued until the inflammation is allayed. If complications arise, the services of a veterinarian should be procured, as they will require treatment a cooling to sedatives.

Occasionally we notice an outbreak of what appears to be an infectious form of mammitis in a herd. Several cows, especially those which are the same milkers, suffer from a slight attack, which appears to be a case. These cases usually yield readily to treatment, but their ap-

pearance indicate that they are caused by an infection that is carried from a diseased to a healthy animal on the hands of the milker. These outbreaks appear to occur spontaneously, but the virus of the disease must have been introduced into the herd in some unknown manner. Care in preventing contagion being conveyed from cow to cow as stated will usually result in abating the trouble in a short time.

Bloody Milk.

We have stated that in some cases of mammitis the milk becomes bloody. This is due to rupture of some small blood vessels in the udder, which have become weakened by the inflammatory action in the parts, and when the inflammation subsides the escape of blood ceases.

But these are cases of bloody milk being yielded by one or more quarters without appreciable cause. This may occur from an injury that exhibits no other symptom, and it may yield to treatment and not recur, while, on the other hand, some cows repeatedly yield bloody milk without apparent cause. This indicates congenital, or at least chronic weakness of the blood vessels of the gland, and, while the case will probably yield to treatment it recurs more or less frequently, and its recurrence cannot be prevented. Such a cow will probably never make a satisfactory milker, and it is usually wise to fit her for the butcher.

Treatment consists in administering styptics. The tincture of iron is probably the best styptic. It should be given in doses of about 1 oz. in a pint of cold water as a drench twice or three times daily until blood ceases to pass. If this treatment causes a tendency to constipation (as it probably will if continued for several days), it should be counteracted by the administration of a pint of raw linseed oil as indicated.

W.H.P.

HORTICULTURE.

Increased Icing Charges.

G. E. McIntosh, in charge transportation, Fruit Branch, Ottawa, writes that the railway companies operating in Canada purpose making the following charges for ice and salt supplies for refrigerator purposes, to become effective May 26, 1919:

	Per Ton
1. When furnished at all stations except as shown in paragraph 2	\$4.00
Minimum charge for each icing	2.00
2. When furnished at points in British Columbia, including points in Alberta west of Edson on Grand Trunk Pacific Railway	\$5.00
Minimum charge for each icing	2.50
SALT. When supplied in connection with icing, at all stations	\$.75 Per 100 lbs.
Minimum charge all stations	\$.75 " " "

It will be noted the charges for ice east of Port Arthur will be increased from \$3 to \$4 per ton; at Port Arthur, Fort William, Westfort, Armstrong, Ont., Duluth, St. Paul and Minnesota Transfer, Minn., and west except British Columbia, also points west of Edson on G. T. P. Ry., the charge is to be increased from \$3.60 to \$4 per ton; no change in charges in British Columbia. The minimum charge is reduced from \$3, \$3.60 and \$5 respectively.

The present charges for salt are 40c., 50c., 60c. and 70c. per 100 lbs. in the different territories. The proposed charge is a flat increase of 75c.

Objections, if any, substantiated by reasons therefor, should be made without delay.

POULTRY.

Vermin in the Hen House.

As the warm weather approaches the parasites common in the hen house increase in numbers and make the life of the fowl miserable. The hen louse and the poultry mite are two of the most troublesome pests, but both are quite easily combated provided they are not allowed to gain too strong a hold on the premises. A good many young chicks are lost every year because the lice are allowed to suck the life-blood from their frail bodies. When hens become badly infested they will sometimes cease laying, and sitting hens frequently leave their nests if attacked in numbers by the pests of the hen house. The mites do not remain on the fowl but do their deadly work at night when the birds are on the roosts. Having appeased their appetites they hide in the cracks and crevices of the pen during the day, but when night comes they emerge from their hiding places to prey upon the hen. Their food consists entirely of blood. These minute creatures are somewhat difficult to combat. Thoroughly cleaning the chicken house and applying coal oil, or carbolic acid, will go a long way towards eradicating them. Care must be taken that the material used is forced into all the cracks about the pen. Thoroughly cleaning the pen and whitewashing it, then dusting the hens with insect powder, or using a liquid louse killer, will make the premises an untenable place for the louse. It is not enough that the house be merely sprayed on the inside, but the nests, perches, etc., should be removed as they furnish excellent hiding places, especially for the