

very often parts of the plow itself follow the shares. The footlift type avoids all this danger to the driver and breakage to the plow. Very seldom have I ever broken a share. Our land is stony and although we keep digging the stones out and drawing them away fresh stones keep coming to the surface by frost action and surface attraction from wind and water. This being the case it is impossible to tell when you will strike a stone. Since buying the footlift plow, however, I have had little trouble and much satisfaction, and can recommend it to anybody wishing a riding plow and having stony land.

Middlesex Co., Ont.

W. E. WILLIAMS.

## THE DAIRY.

### How a Farmer Graded up His Herd of Dairy Cows.

Editor "The Farmer's Advocate":

In the spring of 1909 I went into the dairy business with an endeavor to make more money, for the way I had been farming did not seem to be as profitable as it should be. I decided to buy a pure-bred cow and grow some milkers. I bought Bonnie De Kol, a two-year-old Holstein, from a neighbor, and paid him \$120.00. She dropped a heifer calf and gave 6,000 pounds of milk the first year. The second year she dropped a heifer calf and gave 8,000 pounds of milk, and the third year she dropped a heifer calf and gave 12,500 pounds of milk. She did not freshen again until the next fall, which explains why she gave so much more milk that year. In the fall of 1912 she dropped another heifer calf and gave 9,500 pounds. In September of 1913 she dropped a bull calf and is now giving a good flow of milk. Every one of her calves is doing just as well as she did at the same age, and I have three of them milking, which makes for me four pure-bred cows, which I consider are worth \$600.00. I have sold \$250.00 worth of calves from these cows, which I consider is doing pretty well, but I still have three calves that I raised this year which are worth seventy-five dollars apiece, so I think my first investment was a good one.

I bought a pure-bred bull from the same herd my cow came from and he turned out well and left some good grade milkers as well as my own pure-bred cows. I sold him for nearly double as much as I gave for him and bought myself another. I don't know how he will turn out, but I was careful to get one well-bred and from a good milker. Considering this first cow only cost \$120.00, I think it was a capital investment. I don't think it would be any trouble to make this cow give 14,000 or 15,000 pounds of milk in one year if she were fed on a test and cared for the same as cows are cared for that are qualifying for the Record of Merit, but I am not trying to make her a record cow, for I know there are lots better, but I know she has been a money-maker for me.

We send our milk to a cheese factory, which is five miles away, and have to draw the milk ourselves. That is the only drawback to the dairy business with us. We are too far away from the factory, but as far as the work is concerned, I would sooner do the work in the dairy business than to farm the way I did when we first started farming. It is busy work, but not so hard as growing so much grain, and then the farm is getting better all the time. A great many people thought dairying could not be made a success in this county, but from what experience I have had I don't think there is any better county in Ontario. We can grow lots of feed. All we require is good cows and have them milked regularly and fed regularly, and then we will make the money.

I hope no one who reads this letter will think this could not be done with other breeds of dairy cattle, for there are lots of good milkers in the other breeds. My choice was Holstein and I am well satisfied with them. They are good feeders and good milkers. We keep fourteen cows and find no trouble in milking, doing our other work and drawing the milk to the factory. This means a lot of extra work, but we have a lot of milk of our own, so we cannot manufacture it at home. If a man is going into the dairy business to make a profit, he cannot afford to milk three- or four-thousand-pound cows. I don't believe there is any trouble in grading up a herd of cows that will produce seven thousand pounds of milk each in one year. If a cow does not give me six thousand pounds in one year I won't keep her very long, and that is the reason I think so many have been discouraged in the dairy business; they did not have the right kind of cows.

C. C. HUTCHESON.

Lambton Co., Ont.

### Methods of Producing Pure Milk.

The machinery with which cows are furnished to manufacture milk is the same in all cases with the one exception of slight individual variations. However, the operator, who to a large extent controls the machinery, is responsible for the product of this factory, and although the machinery is much the same, many different kinds of milk are produced.

E. S. Archibald, Dominion Animal Husbandman, who has charge of the dairy herd at Central Experimental Farm, Ottawa, where they are conducting tests in the production of pure and certified milk, made public some of their results in his address at the Guelph Winter Fair. First, however, he made clear the meaning of pure and certified milks.

According to our Ontario law, pure milk must conform to the legal standard for the Province and the municipality in the following points: Must contain 12 per cent. solids and 3 per cent. fats; must be produced under conditions inspected by an inspector for that municipality; must be from cattle which are free from diseases such as tuberculosis, anthrax and the like; must be from herds where the attendants are healthy and free from diseases such as diphtheria, typhoid and the like, and by the above precautions pure milk must contain less than 200,000 bacteria per cubic centimeter (cc.), when placed in the hands of the consumer, and the bacteria must be non-pathogenic. Certified milk has a higher standard and is more expensive to produce. It must be from animals tested for tuberculosis twice annually; must be free from blood, pus and other such impurities; free from disagreeable odors and taste; must contain during the winter months not more than 5,000 bacteria per cc. and during the summer months not more than 10,000 bacteria per cc.; shall not be pasteurized, sterilized, contain any preventative or by any artificial means be

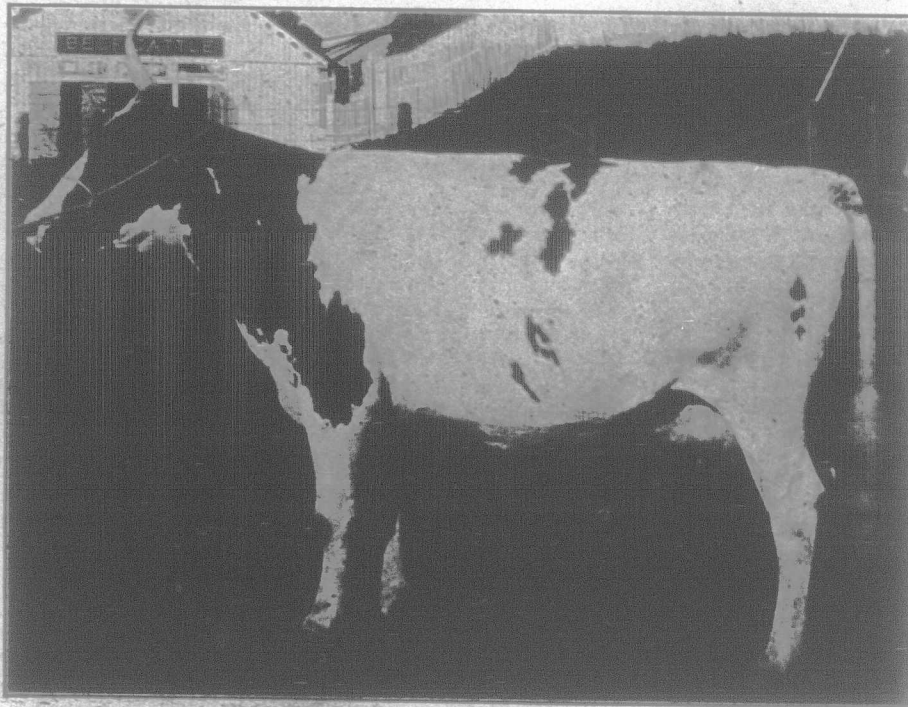
bles which contribute pus-producing germs to the milk should be guarded against and when such troubles are prevalent the individuals should be isolated until cured. Skin diseases and parasites which cause scabs must be guarded against for these add to the bacterial content of the atmosphere of the stable and in other ways help to materially increase bacterial content of the milk. Clean cattle and clean quarters are also necessary and the condition of the barn and practice of the attendants very largely control the cleanliness of the milk. The practice of the Central Experimental Farm is as follows:

Before the morning milking the cows are brushed with a stiff moistened brush, following which the udder, thighs and flanks are washed with an antiseptic solution. This preparation is followed by milking, feeding and cleaning. After breakfast the barn is thoroughly cleaned of manure and the walls are swept, bedding being then supplied. Following this is a thorough grooming of the cows. After dinner, at least two hours before milking, the barn is again cleaned of manure, following which, just before the evening milking, the cows are again cleaned with a moistened brush, and their udders, flanks and thighs again washed with antiseptic solution. The feeding of any dust-containing roughages is done after milking. Washing the udder before milking and leaving it slightly moist gives excellent results. Such antiseptics as carbolic acid or creolin will impart an undesirable odor to the milk, but a solution of mercuric bi-chloride with one part to 2,000 will have the desired results without any evil effects. In some cases the thighs, udder, flanks and tail of dairy cattle are clipped and in this case they may be kept cleaner, but tests along this line have shown that with proper precautions milk may be produced cleaner when left unclipped, as the hair will retain the particles of skin and dust which from the clipped cattle would fall into the pail.

Clean, palatable food-stuff is necessary in order to make the best quality of milk. Moldy, dusty hay, moldy grains and all such dust and germ-containing foodstuffs increase the bacterial content of the atmosphere and consequently of the milk, to a large extent, and at the same time, from a production point of view, are not as palatable or profitable as cleaner foodstuffs. The attendant must also be clean and it has been found by actual test that milkers with filthy hands may add to the bacterial content of the milk from 5,000 to 40,000 bacteria per cc. It is important in the production of pure milk that the attendants, and especially their hands, as well as the udder and other parts of the cow, be clean during the milking process. Too much stress cannot be laid upon this point. Efficient buildings contribute largely to the

ease with which pure milks may be produced and the salient points in stable construction are light, ventilation, comfort, efficiency and economy. In the ordinary stables there should not be less than ten square feet of glass per each cow. The elimination of calves from the dairy stable assists materially in reducing odors and contamination which must of necessity be associated with the calf pen and at the same time it provides greater health for both the cows and calves. A remodelled Rutherford system of ventilation with twenty-eight square inches of foul-air outlet and fourteen square inches of fresh-air intake per cow will give sufficient ventilation and rid the barn of odors and the walls and atmosphere of any noticeable moisture. The provision of chutes whereby the hay and straw may gain advent to the stable without producing a large quantity of dust is found advisable and the fewer beams, studs and stable fixtures that will conveniently accommodate the cattle is the best furnishing for the dairy stable.

After the milk is drawn it should be cooled to 50 degrees within the first hour in order to check bacterial growth. If the container in which the milk is cooled is not clean it will increase rather than decrease the bacterial count, but with good hot water or steam this may be easily prevented. It is necessary also to have the strainers, pails, cans and everything that comes in contact with the milk clean and free from germs.



Bright Smile.

Ayrshire cow; grand champion at Halifax Exhibition, 1913. Owned by C. P. Blanchard, Truro, N. S.

made other than the pure, natural product; shall be cooled immediately after being drawn from the cows and delivered in same condition to the consumer; shall contain not less than 12 per cent. total solids and 3.5 p.c. fat and shall be produced under monthly inspection, both as to the herd and men, by a health officer appointed by that particular municipality. Such are the qualifications of pure and certified milks, and anyone will see at a glance the difficulty and expense connected with their production, but when the consuming public appreciate the value of milk so produced a long step will be taken in preserving the life and health of the human race.

Certified milk is not as common a commodity on the market as pure milk, but no doubt when people are educated to the quality and standard of certified milk there will be a larger demand. Pure milk is becoming more common and the Central Experimental Farm has proven to a large extent that some changes in the ordinary dairy practice are necessary before clean, wholesome milk may be produced. The primary source for pure milk is healthy cattle. By this is meant animals in sufficiently good condition so that their various organs are working normally and not affected or retarded by the presence of any of the multitude of diseases to which bovines are subject. Cows producing milk for consumption should be first free from tuberculosis, anthrax or similar contagious diseases. Tuberculosis is not by any means the only disease which is influential in the production of impure milk. All such troubles as garget, inflammation of the udder, cow pox and similar udder trou-