

milker than the help of a good man at milking time, and if the cows were all fresh than two men. As the cows near the end of the milking period, the machine gradually saves less time, as it takes the same amount of time to wash the machine and also to put on and take off the teat cups on a cow giving a small quantity of milk as with one giving a large flow. In other words, the more milk a cow gives the more a machine will be appreciated. Where help is scarce we believe it would pay with even less than ten cows.

"We do not find our help objecting to milking the same as they did before we installed the machine, and any boy or girl, or inexperienced person, can soon learn to operate the milker, leaving a more experienced man to do the stripping. I have had no experience with any other make of mechanical milker, but I know of several people who are enthusiastic over their particular kind."

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One man may have unequalled success with a certain make of machine, while another man would find it anything but a success. There may be slight differences between two machines of the same make, which would account for one being a success and the other a failure. Some men can handle machinery better than others, and it is necessary to adjust the mechanism of mechanical milkers so as to get the right amount of pressure or vacuum, which will extract all the milk without injuring the teats. Some dairymen complain that the machine will draw blood from the teats; this cannot help but be injurious and the forerunner of udder trouble. However, the same make of machine in the hands of another dairyman does not cause these difficulties. McVicar Bros., of Elgin County had the same kind of machine installed as Mr. Holby has been using for the past three and a half years, but the machine did not give them very good satisfaction. They have a herd of twenty-two cows and they found that the milk flow kept up fairly well if stripping was done after the machine. When the machine worked satisfactorily considerable time was saved in milking, but they found that it required a lot of time to keep the machine reasonably clean. Then, too, they had difficulty in getting the teat cups to work on certain cows. They were all right with a short-teated cow, but were anything but satisfactory when put on cows with large teats. After the machine had been in use for some time several of the cows contracted garget, and the cause was laid on the work of the machine. It was claimed that the pressure or vacuum was so great that the blood was drawn right to the surface of the teats and they became somewhat inflamed. Two or three hours after milking they would go back to nearly normal again. However, they lost the quarters of several valuable cows and rather than have this continue they went back to hand milking entirely. An outfit which cost several hundreds of dollars is now practically scrap. The piping still runs along over the stalls, but the vacuum pump and units are piled up in one corner of the dairy. Besides injuring the cows, Messrs. McVicar claim that the running expenses were high, as it required a six-horse-power engine to operate the pump. While they followed directions regarding the operating and cleaning of the machine, they had more or less trouble with the quality of the milk. The night's milk would sometimes be off flavor before they could deliver it in the morning, and milk kept from Saturday night or Sunday morning until Monday was decidedly off flavor and had an odor. After the milk was drawn it was handled the same as when milking by hand, and under the latter method there was no trouble with the quality of milk. It may be that this particular machine was not adjusted rightly, but any alterations made did not have a beneficial effect. The fact remains that after giving the machine a trial extending over a period of a year and a half, Messrs. McVicar are now milking their herd by hand and claim that they have no udder trouble whatever, and are able to market high-quality milk.

Milking Machine Permits of Increasing the Herd.

J. E. Brethour, a Brant County farmer keeps a herd of fifty milk cows and several years ago tried a mechanical milker but was not satisfied with the work it did and had it taken out. The teat cups were a failure as they would not stay on the teats. The machine also had different sized cups for different sized teats which Mr. Brethour considers is not a desirable thing. He claims that the universal teat cup is the only one that he would buy. Ten months ago a different make of machine was installed and it has given satisfaction ever since. There was no decrease in milk flow when changing from hand to the mechanical milker, and no udder trouble has been noticed that can be attributed to the use of the machine. Mr. Brethour has been able to increase his herd since he has not had to depend on hand milkers, as by use of the machine fifty per cent. of time is saved. With mature cows, it is necessary to strip, but the machine milks the average heifer practically dry. The quality of milk is better than when hand drawn.

The tubes are thoroughly rinsed with cold water after each milking and immersed in a solution of chloride of lime. The entire tubing is taken apart once or twice weekly and thoroughly cleaned. Three units are used and the fifty cows are milked in two hours by a man and a boy. The depreciation is reckoned at about twenty per cent. annually. It does not cost much to operate the machine as one gallon of gasoline daily furnishes the power. Mr. Brethour considers that a mechanical milker might possibly pay with twelve cows, but he would consider fifteen as the minimum, as the time required getting the machine ready and washing up after milking would be just as much as for a large herd. A good deal of the success depends upon the man in charge. A careless operator will make a failure of the

machine. Mr. Brethour says, "the milking machine permits the keeping of a larger herd of dairy cows, and overcomes many objections that farm help have to dairying. It is also cheaper than hand milking, especially in a large herd, when if reasonable care is taken in cleaning the machine better and cleaner milk is the result."

Care and Cleanliness Essential to Success.

In regard to the practicability of the milking machine and its efficiency, D. C. Flatt & Son of Wentworth County, write as follows: "We have used a mechanical milker for two years and as we have never tried any other make, can only speak for the one we have in use. Our experience is that we have never had a cow lose a quarter; in fact, we have had no udder trouble of any kind since using the machine. Our herd consists of about thirty milkers and the work is done in about one hour and a half. Every cow is stripped after the machine is removed. It matters not if we only get one ounce of milk, she is stripped just the same, and we feel that if this is always done there will be no tendency for the cows to dry up earlier than they should. With a machine there is a danger of lowering the standard or quality of milk, but this trouble only applies to the farmer who does not keep his machine clean. Our machine has never missed a day since we commenced using it without being thoroughly washed, which only takes about ten minutes, after which it is put away in a solution which keeps it perfectly sanitary. Our advice to any farmer, who is short of help and trying to run a dairy of fifteen or more cows, is to buy a milking machine, providing he is prepared to keep the machine perfectly clean and furnish brains to run it. Unless prepared to do this, don't waste your money. When we hear people say that a boy or girl twelve or fourteen years of age can run a machine, we don't wonder that they get disgusted and scrap the outfit. The machine has no brains; the man who runs it must supply them."

"All cows will not let down their milk when the same sized teat cups are used. This is one thing in particular that must have special attention by the man looking after the machine."

Mechanical Milker not Expensive to Operate.

Owing to scarcity of help, W. W. Ballantyne & Son of Perth County, were obliged to install a mechanical milker last March. So far they are well pleased with it. The following is their experience with the machine to date: "The cost was an important item with us so after investigating a number of machines we decided to install the one in which the first cost was considerably less than some of the others, and we have found the cost of operating fairly light. At first we used a gasoline engine as power, costing us about ten cents per day for milking and separating. Later we installed an electric plant and now use a one-half horse power motor, which furnishes power at less than half the above amount. So far we have had no repairs, but the rubber mouth-pieces of the teat cups need replacing. However, this is not a big item of expense."

"During the past summer we milked seventeen cows and two men could do the milking quite easily in forty-five minutes. If milked by hand it would take the men in the neighborhood of one hour and a half. We use three single units; one man handles the machine, and the other strips. We find that cows milk much the same with the machine as by hand; that is to say, those that milk out clean by hand will do the same with the machine, and vice versa. We have had no udder trouble that could be attributed to the machine, nor do we think that the cows dry off any sooner than when milked by hand, but regarding this point we would like a little more experience before stating definitely. As our cows are pure-bred and more or less nervous, we expected trouble in accustoming them to the machine but we had none whatever. Some cows would stop eating and bawl for the machine as soon as the engine was started. Of course, the operator must study his cows and humor them a little. In this I think lies a good deal of importance as to whether the machine is a success or not. A man of a mechanical turn will certainly do better with the milker than one who is not handy with machinery."

"If a man is entirely alone with ten cows to milk, we think a machine would pay, and where there is more help more cows may be kept than before. The machine saves time, does not decrease the milk yield nor lower the quality, but it must be kept clean. The pails and covers are washed every milking; the tubes and teat cups are taken apart twice a week in the summer and every six or seven days in the winter and thoroughly washed with washing soda and warm water. When not in use they are always submerged in a solution of chloride of lime, which is renewed every time the tubes are washed. Before and after milking the tubes are rinsed by drawing a quantity of water through them. We sell cream for delivery as sweet cream, and since using the machine have had no complaint about the quality."

Many Men Have Many Minds.

There are differences of opinion as to the efficiency of the mechanical milker. Above is the opinion of users of five different makes of machines, among which are the "Lister", "B. L. K.", "Sharples", "Empire", and "Hieman". Some dairymen like one make of machine and some another, which is the case with every machine or implement used. While the work performed is the same, it is done in a slightly different way. One man has a preference for one make, while his neighbor chooses a different one. A number of types of mechanical milkers apparently do good work, although there may be individual machines turned out of all types which have a slight deficiency or are not adjusted rightly which causes them to prove unsatisfactory. The

operator is sometimes to blame. There are men who lack the knack of running machinery. With any machine consisting of a number of parts or where the mechanism is in any way complicated, the operator should be able to detect when everything is not running as it should and be able to make small repairs or slight adjustments. To be a successful operator of a mechanical milker, a man must know his machine, know his cows, know how to keep the machine in a sanitary condition and then put that knowledge into practice.

Unsatisfactory Possibilities and Beneficial Features

At the Experimental Farm, Ottawa, a number of milking machines have been experimented with and studied. The following paragraphs by Geo. W. Muir, Assistant Dominion Animal Husbandman, points out unsatisfactory possibilities and beneficial features of the mechanical milker: "We have again come to the time of the year when all live stock is stabled for the winter with the consequent increased chores, and owing to the scarcity of labor almost every farmer and especially the dairy farmer is handicapped in his campaign of increased production by want of sufficient help to properly handle his herd. It being almost impossible to hire farm hands at anything like a profitable wage (from the farmer's point of view) increasing attention is being turned to mechanical contrivances that will cut down the labor problem. It is in this connection that we would again call attention to the use of milking machines."

While they are not yet as exact or efficient as some of our intricate industrial machines such as looms, etc., nor can they be expected to become so since all cows are not of one stamp or grade such as is the case with the cotton or wool used in the loom, nevertheless most milking machines of the present day can be relied upon to do good work if properly handled. This is the point upon which most farmers who have installed a mechanical milker and found it a failure have fallen down. They have in many cases taken it for granted that the machine was supplied with the reasoning power and adaptability which they lacked themselves and working upon that assumption attached them to the cows in any old way quite regardless of the amount of pressure or vacuum being applied, or of the fit of the teat in the teat cup, and other equally important factors, then expected the machine to milk the cows thoroughly without doing any damage. Such an attitude does not tend to best results. On the other hand if the operator is a careful man and somewhat of a mechanic, studies the machine and also his individual cows and adapts the one to suit the other giving the machine the proper attention at the proper time, then good work should result.

Provided that a good and steady power is obtainable the point at which the mechanical milker is most liable to give trouble is in not milking clean and possibly doing damage to the teats of the animals, particularly if the teats are abnormal in size or shape. Another point that might be objected to is the fact that with some machines it is impossible to keep individual cow's records. Regarding the first point, it is as well to say that no machine will milk all cows absolutely clean and it is always well to practice stripping after all of the machines. This can easily be done during the time that the machine is milking the succeeding cow or cows, and even though it is necessary still the machine may be considered efficient for it draws the bulk of the milk very quickly. Damage to the teats or udder, if present will usually be found to be due to too high vacuum or pressure, too rapid pulsation, or careless attachment of the cups to the teats all of which can be remedied by an intelligent operator. While weighing of each individual cow's milk is or should be of importance to every farmer it is probably of less importance to the class of farmer who would use a milking machine and therefore could be dropped during the present scarcity of labor.

After such a resume of the unsatisfactory possibilities of the mechanical milker we come to a discussion of the beneficial features. In the hands of a capable and active man the mechanical milker can be depended upon to reduce time necessary to do the milking at least 50 per cent. and the larger the herd and more convenient the stable the greater the reduction. It relieves the farmer of the heavy drudgery of milking and enables him to milk many more cows than it is physically possible for him to milk by hand. With reasonable care the machines can be expected to last upwards of ten years. Subject to the same conditions the repairs are not excessive considering the nature of the machine. The first cost is not so high but what they are now considered profitable under present labor conditions for herds of from twelve to fifteen or more cows though, naturally, the most economical installation would be with the larger herds. They only require from 1 1/2 to 3 h. p. engines or motors, depending upon the make of the machine and the number of units being used and this power can always be used to advantage for other purposes such as running separators, pumping water, pulping roots and grinding grain. It is impossible for us to give the actual cost of power as we have it in the form of electricity which is not available to the large majority of farmers.

One of the important factors to be considered is the proper care of the machine as regards washing. Unless this is properly attended to a poor quality of milk will result. Briefly the procedure should be as follows: Immediately after milking draw cold water through the teat cups and rubber milk tubes into the cans, then draw through a quantity of very hot water and finally brush out the teat cups with the brushes provided. Now detach teat cups and completely immerse in a fairly strong solution of chloride of lime. This solution should be kept in a metal or earthenware container and be changed every week. Once a week the teat cups and connecting