

Present Status of the Milking Machine

No subject is of greater interest to dairymen than the milking machine. The scarcity of help on the farm and the increased demand for labor saving appliances makes a cheap and effective milking machine a valuable asset in the equipment of any dairy. For a number of years men of genius have been at work on this problem and in recent times have solved it to the extent that machines have been evolved that will do the mechanical part of milking so far as the observer can see, in a satisfactory manner. Up to the present time the most successful machine has been that of the vacuum process, or the exhaustion of the air from pipes attached to the teat, thus causing the milk to flow readily and quickly from the udder. Quite recently, however, a new machine has appeared, built on an entirely new plan. The inventor, who is a New Zealander, Mr. Hutchison by name, realizing the need of a machine that would imitate as nearly as possible the human hand in the milking operation, has patented what is called a

NON-SUCTION MILKING MACHINE.

It has been tested on two or three herds and has been found to work satisfactorily. This machine is described in one of our New Zealand exchanges as follows:

"This machine differs from the many mechanical milkers which have preceded it, in that the suction principle has been discarded, and the operation of milking is performed by imitation hands—not hydraulic, but pneumatic. The "hands," one for each teat of the cow, consist of soft air-proof double pouch or mitten-like structures, in the upper part of each half of which is an inner pouch, the pair of inner pouches corresponding to a thumb and forefinger. This thumb and forefinger are acted upon separately, the lower part of the mitten representing the fingers, with distinct but sympathetic action. The action is induced by the inflation of the "thumbs" with air, the inflation of the rest of the hand following at an almost imperceptible interval. The "thumb and finger" clasp firmly the base of the teat close to the udder, and the rest of the hand then closes upon the lower part of the teat, completing the action of hand-milking. The four teats of the cow are milked at one time, and the four hands, each of which is enclosed in a metal case, are enclosed together in a smooth seamless envelope, which offers no lodgment to milk or germs and is easily removed for cleaning. This envelope protects the mittens or pouches from any chance splash or spray of milk. The hands are operated by means of small local air-pumps, one pair to each cow which is milked at a time; the first pump acts upon the four teats of "thumbs and forefingers," the second upon the other parts of the "hands." Power for the whole is supplied by an oil engine, with shafting passing in front of the cows, one-third to one-half man power being required for each cow being milked (eight man power equal one horse power). Suction being absent, the applying and holding of the milker to the teats is accomplished by an ingenious supporting apparatus. A light spring pole of hickory attached to the roof over the cow's head passes over her back; depending from the pole is a wooden box, which descends round the side of the cow and under her body in front of the udder and pressing a

pad lightly upward against the udder, this pad supporting the milking mechanism. All parts of this apparatus are quickly adjustable to any required position. The milk is ejected in jets, clear of the apparatus, upon a gauze-covered metal tray, from which it is delivered by a short ball-jointed tube into the milk pail, which stands at a convenient distance from the cow. The cows show the most complete willingness to give down their milk, and no difficulty is experienced in milking cows which have previously been milked by human hands. The milking is very clean, the "strippings" from five cows being less than half a pint. (The cows upon which the milker was shown in operation were anything but good milkers.) Milking has been done at the rate of eighteen cows per man per hour. The advantages are: The saving of labor, the freedom from injurious effects upon the cow (as proved by a two years' trial in Wellington), and the non-pollution of the milk during any part of the milking. Also, the simplicity of the milker at all its points, and the few hand operations that are necessary."

MILKING MACHINE CONDEMNED

Some rather startling statements from the pen of no less an authority than Mr. Primrose McConnell, B.Sc., well-known agricultural writer of Great Britain, and published about the beginning of the year, makes one doubtful as to whether the milking machine will ever be a permanent success. His experience seems to indicate that cows tend to decrease in milk flow under prolonged milking by machinery. Whether the new machine described above will have a different result remains to be seen. Mr. McConnell is a disinterested party who gave the vacuum process machine as he claims a fair trial. His experience, as given, is as follows:

"About two and a half years ago I had erected in my shed and used for eighteen months all my cows—from 80 to 100—were milked with the same. I stopped it and took it down about a year ago, and went back to hand milking, and now, after the elapse of another year when one can take a "judicial" view of matters, I lay my experiences before the public. My installation, when all the "extras" and spare parts were paid for, cost about £20 for eighty cows, or about £2 1/2 per head, though I must explain that in this was included a steam boiler, which was suitable for steaming purposes outside the milking parts and as such I found that the annual expense of running the thing, at least for the first year, was about £50; the coal for the boiler alone, over and above the proportion usually employed for boiling and steaming, was £30, while the repairs, replacing the rubbers, etc., were another £20, and this did not allow for the tremendous depreciation of the whole plant, which would have to be met in the course of years.

"I started the apparatus, and at the end of two months or so was getting on so well that I invited all my neighbors to come and see it at work one afternoon. About sixty responded to the invitation and at that time I would almost have given it a testimonial, but thought I would wait to see what happened later on. As a result, the milk yield began to go down and kept down ever after, and I never got it up again until three months after I stopped machine milking.

COWS SHRINK ONE-HALF

"I have for many years kept a milk record and so know pretty well what my cows are doing individually and collectively, and therefore am able to give actual figures as to the results of machine milking. For the twelve months before I had the machine, but including three months time of same, the average yield per head was 12 1/2 imperial gallons. For the twelve months during which the machine was in full use the average was 337 gallons per head, and for the twelve months after the machine was dropped the yield was 552 gallons. My usual run is about 650 gallons per head, taking good and bad together, and it would have been about that under ordinary circumstances, but for the effect of the machine for three months before and three months after the above months reckoned to it in the above calculations. In other words, the machine will only get from a half to two-thirds of the milk that hand milking will do.

"Now, a few words as to the conditions under which the experiment was tried, because I may be told that I did not give it a chance, did not give it sufficient personal supervision, etc. To begin with, my two cowmen were natives of the same county as myself, were keen to make it a success, and it was largely at their instigation that I had the installation set up. One of these men was a born mechanic, who could take any piece of machinery to pieces, repair it, and put it together again. As for myself, I was an engineer in my youth, have a hereditary knowledge of mechanics, and have an outfit of every possible kind of tool in my workshop on the farm that is likely to be of use, and moreover, I am in the habit of using the same, for I am never happier than when at the bench or the vise. The mechanical part of the milking machine was, therefore, under the control of two of us who were mechanical experts. As to the other cowman, who helped with the work, stripped out the cows, etc., all were kept on; and they were given to understand that they would not lose their jobs, and were otherwise encouraged to help to make the thing a success. As for myself, I was in the cow-shed every morning before 5 o'clock for several months after we started it, and never missed being present a single milking time, and took a share of the work myself. Later on, when results were getting worse, I worked it for a few more months. I procured from a friend who was working with the apparatus of another maker, and tried this, but it was no better. Then I designed and had made for me a set which combined the best of two makers' machines, and which was simpler and more efficient than either. I took a row of 14 cows, which stood in one lot, and experimented with them myself for a month. Some of these were special pets of my own, which would allow me to do anything with them, and they chewed their cud while the suckers were on; but in spite of all, I had the mortification of seeing the yield go down, no matter which machine was tried."

THE MILKING MACHINE DEFENDED

In reply to Mr. McConnell, a letter appeared in a recent issue of the *Scottish Farmer*, supporting what seems to be the manufacturer's position, and giving the yields of a herd milked by a machine for over four years, and which show a different result from that of Mr. McConnell. The following extract and table are from this letter: