

to bear in mind that all the large milk records have been made by hand milking. The development of dairy cows to their present large production has been done by a process of hand milking and not by suction. It is possible that inventors of suction milking machines have been working on a wrong principle. Who can tell? It is a fact that a non-suction milking machine has recently been invented in New Zealand, whose promoters say that it is the only correct principle for milking cows. Who can tell if this be so? It will require years of experience to determine which type of machine will prove most satisfactory, and whether or not machine milking is practicable.

Fleischmann, a German authority, says: "It is only those who are entirely ignorant of the nature of the milking operation who can abandon themselves to the idea of using milking machines of any description."

Mechanical Problems. A milking machine to be popular must be simple, cheap, durable, easily cleaned, require a minimum amount of power, time, and labor to operate it, and one person must be able to milk from four to six cows at once with the machine. While not wishing to disparage any manufacturer of milking machines, we must say that nearly all the machines which have been put on the market up to the present have been too complicated for the average man to operate. They are also too expensive for small farmers, and some of them have required altogether too much power, time, and labor to operate them. One, at least, of those who have tried was impossible to keep clean. However, we have faith in the ultimate triumph of mechanical skill over the many difficulties connected with the problem of milking cows by machinery.

PRACTICAL EXPERIENCE WITH THREE TYPES OF MACHINES.

Our first experience in 1895 was with the "Murchland" suction, non-pulsating machine, operated by means of a hand vacuum pump. After working with this machine for some time we gave it up. The chief difficulties were in maintaining a uniform vacuum which resulted in the cows not being milked out clean, consequently they gave less milk and milk containing a lower percentage of fat, as compared with hand milking.

Our second experience was with the "Thistle" milking machine, which also operated on the suction principle, but combined a double action, viz., sucking and squeezing of the teat. In other words, this machine aimed to combine the motions of calf sucking and hand milking. For a time we got very good results, and it seemed as if the problem had been solved. However, when hot weather came we found an odor in the milk which tainted it so badly that we were forced to give it up. By some means or other, milk was drawn into the vacuum pipes and when this milk began to decay the odor was very bad. As there was no way of cleaning these pipes, except by taking the pipes down each time, which was not practicable, we gave up the "Thistle" and laid it on the