

Ontario Department of Agriculture.

ONTARIO AGRICULTURAL COLLEGE

MILKING MACHINES.

BY H. H. DEAN, PROFESSOR OF DAIRYING.

The milking of cows by machinery is a very live topic at the present time among dairymen. Having had considerable experience with these machines, we may be allowed to discuss the matter briefly. All our spare time for experiments in the dairy stable during the past year has been devoted to a study of the problems connected with the milking of cows by machinery. We shall consider the question from three viewpoints, viz., physiological, mechanical, and practical operation of the machines. We shall also give results of experiments made this year.

Under physiological, we may first look at the various theories which have been propounded in order to explain the secretion of milk. The problem is a very complicated one, and no very satisfactory explanation of milk secretion has yet been offered. One theory says it is the result of changes in the cells which go to make up the organ of the cow known as the udder. In other words, according to this theory, milk is the liquefied cells which largely compose the mammary glands. The chief objection to the metamorphic or change theory is that a cow giving a large quantity of milk would have to build up the cells of the udder several times during a day, which is practically impossible for her to do.

The second theory is known as the transudation or filter theory, which assumes that milk is merely filtered from the blood by the mammary glands. The chief objection to the filter theory is that blood and milk are not of the same composition. There are substances found in the milk which are not found in the blood, e.g., casein, which is probably the result of cell action. If we combine the metamorphic and transudation theories regarding milk secretion we shall probably have the most satisfactory explanation of the mysterious process of milk secretion.

There is also the ferment theory, which ascribes the secretion of milk to the action of ferments in the cow's udder. We are not inclined to favor this theory, although it may explain some of the phenomena in connection with milk secretion.

There is nothing in the physiological processes so far as we can see, to prevent the satisfactory milking of cows by machinery, and we have always had faith that such a machine would become practicable. Nearly all modern milking machines have been operated on the principle of suction, or have imitated the milking of cows by artificial sucking. We have