see to it first that I have profit-making cows. Then I must feed them up to their best capacity with the right kind of feed. In that way only can I make the largest profit."

G. W. CLEMONS.

Experience with Milking Machines.

A thoroughly successful milking machine is the greatest boon for which Dairying has been looking to Invention. The difficulty, the impossibility, almost, of keeping enough first-class help to hand-milk a large herd without the task becoming a great burden, is driving many dairymen to go out of the business, to cut down their herds or to invest in mechanical milkers.

A large number have been used in Australia, where dairying is conducted in many instances on a wholesale scale. Thousands have also been used in the neighboring Republic, one American firm of manufacturers having sent out over four thousand. A few had also been placed in Canada, principally in Ontario, though some had been purchased by Quebec and Western dairymen. While Prof. Dean's experience with this make was not wholly satisfactory, other dairymen have claimed more satisfactory results.

Last winter the Farmer's Advocate and other agricultural journals carried the advertisement of a machine different from the one most commonly known in Canada. It works on the principle of pressure and suction combined, being therefore an approximate imitation of sucking. Quite a number of these machines have been placed in Canada within the last few months and so far as we have heard they appear to be giving satisfaction. The accompanying half-tone was made from a photograph taken last month by a member of our editorial staff in the dairy of Isaac Holland, Oxford County. Mr. Holland has a herd of 52 cows, and though he has a good-sized family to help milk, had concluded that he would have to sell ten cows unless a machine could be got to do the milking. He accordingly invested in a four-unit machine at a cost of $550, exclusive of the gasoline engine. He has been exceedingly well pleased. In a letter written August 19th, he stated that the herd of 52 cows, of which six were then dry, were producing between ten and eleven hundred pounds of milk a day. He thought they were milking as well as or better than on the same date last year, considering the stage of parturition, many being winter milkers. Only about four of the older cows fail to give their milk down freely. He anticipates no particular trouble from cows having udder affections, as the symptoms would be noticed when emptying the milk or stripping out the cows. Two other machines of the same make in his neighborhood are also giving good satisfaction.

R. A. Penhale, of Elgin County, is milking a herd of 31 cows with a two-unit machine, costing, with gasoline engine, about $600. His herd also seems to be keeping up its flow satisfactorily as compared with previous years, giving between five and six hundred pounds a day. One man has milked and stripped them since June 1, requiring one and a half hours mechanical operation at each milking. Mr. Penhale would prefer a machine of three or four units. Each unit milks one cow and costs $110.00 besides the pumps, tanks, engine and fittings. The machine is not a difficult one to cleanse and Mr. Penhale feels satisfied his cows are being as well milked this year with the machine as they have been any other year by hand. While possibly not as good as a first-class hand-milker, he considers it is better than the average milker.

In connection with the foregoing we append the following extract from a letter received last February from R. E. Gunn, of North Ontario Co., Ont. For nearly two years Mr. Gunn had then being using on Dunrobin Stock Farm five machines of the make last tested at the Ontario Agricultural College, and had found them satisfactory in every way. To quote from his letter:

"If your representative would drop into 'Dunrobin' at any time we will be pleased to show him the machine working satisfactorily, the cows holding up in their yields and some seventy cows being milked by four men in an hour and a half to two hours

"If I for one had to depend on the hired help you can get to-day for $25.00 a month to do the milking I would quit dairy farming to-morrow. However, we have been gradually increasing our herd until now we have over 130 females that will be giving milk in the course of a few months.

"The milking machine, like all mechanical contrivances, is not possessed of brains, so intelligence must be used in its operation. We have found that in closely following the manufacturer's instructions there is little or no trouble. Some cows will not milk with the machine, but we have found that they are about four per cent. of the whole. Heifers are the most adaptable to mechanical milking, as they have known no other way, and so milk out clean with the machine. We always have strippers following the machines and we weigh the milk drawn by the machines and the strippings in separate columns on our weight charts, so as to know what we are doing."

The experience of these and other investors will be closely watched, especially during the late autumn and early winter. If results continue satisfactory the ensuing sale of milking machines in Canada will be large.

King of the Ormsbys.

At 14 days old. A full brother of Jennie Bonergies Ormsby, who holds the senior two-year-old butter record of the world for a year, and has a seven-day record of 33 pounds of butter (80-per-cent. basis), and a thirty-day record as a four-year-old of over 125 pounds. Owned by D. C. Flatt & Son, R. F. D., Hamilton, Ont.

GARDEN & ORCHARD.

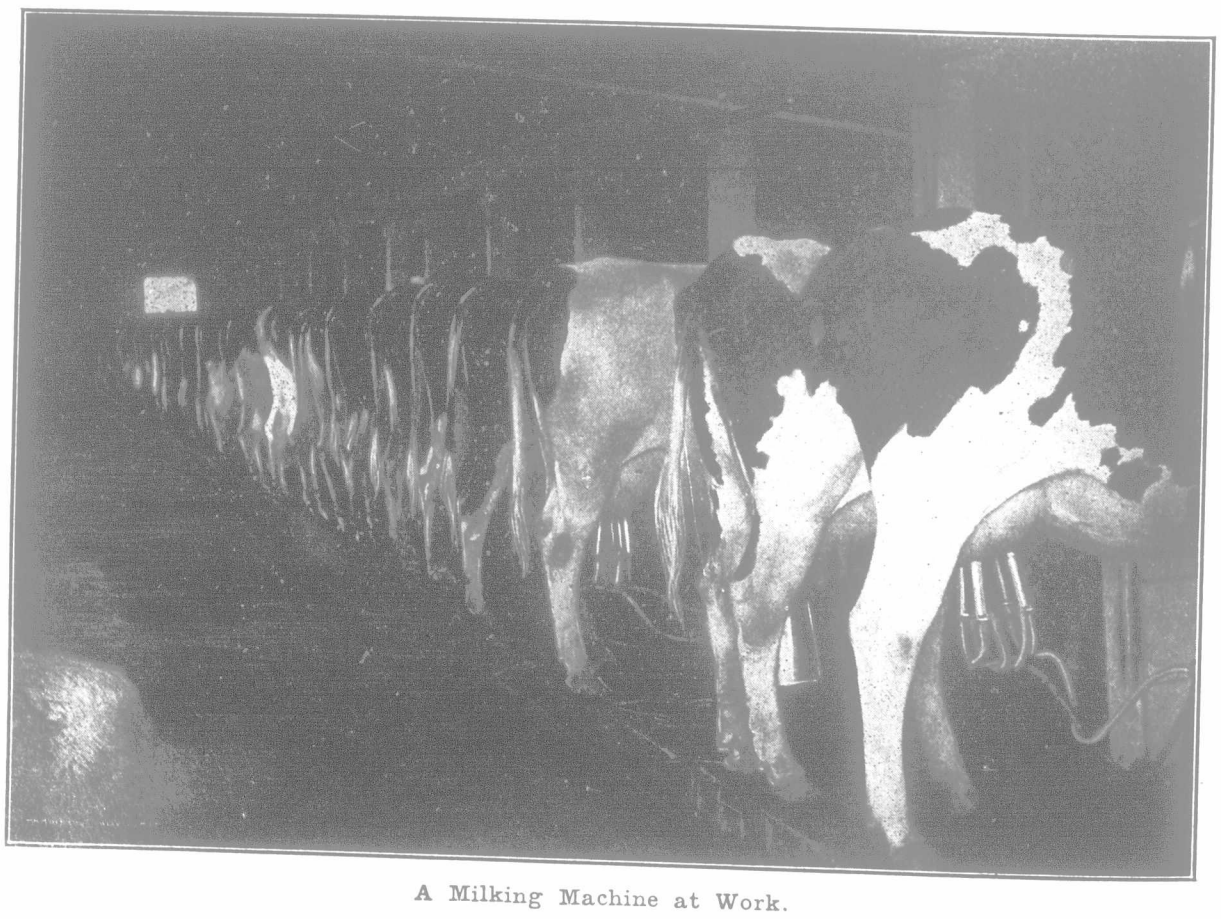
Smoking Cigars by Machinery.

Although the average annual production of tobacco in the United States reaches nearly one billion pounds, for which the farmer receives about $100,000,000, the net profit to the farmer is much smaller than it should be. Among the principal causes for small profits from such an important crop are failure to follow sound cultural methods, use of unadapted varieties or strains, damages by insects and diseases, and imperfect knowledge of the principles that apply to the processes of curing, fermenting, and handling the leaf. To remedy these conditions the American Department of Agriculture in 1898 began to investigate the improvement of tobacco production.

Cultural Methods.—The early work of the Department with tobacco was confined almost entirely to the cigar types, but since 1905 investigations have been in progress in the manufacturing and export districts. In most of these districts the average yield has been much less than could be obtained by better cultural methods. In the Connecticut Valley, where the soils are maintained in a high state of fertility, yields of 2,000 pounds and over to the acre are common, while on similar soils in many of the manufacturing and export districts the average yield is scarcely one-third of what it should be. One of the improper cultural methods to which this lack of yield is largely due is growing tobacco on the same land year after year instead of practicing rotation of crops. The work of the Department along this line has been to correct this one-crop system of farming whereby the fertility of the soil is exhausted. These efforts have succeeded so well that the production in Maryland, Virginia, and North Carolina has greatly increased, and the Virginia Legislature has made an annual appropriation of $5,000 in support of this work.

Breeding and Selection.—In developing acclimated strains of Sumatra and Cuban tobaccos by systematic seed selection it was found that the old standard types could be greatly improved in productiveness and other characteristics, and several desirable types were produced. A large quantity of tobacco seed is grown directly under the supervision of the Department's tobacco specialists located in the various tobacco-producing centres, and is annually distributed. Supplies of seed of the new and improved types are also distributed to those desiring to grow these types.

Scientific and Technical Investigations.—Efforts to introduce the growing of a high-grade cigar-filler leaf from Cuban seed in the Southern States have demonstrated that this industry can be made a success. A satisfactory substitute for the imported Sumatra wrapper leaf has resulted by growing Sumatra and Cuban types under artificial shade, and in 1911 over 2,000 acres of such tobacco (worth $2,000,000) were grown under shade in the Connecticut Valley, The Cuban bulk method of fermenting has been successfully introduced into northern cigar-tobacco districts, resulting in a more uniform and better product. Substantial improvements in the methods of curing are now being introduced, notably in the use of artificicial heat in curing cigar-tobaccos, thus eliminating the loss from pole-sweat, which is estimated to have caused losses in some years amounting to $1,000,000 in the Connecticut Valley alone. Poor burning quality in cigar-tobaccos renders them of little value. This subject has been thoroughly investigated and the principal influencing factors have been worked out. A somewhat unique feature of the laboratory methods was the development of the Department's automatic cigar smoker, a device for smoking or burning under uniform and controlled conditions a large number of cigars used in the tests. This device has eliminated the necessity of the actual smoking of cigars by those conducting the tests, except for the final test for aroma. The necessity for such a device can only be appreciated by those who have been called on to try smoking a few hundred cigars made from raw tobacco, in the effort to find the one good plant needed as the



A Milking Machine at Work.