## COST OF KEEPING DAIRY COWS.

In estimating the cost of feeding cows it is customary to figure feeding stuffs at what they would bring on the market. No account is taken of the fact that if these same feeding stuffs were sold instead of fed on the place, the farm would immediately begin to be less productive. To get results that are accurate it would be necessary to deduct from the market price of the food, its value as a manure. And this value is not determined simply by the amount of nitrogen, phosphoric acid, and potash it contains, but by the actual increase in yield it will give when properly applied to the land. A ton of barnyard manure may be worth twice as much applied to one field as to another. The proper way to estimate the cost of keeping cows is to charge the cow with what her feed costs. When a man can raise four tons of hay on an acre of land, which he can do on the west side if he makes proper use of farm manures, at a cost of not more than $8 an acre, taking cost of tillage, seed, cutting, etc., into account, the hay has plainly cost him but $2 a ton. This assumes that the manure from feeding the hay is to be returned to the land. The $2 cost is for the feeding value, and not the manural value. If the hay were sold at even $4 a ton there would be a loss, for more than the $2 worth of fertility would be sold. The above is, we think, a perfectly fair estimate of the cost of hay fed on the farm. In the same way, the feeding cost of roots will be 75c to $1.50 per ton, say $1 on the average in Western Washington. The cost of producing oats will be not over $12 a ton, and this is a liberal estimate. Peas can be produced, say for $16 a ton. With these figures as a basis, let us see what a day's feed for a cow in full flow of milk will cost:

| | Pro. | Carb. | Fat |
|---|---|---|---|
| Clover hay, 8 lbs.. | .648 | 3.128 | .168 |
| Timothy, 8 lbs.... | .232 | 3.280 | .120 |
| Mangels, 25 lbs... | .275 | 1.200 | .005 |
| Ch. Oats, 5 lbs.... | .465 | 2.415 | .210 |
| Ch. Peas, 4 lbs.... | .808 | 2.176 | .068 |
| | 2.428 | 12.200 | .571 |

This excellent ration, at the above figures, costs 8.55c a day. In seven months it would cost $17.95 to feed a first-class cow. Estimating pasture for the remaining five months at 75c, we have a total annual cost for feed of $21.70. If such a cow produces 300 lbs of butter a year, and a fair average cow will do that on such a ration, and the butter sells for 20c, the income from this source is $60. The skim milk, properly fed, will about pay for labor of feeding and milking. There is then a net profit of $38.30 per cow. Estimating 40 acres at $35 an acre, 20 cows at $50 a head, other stock at $250, improvements at $3,000, this gives a net profit over and above fair wages for the farmer if he does all his own work, of about 18 per cent on his investment.

Of course a man can figure himself rich in any business by assuming the income and the expense right. But in the above estimates, the estimates are based on the actual experience of many farmers, and very liberal allowances are made for matters of expense. This makes dairy farming look profitable. We should like to hear from our dairy farmer friends on this subject.

## MILKING MACHINES.

The inventive genius of the Yankee has not yet completely solved the problem of the milking machine, although there is little doubt that its solution is a matter of only a few years at most. Several machines have been made which, as far as obtaining the milk from the cow is concerned, are even more successful than the average milkman. It has been shown that the cows take kindly to the machines and give down their milk as freely as when milked by hand. The difficulty which still hinders complete success lies in the complex nature of the apparatus. The Cushman machine in which glass cups are applied to the teats of the cow and in which the milk is drawn entirely by suction, is not particularly complex in its structure, but the fact that the milk must pass from the cups to the milk can through narrow tubes which cannot be perfectly cleaned by any simple method seems to militate against the general adoption of this method. In comparative experiments it has been shown that milk drawn through these tubes sours more quickly than that drawn in the ordinary way.

The great difficulty in securing reliable and competent milkers will cause dairymen to hail with delight any successful invention of this character. Such an invention would do fully as much toward extending the dairy industry as the cream separator has done. Thousands of farmers would keep herds of dairy cows who do not now do so because of the difficulty of securing competent help.

## RELATION OF FOOD TO MILK FAT.

It is very generally believed among dairy farmers that it is possible to make a cow's milk richer by improving her daily ration. The Cornell experiment station at Ithaca, New York, has recently made extensive investigations on this question, the results of which are given in bulletin 173, just issued. In addition to giving the results of their own experiments, Prof. Anderson reviews the reports of forty-four other experiments. In twelve experiments in which fat was fed to cows to see if it would increase the per cent. of fat in the milk, eight experimenters said no, while four said yes. "Of the four experiments where the fat in the food increased the proportion of milk-fat, one reports so great a reduction in the yield as to make such feeding unprofitable. The noted experiment of Soxhlet whereby he increased the per cent. of milk fat by feeding the cows oil emulsified in the drinking water, has been repeated many times by other experimenters, but none of them so far as we know, have reached a similar result."

In twenty-six experiments to ascertain if increasing the proportion of protein in the ration would increase the per cent. of fat in the milk, twenty said no, and three yes. Three others thought there was a tendency to increase. In three experiments in which molasses was fed, the per cent. of fat increased each time. Summing up, out of forty experiments, thirty showed no effect of food on the per cent. of fat, while ten did.

It is a well known fact that any sudden change in a cow's ration, especially if the character of the feed be abnormal, as in the case of oils and molasses, the per cent. of fat in the milk is liable to be affected to a marked degree for a short time, but after a few weeks it returns to the normal. This fact undoubtedly accounts for a good portion of the cases in which an increase in richness was reported; while the ordinary variations which occur in the milk of every cow will also account for others, independently of any effect due to the feed. On the