

Cottrelle believes. A sow to make a place in the breeding herd must produce at least eight pigs her first litter. Yorkshires are chosen because they are prolific and the Berkshire or Duroc sire because the cross produces easy feeders which make rapid gains.

As a part of the plan one hundred Holstein dairy cows are to be put in. The by-product of this herd and the cull corn will feed the pigs and the corn stalks, cull corn, cull oats and cull barley together with clover and alfalfa hay will feed the cows. Then, with all this will work in the pure-bred seed grain, corn, oats and barley.

Is it not a great three-unit system? At present the dairy herd consists of thirty-eight cows with twenty-seven milking. The mil. is weighed and a record kept of the weight at each milking. In the number already on hand are at least six 10,000-lb. cows or better. The standard of production for the dairy herd is at least 7,000 l.s. each. Sixteen nice heifers and a number of bulls are coming on. The sire in the herd is a four-year-old and he is being kept until his daughters become of producing age to see how they do. If they justify it he will be kept on as the owners believe an old bull with heavy-producing daughters to be much more valuable than a question-mark of a youngster.

Twenty-four clean-legged, 1,400-lb. horses are kept to do the work and from eight to ten men on the average are required. Eventually a tractor will be installed in the place of some of the horses. New dairy and horse barns are to be erected and we hope to be able to describe them when they are completed. A stable man looks after the horses, the teamster having nothing to do with the feeding. Two saddle horses are kept for the Superintendent and foreman, the oversight of operations being accomplished from the saddle. Eight workman's cottages, simple, yet comfortable are already on the place and it is intended to keep married men as far as possible and thus solve the labor problem.

Gasoline engines are to be installed, one at the repair shop and a larger one in a shed next to the granary and all the grinding is to be done at home. Also all straw is to be cut, this to facilitate working the manure into the soil and to aid in absorbing liquid manure. The grain and all feed will then be weighed out to each tranch and that branch debited with it. It will thus be easy to determine where the profit or loss lies. It is the purpose to feed the cattle all the year around and the only fences on the place will be around the outside and a calf paddock.

Up to the present the work has been rather of a cleaning-up nature. Twelve m's of four-inch tile have been put in at a total cost of sixty-eight cents per rod. The drains are laid one hundred feet apart, this with a four-inch tile being considered better than a three-inch tile at four rods apart. The entire farm is to be so under-drained.

All the men are paid by the hour and a complete system of book-keeping is followed. There is room for such farms. They are an object lesson to others. This is ordinary fairly strong clay and clay loam soil no better than plenty of other farms. Business methods are injected into its operation. There is something to be learned from it. It is system. It will accomplish good. Think what the good seed produced will be worth to the people who buy. Mr. Biggar, previously mentioned, tried an experiment with some of the specially cured corn against some of inferior grade and he said: "If I had paid \$32 per bushel for the good seed it would still have been \$8 cheaper than the inferior stuff at market price." It was ready to cultivate four days ahead of the inferior seed which came up weakly and was behind all season and the good corn was a much better crop and matured a great deal earlier." Mr. Biggar and the Essex County Seed Farms Ltd., are the only producers on a large scale in this country of kiln-dried seed corn—kiln-dried without heat by nature's own simple, yet best method. When the buildings are all up and the drives laid out it will be a treat to drive over this farm overlooking the great river and within easy distance of great cities by an electric road which passes, cars stopping hourly at the gate. It is a great three-unit farm—pure-bred seed, pure-bred dairy cows and pure-bred pigs—a three-year rotation on the farm and an inseparable, three-handed disposition of the products.

POULTRY.

Record Price for a Goose.

A goose given for sale for the benefit of the Belgian Relief Fund by Mr. Denver, of Newbury, Ireland, fetched altogether £78 at Newbury Cattle Market. It was sold several times, each buyer returning it for re-sale, until Mr. Leach, of Newbury, paid an additional 50s. to retain it as a record priced goose.

THE DAIRY.

Changing Creamery to Cheesery.

Editor "The Farmer's Advocate":

A few weeks ago we called attention to the fact that some parties are thinking seriously of changing their cheese factories into creameries, but the writer thought it an inopportune time to make such a change.

Since then we have had several communications from other persons saying, the writers thought of changing back again to cheese. The reasons given were that patrons were tired of turning separators, there was more money in cheese than in butter, and it took less time to care for the milk going to a cheese factory than it did to separate and cool the cream.

All these parties mentioned one drawback when patronising the cheesery, namely, the difficulty of rearing calves, which is undoubtedly a great obstacle in live-stock districts, or where a farmer desires to raise his own cows, as is becoming more necessary each year in order to renew and improve the dairy herd.

We have been asked a number of times regarding the value of pasteurized whey for calves; and whether this by-product of the cheesery can be satisfactorily substituted for skim-milk. While we do not know of any experiments having been conducted on this point, it is very doubtful if young calves especially, can be fed successfully on whey, whether pasteurized or not. Several farmers report good results from feeding pasteurized whey to calves after receiving a start on whole milk, but the farmers making enquiry wish to start the calves right off on whey.

One man says the practice in his locality has been to feed on whole milk for a few weeks, then change to water and grass, but the calves, he says, do not take kindly to the "water wagon," and he thinks they would do better if continued on the same feed throughout the summer season.

If any readers of "The Farmer's Advocate" have had good results from feeding whey to calves, no doubt the Editor would gladly give space for such, as the year 1915 is likely to see a boom for cheesemaking, but many farmers are puzzled to know how to raise their calves.

Theoretically what whey lacks is proteid or muscle-forming material as compared with skim-milk. In the process of cheesemaking, the rennet acts on the casein throwing it out of solution or changes its colloidal (jelly-like) form, to that of a solid, incorporating with it most of the fat of milk, some sugar and ash material, and a good deal of moisture.

The percentage composition of skim-milk and whey, as given by Dr. Van Slyke, is:

	Water	Fat	Casein and Albumen	Sugar	Ash
Skim-milk.....	90.30	.10	3.55	5.25	.8
Whey.....	93.12	.27	0.81	5.80	

From this table of compositions we see that whey and skim-milk are similar in chemical composition except in casein and albumen, or what chemists call the protein material. The whey has more fat than has the skim-milk from a separator and about the same percentage of sugar and ash, which are given combined for the whey instead of separately as in the case of skim-milk. An important point in connection with the sugar of whey is to prevent it changing to lactic or milk acid, which can be done by pasteurization, as the heat destroys the bacteria which feed on the milk sugar, leaving an acid behind, causing what is known as souring of the whey. For grown pigs, the whey acid seems to do no harm, but rather tends to aid digestion. Some recent experiments indicate that sour milk for calves is equal to sweet milk. It is possible we may have to raise our estimates of the relative values of sweet and sour dairy by-products for live-stock. In the meantime we should advise feeding these sweet to young stock at least wherever possible.

Other points raised by our correspondents are: the method and cost of pasteurizing whey, the cost of returning whey from factory to farm, the best method of keeping the whey on its return to the farm, and how long the pasteurized whey would remain sweet after reaching the farm.

Bulletin No. 183 from the Ontario Department of Agriculture, Toronto, deals with methods of heating whey and cost of same. Illustrations are given of five systems of heating whey, and to those who contemplate putting in a system of pasteurizing whey, we recommend them to get a copy of this bulletin.

The authors say, "We believe the average cost for heating will be about 75 cents per ton of cheese (20,000 lbs. whey). In no case have we known the cost of heating to be greater than \$1.00 per ton of cheese."

As to who should pay the cost of pasteurizing whey at the factory, this bulletin says: "As the patrons receive the greatest benefit from proper

pasteurization of whey, they should in all cases pay the cost, which is very small considering the benefit derived. Makers should in every case use their best efforts to see that the very best possible results are obtained, and the work properly performed."

As to cost of returning whey to patrons, this would depend upon the distance which the driver has to haul the by-product, condition of roads, etc. The rule, in some localities, used to be, one dollar per cow for the season. However, everything has advanced in price, as measured by the dollar standard, so it may be worth more today.

A clean galvanized or tin vessel is probably the best in which to keep the whey on the farm, but if the whey is left in until it sours, then the acid "eats" the tin or galvanizing, the vessel soon becomes rusty, and it is difficult to keep clean. Wooden vessels are not affected by the acid, but owing to their nature they are very difficult to keep sweet and clean, although many farmers use a barrel in preference to anything else for containing dairy by-products.

If the vessel containing the whey is kept clean and the by-product cooled on reaching the farm, the whey should keep reasonably sweet for 24 hours, which is as long as needed, except for over Sunday. For Sunday night and Monday morning feeds, probably some whole milk would be necessary, hay-tea, or a cheap substitute for milk. However, we need to bear in mind that calves, as a rule, do not take kindly to changes in diet, and such changes frequently result in scouring, indigestion, etc.

There are a number of problems relating to the cheese-factory and live-stock interests that will need careful consideration between now and the opening of the cheese factories in the spring of 1915. Cheese is likely to be a paying proposition for the coming year, but we cannot afford to sacrifice our live stock, for which skim-milk seems to be almost a necessity, especially for calves when they are young. Any light on this question will be gladly received by patrons of cheeseries for the year 1915.

O. A. C.

H. H. DEAN.

About Holstein Bulls.

Editor "The Farmer's Advocate":

In "The Farmer's Advocate" of Dec. 24th, a man from Wentworth County, Ontario, discusses the Holstein situation unfavorably because some American has bought a bull for \$10,000 and has since sold a half interest in him for \$25,000, enabling him to value his bull at \$50,000. Bulls from other breeds of cattle have been sold from \$10,000 to \$40,000 each, and people have been lucky to secure one of their sons; but our friend from Wentworth says, "It will be in order for suckers in Canada, one of whom is born every minute, to secure sons of this \$50,000 bull." Unfortunately there will not be enough to go around. We are lucky in having already secured one.

Nearly all the best Canadian breeders have sons or grandsons from bulls bred by our American friends. The Wentworth man takes about half of his letter in describing dishonest methods of some hog breeders. Well, we are not hog breeders, and must admit that he knows more about hog breeding and hog boosting than we do. He finishes his letter by saying, "The ultimate effect on the breed is bound to be disastrous." Now, if it is it will be because people listen to the misrepresentations of this man and do not secure some of the blood of this valuable bull.

Prince Edward Co., Ont. B. R. LEAVENS.

FARM BULLETIN.

Mending Bags and Other Things.

By Peter McArthur.

It seems that when answering correspondents and telling how to mend bags I did not cover the subject fully. There are other ways of doing the trick and readers of the Advocate are trying to set me right. This suits me entirely for the only way to get the ripest thought on a subject is to hear from all the people. I welcome these pointers, both grave and gay, and try to profit by them myself and to let other people profit. Regarding ragged bags a good-natured correspondent writes:

"At different times we have used all the well-known methods you have mentioned with varying success, but I think there is one stunt you have missed and I am going to give it to you. I believe you are always ready for new hints so prepare yourself."

"When the holes in the bags become so bad that straw will not stay in them and when if you puckered up the hole and tied a string about it there would be so little of the bag left that it would be almost useless, take two bags and put them one inside the other so that the holes are not opposite each other and you will have a