

Dairy Department

separation is not sufficient to insure a first grade cream. In order to remove the portion of cream clinging to the inside of the bowl, and particularly the separator slime, which readily decomposes, it is necessary to take the bowl apart and thoroughly cleanse it. Furthermore, there is an economic loss of fat in skimmilk caused by an unclean separator bowl, which no farmer could well afford to lose. The following average of a series of experiments shows the loss of fat in skimmilk from an unclean separator to be three times as great as the loss where the separator is washed after each separation. Loss of per cent of fat in skim milk when separator was

Washed after each separation, .038 per cent.

Washed once a day, .10 per cent.

SEPARATING SOUR MILK.

Milk that has curdled will separate with difficulty. Previous to separating such milk should be thoroughly mixed by pouring from one can to another, breaking up curd as finely as possible so as not to clog the machine. The separation of curdled milk finally clogs the skimmilk tubes with the result that more skimmilk passes through the cream outlet making a thinner cream. While on the other hand, when sour milk is separated, though not curdled, the cream produced will be thicker. This is due to the fact that cream from sour milk has a high viscosity, or is less fluid, and a smaller proportion of cream is delivered containing a higher per cent of fat. A slight variation in per cent of fat in cream separated from sweet and sour milk is shown in the following table:

Per cent of acid in		Per cent of fat in cream separated from	
Sweet milk	Sour milk	Sweet milk	Sour milk
.19	.39	41.8	44.8
.19	.39	17.7	17.7
.19	.40	18.6	18.8

EFFECT OF BALANCED AND UNBALANCED SEPARATORS ON PER CENT OF FAT IN CREAM.

A separator that is not kept level, causing a vibration of the bowl, cannot do efficient work. When milk is separated in a balanced bowl the milk is divided into three layers, namely: cream, skimmilk, and the separator slime, each finding its respective outlet. If the machine trembles, a portion of the skimmilk and cream are mixed by the vibration of the bowl, and a large per cent of

fat is lost in the skimmilk. This is shown by the following results:

Per cent of fat in cream	Separators	
	Balanced	Unbalanced
31.0	28.3	
Per cent fat in skim milk	.03	.17

SKIM RICH CREAM.

The cream separator screw should be set to deliver cream containing from 35 to 45 per cent. Cream of this richness has a better keeping quality, it is less bulky to handle, and more skimmilk is left on the farm for feeding purposes than when a thin cream is skimmed. Aside from this fact that cream with a high per cent of fat is an economic benefit to the patron, it is also of great importance to the creamery in the manufacture of the best quality of butter as it allows pasteurization and the use of starters in ripening cream to be carried on with better results.

PATRONS' CHECK ON PER CENT OF FAT IN CREAM DELIVERED TO CREAMERY.

Any patron can calculate within a few per cent what his cream should test before taking it to the creamery. However, it is necessary to know approximately the per cent of fat in the milk before separation. Assume for example you have 100 pounds of milk for separation testing 3.5 per cent fat, which means 3.5 pounds of butterfat, and from this amount of milk you receive 10 pounds of cream—the test of the cream would then be 35 per cent. The following table gives the pounds of cream testing from 20 to 45 per cent to be obtained from 100 pounds of milk testing from 3.3 to 4 per cent:

100 lbs milk test %	CREAM					
	20%	25%	30%	35%	40%	45%
3.3	16.5	13.2	11.00	9.43	8.25	7.34
3.4	17.0	13.6	11.33	9.71	8.50	7.56
3.5	17.5	14.0	11.66	10.00	8.75	7.78
3.6	18.0	14.4	12.00	10.28	9.00	8.00
3.7	18.5	14.8	12.33	10.57	9.25	8.22
3.8	19.0	15.2	12.66	10.85	9.50	8.44
3.9	19.5	15.6	13.00	11.14	9.75	8.66
4.0	20.0	16.0	13.33	11.43	10.00	8.88

FINANCIAL LOSS IN CARELESS HANDLING OF SEPARATORS.

The following data from the California Experiment Station Bulletin No. 209 shows the possible annual loss of butterfat in skimmilk from one cow where the separator is improperly operated:

Separator run	Fat in skim milk Per cent	Loss in butterfat Pounds	Value of butterfat lost
Balanced	.03	2.8	\$.75
Unbalanced	.17	13.0	4.28
10 turns too high	.029	2.21	.74
Normal speed	.029	2.21	.74
10 turns too low	.120	9.18	3.03
20 turns too low	.210	16.06	5.30
Washed after each separation	.038	2.98	.96
Washed once daily	.10	7.45	2.77
Large inflow	.145	11.09	3.64
Normal inflow	.028	2.14	.71
Small inflow	.027	2.06	.68
Temperature of milk 90 degrees F	.022	1.68	.55
" " " 75 " "	.051	3.90	1.29
" " " 60 " "	.120	9.18	3.03

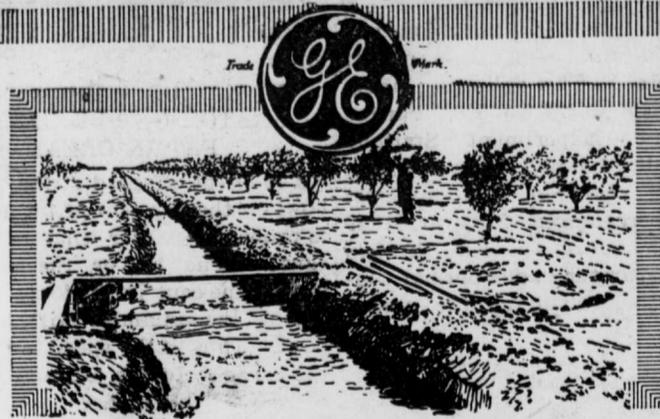
The results below are figured by taking 9,000 pounds of milk as the yield and 85 per cent of this amount being skimmilk separated, and the value of the butterfat is rated at 33 cents per pound.

Other root crops will produce the same results and we usually select that crop which will give us the largest yield.

RATION FOR CALVES.

Question: We have had some calves bloating and we can't figure out the cause of it. We are feeding them now skimmed milk at 90 degrees F., and shorts with some hay. F. D. Cape Horn, Wash.

Answer: You do not state what sort of hay you are feeding, but if it is clover or alfalfa the bloating may be caused by the hay. Large amounts of skimmilk with shorts might also produce bloating. You have not de-



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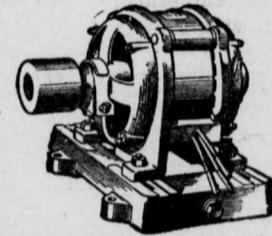
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Questions and Answers.

CARROTS ALONE NOT A GOOD RATION.

Question: I have noticed that when I feed my cows carrots during the winter, the cows come out very poor in the spring, though I feed each cow about 24 quarts per day. J. H. R. Colville, Wash.

Answer: Carrots do not make a good feed when fed alone because they do not contain a sufficient amount of nutrients, but if good alfalfa or clover hay is used as a roughage and a grain ration of bran, ground barley and oats is used the carrots may be fed to advantage in quantities of from twenty to thirty

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