butter-making, or sending the whole milk to the factory, substituting therefor either skim-milk, butter-milk, or whey, with the addition of certain fatty substances, or by using in part or entirely one of the useful calf foods which can now be purchased at prices that make them profitable to use. These various methods will be discussed in turn.

Highland Cattle fed on Skim-Milk

Raising Calves for the Dairy on Skim-Milk.

Where butter-making is largely practised, the greater part of the skim-milk which is available for feeding purposes is separator milk, out of which has been extracted the greater portion of the butter fat, the amount remaining in it depending, of course, on the care, or want of care, with which the extracting has been done. In the old methods of setting milk the butter fat was never removed so closely as is done to-day by means of the separator, and therefore skim-milk, before the separator came into general use, was richer in feeding properties on account of the butter fat remaining in it. This fat, however, though serving a good purpose, was yet too costly a food, because when recovered from the milk it could be made into butter, which would bring more than its worth for calf-feeding purposes. But, supposing that every atom of the butter fat was extracted from the milk, we have yet in the skim-milk remaining the most important part of the milk for feeding purposes, viz., the protein, the percentage of which is a little larger in the skim than in the whole milk, and from which are principally formed the bones, ligaments, muscles, nerves and internal organs of the animal. In skimming milk that tests 4.2 per cent. fat we remove one quarter of the total solids, and there is left in the skim-milk about 9.16 per cent. of solids not fat, and from .1 per cent. to .2 per cent. of fat. Now it is evident that if we can replace the butter fat extracted from the milk by one or more feeding substances that contain nearly, if not quite, as good feeding qualities as the fat, and the primary cost of which is much lower, the substitution of these must be profitable. In linseed or oil meal and in prepared calf foods we have nearly ideal foods to add to the skim-milk to bring it up to the desired standard. The average proportion of oil in crushed linseed meal is about 35 per cent. Whole milk is composed of eight parts of water by weight to one part of solids. The very first essential in calf-raising is to preserve this relation between water and solids undisturbed as much as possible when the milk is given the calf, also to have the substitutes for whole milk in such a condition that they can be digested without difficulty.

Developing the Dairy Habit in the Young Calf.

It is a fundamental law among dairyman that the calf destined for the dairy should never be fed a ration conducive to the putting on of fat. When once the flesh forming habit has been acquired by the young growing animal, it remains with it all its life, and consequently, the animal's usefulness for the dairy is very seriously impaired, even if not utterly ruined. This must be carefully borne in mind when the dairyman selects his rations to add to the skim milk allowance.

As soon as the calf is born, it is wise to remove it at once from its mother to a separate pen where it should be thoroughly rubbed dry with a cloth. Some prefer to let the cow do the rubbing and cleaning process, but it is doubtful if any good is served thereby, and in the case of a heifer with her first calf the longer she is left with the calf the more troublesome she is likely to be when she is milked, especially as regards holding up her milk. Teaching the calf to drink is not as a rule a troublesome process when it is removed from its dam before it has sucked. By using two fingers the calf is soon induced to lower its head into a pail, and it is not long before it will drink of its own accord. By those who dislike the trouble of teaching the calf, the calf-feeders that can be obtained in any city will be found advantageous. If the calf should prove obstinate when being taught and the milk gets cold, warm water should be added in order to keep up the required temperature, otherwise disarrangement of the bowels may be looked for. The milk, whether whole or skim, should always be fed at a temperature of 98 degrees to 100 degrees. Cold milk or scalded milk soon causes indigestion and scouring.

Feed New Milk for a Week.

Nature has specially prepared the first milk of the dam for cleansing the bowels of the young calf, and, therefore, this should always be given to it. The time when the milk resumes its normal character varies from three to four days, or perhaps a little longer. In actual practice it is proved desirable to give the calf whole milk for a week at least and some continue it for a fortnight. One quart is quite sufficient at first for a meal and should be given three times a day. Frequent

Highland Heifer, two years old, reared on Skim-Milk and Calf Meal Gruel.