

They were spread all over the country at this sale, some of them going to Canada, where, for no fault of their own, they did little good. Near a quarter of a century rolls round, and here these pictures bring back to memory the old days, days when farming in Scotland had reached its zenith—another year and a blight came over it, and the British farmer has been laboring since under a more or less heavy load. In fair Tweedside, with a soil suited to mixed husbandry, and preeminently the land of the sheep with their golden hoofs, they have suffered less from depression than probably any other part of the British Isles.

In those Border lands, in Roxburghshire and Berwickshire on the Scotch, and Northumberland on the English side of the boundary line, they have studied out the question of the sheep most adaptable and suitable to the climate and soil. On the lower richer soils they have the Border Leicester, on the higher pasture lands the Cheviot, and then intermediate is the Leicester-Cheviot, a magnificent combination of constitution, carcase, and wool. There is a breadth, dash, and verve about these breeders that we could well copy here. The friendly emulation is most seductive to an outsider, and no student of fleecy flocks should miss a visit to that part of the world. The sheep are not suited to our country except in small districts, and under favorable conditions, but the methods of those Border flockmasters are beyond criticism. Long inheritance has gifted them with an innate knowledge which has almost become instinct, and it is with regret that we read year after year of certain flocks being dispersed. Fresh blood floats into other streams, and gives in most instances stamina and constitution, even if style and gaiety are left behind, although it is a fact, proved by long years of trial, that the Mertoun sheep, with no fresh infusion of blood, have held their own, and during my last visit, some eight years ago, were better than ever. Lord Polwarth has solved the problem of line-breeding better than the disciples of Bates and Booth with cattle, and has equalled, under almost exotic conditions, what the Cheviot breeders have done on a green hillside, where the survival of the fittest, added to a soil of wonderful soundness, has helped and fostered a prolific and hardy breed of sheep.

Shorthorns.—It is reported that Mr. Miller, Buenos Ayres, has sold the Royal Champion Bull, Bapton Emperor, for \$4,000. This bull was bred by J. D. Willis and sold to W. S. Marr, Upper Mill, from whom Mr. Miller bought him for \$2,500. He is now in Buenos Ayres.

Border Leicester Sales.—The Kelso auction sales of Border Leicesters have resulted in prices rather under those of last year. The Auchenbrain and Mertoun flocks did the best. Lord Polworth's Mertoun flock is the finest in the world. Last year the highest price ever reached was paid for a shearling ram from this flock, viz., \$1,375—by Mr. Leo Markle. This year the biggest price was \$350, and the average for the lot \$93. Auchenbrain is a farm of 200 acres, carrying a heavy stock of dairy cows and 45 ewes. Mr. Wallace, the farmer, sent up 15 shearling rams for this flock. One made \$550, another \$450, and the whole 15 made \$2,845, a very nice sum for such a farmer.

Milk Fever.

A correspondent of the *North British Agriculturist* has had good results from the use of a tablespoonful each of potassium bromide and chloral hydrate in two or three pounds of treacle after calving as a preventive. If the cow shows signs of the disease, repeat every two or three hours as the urgency of the case may require. Milk fever needs to be taken in time. In nineteen cases out of twenty the game is lost before the vet arrives.

Guard Our English.

Wm. Housman, writing in the *London Live Stock Journal*, calls attention to the growing use of the words "sired by." Of course it is understood that sired by is an utterly illiterate term. We first saw it in printed pedigrees from over the seas. This spurious coin, the new verb for the noun, appears to be one of the products of

ranche or colonial life. The old custom of saying or writing "got by" has become almost obsolete. Sire has become the common word now. It was first used in England by the late Col. Davy in the Devon Herd Book. It was adopted by Mr. Thornton in his catalogues and in the Jersey Herd Book from the first volume. It is all right. There is really no use for the verb. The substantive expresses the same thing more briefly and much more elegantly. We may soon have "sistered," "uncled" and "aunted," and the "sired" had better be dropped in time because it is growing with the infectious nature of a popular habit.

The Principle of Cream Separation

A Comparison of the Different Methods of Creaming Milk

Written for "Farming" by J. W. Mitchell, Dairy Superintendent Northwest Territories.

PRINCIPLE OF SEPARATION.

There are two methods of creaming milk, the *natural* or *gravity* method, or what is commonly spoken of as setting the milk; and the *mechanical* or *separator* method, in which the cream separator is employed. In both methods the principle of separation is the same, depending upon a well established law of nature, which may be stated as follows:

When a heavier and a lighter substance are mixed together and subjected to any outside force, the heavier substance moves as far in the direction in which the force is acting as the vessel confining it will permit of, compelling the lighter substance to move in the opposite direction; provided, of course, that the substances are of such a nature that they can exchange places, such as two fluids, or a solid and a fluid.

Now, milk may be looked upon as a mixture of a heavier and a lighter substance, the heavier being the *skim-milk* or *serum*, and the lighter being the *butter-fat*. A vessel which would hold 1,000 pounds of water would hold 1,033 to 1,036 of skim-milk, and about 930 of butter-fat. When we set milk, whether in a shallow or a deep vessel, it is subjected to the force of gravity which acts directly downwards; and as a consequence the heavier skim-milk or serum moves towards the bottom of the vessel, compelling the butter-fat to move upwards, or opposite to the direction in which the force is acting. Again, when milk flows into a separator bowl which is running at a high rate of speed—6,000 to 10,000 revolutions per minute—it is compelled to take the motion of the bowl, which subjects it to a great centrifugal force; and as a consequence the serum moves towards the outside of the bowl, or in the direction in which the force is acting, and compels the butter-fat to move towards the centre of the bowl. Thus we see that whether we set the milk in a vessel, or put it through a separator, the principle of separation is the same, namely, the heavier skim-milk moves in the direction in which the force is acting, and compels the lighter butter-fat to move in the opposite direction.

Now, if the fat globules in milk were large, the force of gravity would be quite sufficient to cause a ready and complete separation; but it happens that they are extremely small, it taking about 6,000 placed side by side, in line, to extend over an inch in length; and as a result of their minuteness, and of the serum being somewhat viscous in nature, they are offered considerable resistance in rising. Hence, as the centrifugal force that milk is subjected to in a separator bowl is several thousand times as great as the force that it is subjected to under the gravity method a much more complete separation is obtained from the use of a separator, and this within a very short space of time.

The writer having some time at his disposal after the close of the Guelph Dairy School, in the spring of 1898, devoted it to experimenting with the setting of milk in deep cans and in shallow pans.