

The history of the breeding of flock sheep (as distinct from stud sheep) in this country is largely one of cross-breeding. The first sheep introduced in quantity were Merinos; then the Lincoln and Leicester breeds, besides being bred pure, were used as sires for a few generations on the Merino ewes and the progeny of their crosses. Latterly the Romney breed has come to the front, and has been used largely for crossing with the Lincoln and Leicester breeds, and the progeny of their crosses with the Merino, with the result that to-day the blood in some flocks is very mixed. If it had been possible to breed first crosses only it might not have been so bad, but the commonest practice has been to back-cross to either the Lincoln or the Romney sire as the demand has changed for different types of wool. Another practice is to use the Lincoln ram on the finer-woolled sheep with a predominance of Romney blood, while the Romney ram has been used on the coarse-woolled ewes with a preponderance of Lincoln blood. Such indiscriminate cross-breeding cannot do otherwise than bring out recessive characters, which would be intensified by future breeding unless very careful selection were practised.

When considering the question of medullated fibres in the previous article, dealing with the faults of New Zealand wools, it was pointed out that the amount of sulphur present in an organic form in the food of the sheep probably plays some part in the production of these fibres. The system of indiscriminate cross-breeding which has been so much in vogue in the past, combined with poor selection of the breeding-stock and unfavourable nutritional conditions, is more likely to be the chief cause of the production of hairy fibres than is the influence of any one breed.

When there is excessive variation in the size and shape of the fibres within a staple of wool, as occurs in some New Zealand wools, particularly those of the crossbred type, it becomes a serious fault from the manufacturing point of view. Wools which result from the crossing of two or more breeds of sheep frequently appear to have a greater variability of the size of their fibres than do wools from strictly pure-bred sheep. Therefore this is another reason why cross-breeding, except for butchers' purposes, should be limited to a minimum. A special feature of this irregularity is that, as a general rule, the coarsest fibres are also the longest and quickest growing, and if nutrition plays some part in the production of medullated fibres then this feature would tend to increase the likelihood of medulla formation.

While the crossing of different breeds is undesirable from the wool viewpoint, the crossing of widely differing types within the same breed is very little better. Of recent years many well-known writers on animal improvement have stressed the necessity for line-breeding and careful inbreeding if uniformity of production is required. Many breeders are afraid of close breeding because in the past some faults, such as sterility, have been attributed, often erroneously, to this practice. It is quite possible to breed sterile animals by the most violent out-cross, provided care is taken in the selection of the parent stock. It should be remembered that inbreeding creates no new characters, but intensifies both the good and the bad characters that are already in existence, so that they may be multiplied or discarded