ABNORMALITIES OF THE VAGINAE OF MERINO EWES IN QUEENSLAND.

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SUMMARY.

Abnormalities were found in the vaginae of 6.5% of 2,903 Merino ewes examined by means of a speculum.

In four of six ewes examined post-mortem, the mid-third of the vagina was constricted. In the other two, an obstruction due to fibrous adhesions between the walls of the vaginae in the region where the hymen should be situated was found.

A small breeding trial with ewes having abnormal vaginae was conducted. The percentage of ewes that lambed was lower than in a flock of unaffected ewes.

Attention has already been drawn to low reproduction rates amongst flocks in Queensland (Moule 1952 a, b, c). However, few clinical observations appear to have been made upon the vaginae of Merinos in relation to fertility of ewe flocks.

In a Merino flock in north-western Queensland, 10% of ewes failed to breed in 1953, although mated with fertile rams for at least six weeks in both the autumn and the spring. It was decided, therefore, to examine the vaginae of ewes for evidence of any conditions likely to impair conception. The results of an initial examination of ewes in three flocks, reported here, indicate that the vaginae of 6·5% of the ewes examined were abnormal.

MATERIALS AND METHODS.

The vaginae of 2,803 ewes of mixed ages in two flocks were examined during April, 1954.

In the first flock 2,123 ewes were examined. They had been mated with rams in the usual circumstances prevailing in pastoral Queensland; 2½% of rams were liberated amongst the ewe flock for about six weeks. The sheep were in a paddock of about 4,000 acres.

The second flock comprised 680 ewes. All but the maiden ewes in this flock had been mated, under paddock conditions, at least once previously.

The ewes were examined as they came on heat. Oestrum was detected by the marks left on the rumps of the ewes following mounting by vasectomised rams, which had a mixture of grease and pigment painted on their briskets.

Each ewe was confined in dorsal recumbency and a speculum was inserted into her vagina. The speculum consisted of a clear glass tube made from a large test tube. It was about 15 cm. long and 2·5 cm. o.d., with an oval opening about 2·0 cm. wide and 2·5 cm. long blown in one end at approximately 30° to the longitudinal axis. The speculum was tapered gently at this end. The opening at the other end was the mouth of the original test tube.

The speculum could not be inserted into the vagina of some ewes. In these cases, the vagina was explored by digital palpation. This usually revealed a constriction in, or a partial occlusion of, the lumen of the vagina. The constriction was situated between 1 and 2 cm. anterior to the external urethral orifice and about 3 or 4 cm. anterior to the commissures of the vulva.

The third flock consisted of 100 ewes, each of which had been identified by a numbered ear tag since birth. These ewes were born in the spring of 1951 and were mated for the first time in 1953. The vaginae of the whole flock were examined by digital palpation in the winter of 1954. During the examination these ewes were restrained in the standing position.

INCIDENCE OF ABNORMALITIES.

In the first flock, 147 of the 2,123 ewes of mixed ages examined had abnormal vaginae. All of the affected ewes were born in 1951 and were mated for the first time in 1953. They were submitted to examination in 1954.

In the second flock, 37 of the 680 ewes examined had abnormal vaginae. Of the 37 abnormal ewes, 1 was about 16 months old, 14 were 21 months, 13 were 28 months and 9 were over 3 years of age.

Ten of the ewes in the third flock had abnormal vaginae. Subsequent reference to the breeding records showed that none of these 10 ewes had lambed as the result of the 1953 mating.

The smallness of the udders and the teats of the ewes with abnormal vaginae in the other two flocks suggested that they also had not lambed.

The three flocks had lambed reasonably well for Queensland conditions following previous matings. Between 50% and 80% of lambs had been marked from the ewes mated.

THE ABNORMALITIES ENCOUNTERED.

No abnormalities of the mucous membrane lining the vagina or of the cervix were observed.

It was not possible to pass the speculum more than 3 or 4 cm. into the vaginae of the abnormal ewes owing to the presence of a construction or an occlusion in the lumen. However, a glass rod $\frac{1}{4}$ inch in diameter could be passed through the speculum and inserted into the vagina. The ease with which this could be done varied considerably, but it was achieved without damaging any tissues. In each case the depth of the rod was inserted beyond the obstruction suggested that the vagina was of normal length. Digital exploration of the vagina when the ewes were in the standing position, and at intervals for three days after the initial examination, revealed that the condition was constant. Apparently it was not associated with oestrum or mating, and it did not appear to be of a temporary neuro-muscular nature.

Post-mortem examination was made of six of the affected ewes. On each occasion examination of the vagina immediately after the animal was killed revealed that the obstruction was still present. The entire reproductive organs were removed from the carcases. Macroscopic examination revealed no abnormality other than that in the vagina.

Two types of abnormality were observed.

In four cases the vagina had a slight "hour glass" appearance from the exterior. The mid third was constricted, although the walls of the vagina felt as though they were slightly thickened. The vagina was opened by making a longitudinal incision along the dorsal wall, commencing at the dorsal commissure. In three sheep, the walls of the vagina, at the constricted mid third, were thicker than those at the proximal or distal thirds. The mucosa appeared normal and there were no fibrous adhesions between the walls.

In the remaining two ewes on which post-mortem examinations were made, an obstruction could be palpated about 5 cm. from the commissures of the vulva. The lumen was patent but nothing larger than a glass rod $\frac{1}{4}$ inch in diameter could be passed through the full length of the vagina. An anular thickening, occupying about $\frac{1}{8}$ inch of the length of the vagina, could be felt through the walls at the site of the obstruction. A longitudinal incision was made along the dorsal wall of the vagina, commencing at the dorsal commissure. The obstruction was due to fibrous adhesions between the walls of the vagina in the region where the hymen should be situated. The lesions in one of these ewes are shown in Fig. 1.

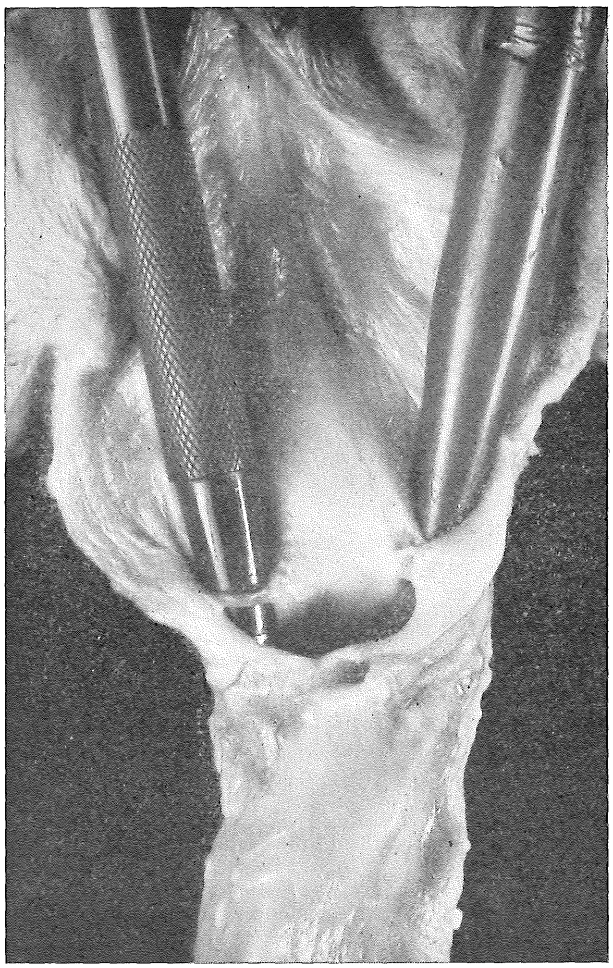

Fig. 1.

Fibrous Adhesions between the Walls of the Vagina of an Affected Ewe.

EFFECT OF ABNORMAL VAGINAE UPON REPRODUCTION.

A breeding trial was conducted to determine the effect of abnormal vaginae upon reproduction.

Two rams were mated in a small paddock with 60 ewes whose vaginae were considered to be abnormal. A further 34 identifiable ewes with abnormal vaginae were mated under paddock conditions, together with about 1,000 other ewes. The ewes were examined about eight weeks after lambing was completed in the flock.

The results are summarised in Table 1.

Table 1.

RESULTS OF EXAMINATION OF EWES EIGHT WEEKS AFTER LAMBING.

	In Small Paddock.	In Large Paddock.
Number of ewes with abnormal vaginae mated	60	34
Number of ewes with abnormal vaginae that lambed	34	14
Number of lambs	27	11
Percentage of lambs marked to ewes mated	45	32·3
Percentage of lambs marked to ewes mated in large flock of about 1,000 unaffected ewes	..	62

DISCUSSION.

The history of the sheep which precipitated these observations indicates that the abnormalities observed in the vaginae of some of the ewes may have an influence upon the reproduction rates of flocks.

The bearing which the condition has upon lamb-marking percentages under field conditions may depend upon the circumstances which prevail at the time of mating. Rams may persevere with one affected ewe in a small flock; in a large flock in which other ewes are coming in oestrum, they may leave a ewe with an abnormal vagina for others which are more accommodating.

Arguments might be advanced for the mating of older and more experienced rams with young ewes. Clinical observations made by two of us (Miller and Moule 1954) upon the reproductive organs of rams suggest that the joining of older rams with young ewes is not desirable. In addition, it might be preferable to mate younger rams possessed of more slender penes with young ewes.

Until the cause and the significance of these conditions have been determined, it is important to recognise their occurrence in sheep being used in experiments on fertility or on ovine genetics, where high reproduction rates are essential.

ACKNOWLEDGEMENTS.

These observations were made as part of a study into the fertility of sheep which is being financed under the Wool Research Trust Fund.

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(Received for publication Feb. 22, 1955)