

Repeatability of Twin Births

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In view of the report by Barrett and May (these Proceedings) that failure to lamb was distributed at random in flocks of ewes observed over a number of years, it seems appropriate to draw attention to a finding that another factor associated with reproduction, the incidence of twin births, has not been distributed at random in a flock of medium Peppin Merino ewes which has now been under observation for six years at the C.S.I.R.O.'s Regional Pastoral Laboratory, Deniliquin, N.S.W. From a flock of ewes which lambed there at 5 and 6 years of age in 1952 and 1953, two groups of ewes were selected; one (the T group) consisting of ewes which had borne twins on both occasions, and one (the S group) of ewes which had borne singles on both occasions. 38 of the T group ewes and 39 of the S group have now been present at 4 subsequent lambings (1-954-1957). Table I shows the numbers of ewes in each group which have

TABLE I.

Observed and Expected Numbers of Ewes with a Given Number of Multiple Births out of Four Lambings.

Group	Number of multiple births					Total
	4	3	2	1	0	
T	4	6	11	8	9	38
S	—	2	5	7	25	39
Observed total	12		16	15	34	77
Expected total	5		19	32	21	77

borne 4, 3, 2, 1 or 0 sets of twins (or triplets) in the 4 years, together with the observed and expected numbers over the two groups together. The expected numbers have been calculated from the binomial $(p + q)^n$, p , the probability of a multiple birth, being calculated from the total number over both groups in the four years. The distribution in the T group differs significantly from that in the S group ($\chi^2_6 = 15.17$, $P < 0.01$, obtained by grouping the 3- and 4-twin cells together). The mean number of lambs dropped per ewe in the T group over the 4 years was 5.16, compared with 4.13 in the S group.

The observed distribution on the total of the two groups also differs significantly from the expected ($\chi^2_3 = 27.35$, $P < 0.001$), with an excess in the classes of 0 and 3 or 4 births.

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By recording the number of lambs dropped at a parturition as 0, 1, 2 or 3, it is possible to perform an analysis of variance with terms for between sheep, between years, and error, and from these to estimate the between sheep (σ_s^2) and error (σ_e^2) components. **The** repeatability of number of lambs dropped at successive parturitions

by the same ewe, $R, \left\{ = \frac{\sigma_s^2}{\sigma_s^2 + \sigma_e^2} \right\}$ was calculated as 0.30, which, though small, is significant. Only the 4 years after selection, **and** not the initial 2 years, were included in computing **R**.

There is thus evidence that twinning performance at initial lambings can be an indicator of subsequent performance. **In** the present case, the base ewes were 5 and 6 years old at the initial lambings, which is too old to be of any great value for selection in commercial flocks. Performance at earlier, ages will be studied as the experiment proceeds, and the work will be reported more fully elsewhere.