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A   S T U D Y   O F   T H E   I N H E R I T A N C E  
O F   S O M E   P R O D U C T I V E   T R A I T S  
I N   P E R E N D A L E   S H E E P

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## A C K N O W L E D G E M E N T S

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K.H.E.

# A B S T R A C T

Genetic parameters were estimated using 3,313 half-sib records from 62 sires and 1720 daughter-dam pairs. The data used were obtained over the period 1957 to 1972.

The estimates of heritability by paternal half-sib and daughter-dam regression analysis were respectively:- weaning weight (0.20 and 0.16); hogget body weight (0.27 and 0.44); fleece weight (0.32 and 0.30); quality number (0.26 and 0.31); fibre diameter (0.54 and 0.47); staple length (0.49 and 0.35); character (0.23 and 0.23). An estimate of 0.03 was obtained for lambs weaned/cwe lambing (LW/EL) by the daughter-dam regression analysis from 665 daughter-dam pairs.

Estimates of genetic correlations were in the following ranges:-

Medium negative (-0.4 to -0.6)	..	Hogget body weight with character. Quality number with staple length.
Low negative (-0.2 to -0.4)	..	Weaning weight with quality number, fibre diameter and character. Quality number with fleece weight and fibre diameter.
Low positive (0.2 to 0.4)	..	Hogget body weight with weaning weight and quality number. Staple length with character.
Medium positive (0.4 to 0.6)	..	Fleece weight with fibre diameter and character.
High positive (0.6 and over)	..	Fleece weight with staple length.

Phenotypic and environmental correlations were also estimated. Phenotypic correlations generally agreed with the genetic correlations. Important exceptions were hogget body weight with fleece weight, staple length and fibre diameter.

Among the environmental factors studied, age of dam and rearing rank effects for the wool traits were generally small. These effects had a marked influence on weaning weight and hogget body weight. At weaning, singles were 4.2 kg heavier than twins, while at 14 months this difference had been reduced to 2.1 kg. When comparing a two-year-old and mature age of dam effects, a 1.44 kg difference at weaning in favour of the mature age of dam reared animals, was reduced to a 1.11 kg difference at 14 months.

The estimated parameters and environmental effects were discussed with reference to their implications in selection programmes.

Relationships between hogget traits and the ewes life-time production (four consecutive years) were analysed. Records from 458 sheep were used.

Correlation coefficients indicated that hogget fleece weight, quality number, fibre diameter and staple length were good indicators of lifetime ewe performance for these traits. The results indicated that a poor relation exists between hogget body weight and number of lambs weaned by the ewe over four lambings.

A regression analysis of hogget traits on life-time economic value of the ewe indicated that fleece weight and hogget body weight were the most important variables influencing life-time economic value.

Implications of the results were discussed with reference to selection and culling programmes at the hogget age in ram breeding and non-ram breeding flocks.

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