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On the correlation between number of mammæ of the dam and size of litter in mammals. II. Intraracial correlation in swine.

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The data here discussed regarding the intraracial correlation between mamma number and size of litter in Duroc Jersey swine were furnished me by Professor E. N. Wentworth, formerly of the Iowa State College. I take this opportunity of expressing my appreciation of this kindness. The material was collected in the course of Professor Wentworth's studies on the inheritance of mamma number.[2] In the case of 13 out of the 57 dams recorded data are available for the size of two successive litters, namely those of 1911 and 1912. In these cases, in order to avoid unequally weighting the table because of the fertility of the dams, each dam has been entered in Table I once only, the litter size entered being the mean of the two successive litters.

The ungrouped data are given in Table I.

TABLE I.

SHOWING THE INTRARACIAL CORRELATION SURFACE FOR THE VARIABLES (*a*) NUMBER OF MAMMÆ OF DAM, AND (*b*) SIZE OF LITTER, IN SWINE.

Mammæ of Dam.	Size of Litter.														Totals.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
10	1	—	—	1	1	2	1	3	2	4	3	—	—	—	18
11	—	—	—	—	—	3	—	1	1	—	2	—	—	1	8
12	—	—	—	—	—	—	5	4	4	3	4	1	3	—	24
13	—	—	1	—	—	—	—	—	—	1	3	—	—	—	5
14	—	—	—	—	—	1	—	—	—	—	1	—	—	—	2
Totals.....	1	0	1	1	1	6	6	8	7	8	13	1	3	1	57

In dealing with this table slightly different methods were used than in the case of the interracial correlation.[3] The classes of both variables have been assumed to center at the points given by

[1] Paper No. 53.

[2] *American Naturalist*, Vol. XLVII, pp. 257–279, 1913.

[3] Cf. these PROCEEDINGS, Vol. X, p. 31, 1913.

the actual counts. In other words it has been assumed that we are dealing here with strictly integral variates. This assumption seems justified for the present material, but not for the interracial material of the previous paper.

The constants deduced from Table I are given in Table II.

TABLE II.

CONSTANTS OF VARIATION DEDUCED FROM TABLE I.

Character.	Mean.	Standard Deviation.	Coefficient of Variation.
Number of mammæ.....	11.39 ± .10	1.12 ± .07	9.84 ± .63
Number of young at birth....	8.88 ± .23	2.54 ± .16	28.63 ± 1.95

Coefficient of correlation $r = 0.195 \pm .086$.

From this table the following points are to be noted.

1. There are approximately 2.5 more mammæ in the dam, on the average, than number of young in the litter in these swine. This is a slightly larger "factor of safety" than is found interracially.

2. The intraracial correlation between these variables in swine is not only absolutely low, but is relatively much lower than the interracial correlation. Again it is not apparent here that natural selection has operated in the expected manner.

3. Intraracially, just as interracially, size of litter is relatively a more variable character than number of mammæ in the dam.

4. There is, as would be expected, a very considerable reduction in variability, in respect of both characters, in the single species (intraracial) as compared with the composite group of 90 different species (interracial).

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The effect of animal extracts upon the volume of the spleen.

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We studied the volume of the spleen with an oncometer attached to a modified piston recorder. The animals employed