FURTHER DATA ON LINKAGE BETWEEN SHORT-EAR AND MALTESE DILUTION IN THE HOUSE MOUSE

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AMONGST this laboratory's stocks of inbred mice maintained segregating in several factors are two (lines 4 and 17) segregating for the very closely-linked genes short-ear (*se*) and Maltese dilution (*d*). Inbreeding has been carried on in both of these lines with backcrosses in coupling for this pair of genes and to date, the following linkage data have accumulated.

Source	Sex of heterozygous parent	Offspring				Total	χ^2 (segregation)
		se d	++	*se* +	+ *d*		
Line 4	♀	477	551	0	0	1028	5·33
		336	416	2	1	755	8·51
Line 17	♂	562	609	1	1	1173	1·89
		465	512	1	0	978	2·26

The segregation ratio, short-ear dilute *versus* normal mice, is independent of the sex of the heterozygous parent and is not significantly different in the two inbred lines. It is only in line 4, however, that there is a significant deficiency of short-ear dilute mice, a deficiency which can be attributed to the lower viability of homozygous short-ear animals (Snell, 1928). Six crossovers observed in a total of 3934 gametes yield as an estimate of the recombination value, $0{\cdot}00152 \pm 0{\cdot}00062$.

Castle, Gates, Reed and Snell (1936) have given comparable linkage data from coupling backcrosses and Snell (1928) has reported data collected by Miss Copeland and himself from repulsion backcrosses as follows :

Source	Sex of heterozygous parent	Offspring				Total	χ^2 (segregation)
		se d	++	*se* +	+ *d*		
Castle *et al.* (1936)	♀	792	827	0	2*	1621	0·76
	♂	68	67	1	0	136	0·01
Snell (1931)	♀	0	1	482	536	1019	2·86
	♂	0	0	57	64	121	0·40

In these data, four crossovers were found in 2897 gametes, giving as an estimate of the recombination value, $0{\cdot}00138 \pm 0{\cdot}00069$, a value which is slightly lower than but not significantly different from that reported above.

The two long-eared dilute mice found by Castle *et al.* occurred in the same litter and were taken by those authors to be identical twins. However, Stevens (1937) has shown that pairs of identical twins, if they occur at all in mice, are not more frequent than about seven per thousand, a frequency comparable with that of crossing-over between the short-ear and dilution loci.

On the basis of the recombination value, the new data given above tend to support the view that the two long-eared dilute mice of Castle *et al.* were independent cross-overs rather than identical twins.

On this view, the combined data show ten crossovers in 6831 gametes, yielding for the estimate of the recombination value for short-ear and dilute, $0{\cdot}00146 \pm 0{\cdot}00046$. For the separate sexes, the estimates of the recombination value are $0{\cdot}00136 \pm 0{\cdot}000175$ in females and $0{\cdot}00166 \pm 0{\cdot}00262$ in males.

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