T4-9$_{5657-2}$ (4L.33-9S.25) and in homozygous T6-9e (6L.17-9L.22). In the second case the break is in 9L so a centromere effect is ruled out. No explanation can be advanced at present for the change in recombination frequencies in the homozygous T6-9b.

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4. Test for pseudoallelism at the A_2 locus.

A total of nine possible mutants (A_2) were obtained among 179,500 seeds from crosses of Gl_{17} $a_2^{Bl\ Mex}$ Bt V_2 / gl_{17} a_2^{St} bt V_2 yy ♀ X gl_{17} a_2^{St} bt Pr v_2 Y ♂ (see MNL 34, page 65). The phenotypes of these nine individuals and the results from selfing are shown below:

	Plant phenotype						⊗ Ear
1	Gl	A	Bt	Pr	Y		seg bt and sh, no v; red cob
2	Gl	A	Bt	Pr	y	(on same ear)	not seg bt or v
1	Gl	A	Bt	Pr	y		seg bt, no v; red cob
*1	Gl	A	Bt	Pr	y		seg bt, seg v; white cob
1	?	A	Bt	Pr	y		(no germination)
1	gl	A	bt	Pr	y		(hoed out)
*1	gl	A	bt	Pr	y		seg v
1	?	A	bt	Pr	y		(no germination)

The two cases which appear not to be contaminants are non-recombinants for the adjacent markers, one being Gl Bt, the other gl bt. They probably represent mutations of a→A. The reverse mutation rate of the two a alleles used in the experiment has not been tested. This experiment failed to demonstrate intra-cistron recombination.

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5. Evidence for the chiasma theory of metaphase pairing.

On the chiasma theory of metaphase pairing post-diplotene association is due to the presence of chiasmata which arise from prior crossover events. This theory is believed to be generally valid although in some forms, notably Drosophila, other mechanisms are responsible for association of the two homologues until anaphase separation. There is, however, considerable evidence in maize which indicates the essential correctness of this theory. Data of two kinds are available.