Plants homozygous (Families 25127, 130 and 132) for In 3c and heterozygous for the gl_6 lg_2 a_1 loci were testcrossed as the egg parent to give the following data:

(0)	a	Lg	Gl	962	(2)	a	Lg	gl	323
(0)	A	lg	gl	1005	(2)	A	lg	Gl	330
(1)	a	lg	gl	619	(1-2)	a	lg	Gl	104
(1)	A	Lg	Gl	633	(1-2)	A	Lg	gl	124

Σ = 4100 A-Lg = 36.1% Lg-Gl = 23.9%

It is clear that all three loci lie within the inverted segment. This is expected from what is known of the cytological position of these genes. The A_1 locus lies distal to point .75 (In 3b) and proximal to point .95 (In 3a). The gl_6 locus is proximal to point .25 (In 3b) and distal to .05 (In 3c). (As we stated earlier, the proximal break in In 3c has not been exactly determined but it is very near the centromere.) The crossover values from homozygous In 3c plants permit a study of the effect of the centromere on crossing over in adjacent regions. The Drosophila data indicate that distal regions brought near to a centromere have a greatly reduced frequency of crossing over. In the present study the Lg-A region normally out in the distal portion of the long arm of 3 is placed close to the centromere and the proximal Gl-Lg region is far removed from the centromere. However, the crossover values in homozygous In 3c plants for the Gl-Lg and Lg-A regions do not differ significantly from those in plants with structurally normal chromosomes 3. The data in maize, therefore, do not agree with those from Drosophila and emphasize the danger of generalizing about centric effects on crossing over from experiments with one organism.

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2. Recombination values between the centromere and three loci in the short arm of chromosome 2.

In the 1956 News Letter data were presented which indicated that the unreduced eggs produced by homozygous el plants arose by the failure of the second meiotic division. It was further argued that for a locus very near the centromere the percentage of diploid eggs homozygous for the recessive allele would be 50 and that the frequency of homozygosis could be used to measure the recombination value between a given locus and its centromere. The percent of recombination was determined in this way for the wx and sh loci in chromosome 9 and for the lg_2 and A_1 loci in chromosome 3. However, it seemed desirable to test the method by studying the homozygosis percentages for three loci, all of which were located in the same chromosome arm. Accordingly, plants homozygous for el and heterozygous for the ws_3, lg_1, and gl_2 markers, all known to reside in the short arm of chromosome 2, were used as the female parent

in testcrosses. The triploid offspring coming from these crosses were scored for the three marked loci.

el el $\frac{ws\ lg\ gl}{+\ +\ +}$ ♀ X ws lg gl ♂

Triploid Progeny

+ + +	371			
ws lg gl	28			
ws + +	10	13.3% lg_1	lg_1-centromere	36.7% recombination
ws lg +	12			
ws + gl	2	17.5% gl_2	gl_2-centromere	32.5% "
+ lg +	0			
+ + gl	30			
+ lg gl	23			
	475			

The recombination values are in the anticipated order and indicate that the method, although laborious, has some merit. It should be pointed out that although the homozygosis percentages were obtained from triploid plants, not all of them had 30 chromosomes. A few of the plants with 29 chromosomes could have arisen from 19 chromosome eggs having only one chromosome 2.

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3. Further studies with T6-9b.

Genetic studies with T6-9b (breaks 6L.10-9S.37) reported in previous News Letters have shown that the frequency of recovery of T chromosomes from backcrossed T/N plants is 50% when the heterozygote is used as male parent, but only 31.5% when used as female parent. This observation was confirmed by crossing the translocation stock to five unrelated stocks and testing transmission rates in different backgrounds(Table 1).

Table 1. Transmission frequencies and recombination in T/N pistillate parents carrying N chromosomes from five different sources.

Female parent in B.C.	% T marker	% C-Wx recombination
T/ chr 3 tester	31.3	5.1
T/ chr 9 tester	31.5	2.8
Bl Mex/ T	33.9	5.2
chr 10 tester/ T	34.3	3.8
chr 6 tester/ T	40.2	12.4