$\frac{Rg\ gl\ lg\ a}{rg\ +\ +\ +}$ X rg gl lg a Σ = 1165

(0)	(0)	(1)	(1)	(2)	(2)	(3)	(3)	(1-3)	(1-3)	(2-3)	(2-3)	(1-2-3)	(1-2-3)
Rg	rg	Rg	rg	Rg	rg	Rg	rg	Rg	rg	Rg	rg	Rg	rg
gl	+	+	gl	gl	+	gl	+	+	gl	gl	+	+	gl
lg	+	+	lg	+	lg	lg	+	+	lg	+	lg	lg	+
a	+	+	a	+	a	+	a	a	+	a	+	+	a
256	270	4	7	89	97	196	162	2	4	38	39	1	0

Rg-gl = 18 ÷ 1165 = 1.5%
gl-lg = 264 ÷ 1165 = 22.7%
lg-a = 442 ÷ 1165 = 37.9%

Order is Rg gl lg a.

These data together with those from the lg-na-a backcross and from linkage data previously reported give the following linear order of genes in the long arm of chromosome 3, which is one of the best-marked arms of the maize chromosomes.

$$Rg\ \ gl_6\ \ ts_4\ \ lg_2\ \ na_1\ \ a_1\ \ sh_2\ \ et\ \ ga_7$$

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4. Tassels with 4N sectors.

In the course of pollen examination in a backcross population segregating for a translocation, it was noted that many tassels were sectored for two types of anthers. One type had small grains of the usual size and the other had larger grains. In plants expected to be heterozygous for the translocation, the first type of anther showed 50% abortion but the second type had mostly normal grains. Three plants were used as males in crosses to a 4N pr stock. Two of these carried the translocation and the other had normal chromosomes. The resulting ears had many plump seeds as well as some shrivelled seed. One ear had all Pr seed while the others were segregating Pr and pr. Ratios of 62 Pr: 15 pr and 91 Pr: 24 pr indicate the pr allele was in duplex as would be expected if doubling had occurred in a Pr/pr plant. Apparently the tassels contained tetraploid sectors. No such sectors were found in related material the previous year. The population in question was located downhill from an experiment involving treatment of seeds with various chemical mutagens. It is possible that washing of these chemicals affected the developing tassels and caused somatic doubling.

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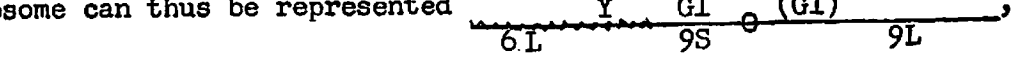
5. Linkage of Gl_{15} and Y_1 in homozygous T6-9b.

A population of 1070 plants from a backcross of y T Gl wx c / Y T gl Wx C was found to give 34.3% recombination for C-Wx, 7.3% Y-Gl recombination and independence of Wx-Y and Wx-Gl. The 9 chromosome can thus be represented 

,

with Y in 6L and Gl close to the centromere either in 9S or 9L.

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6. Linkage of oy.

The data listed below come from crosses of oy R kl0/ Oy r Kl0 females with oy R kl0 males. Two types of kernels were produced, R R R and r r R. The r r R class is more frequent because of preferential segregation. There is no evidence of preferential segregation of oy or of linkage of oy and R.

	R R R		R r r	
	Oy	oy	Oy	oy
22843 X 23063	138	140	399	407

Because of the negative results obtained above, a further test of the location of oy on chromosome 10 was made. Plants trisomic for chromosome 10 were crossed to an oy stock and the trisomic F_1's were used as male parents in the backcross to oy. Five different male parents gave ratios of green to oil yellow as follows:

	Oy	oy
24610-4	59	21
24610-11	56	22
24610-13	190	110
24612-12	42	23
24612-15	70	27
	417	203

The total of 417 green to 203 oil yellow indicates that oy is located on chromosome 10, as was reported by E. G. Anderson (MNL 25,1951). Although abnormal 10 is present in the trisomic stock, no distortion of ratios is expected since male gametes were tested. A stock of du, which is 20 units proximal to R, was obtained from H. H. Kramer and will be crossed to oy for more precise location. The information given here indicates that oy is either in 10S or is close to the centromere in 10L.

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