The effect of background is still not clear, but may be slight (note 1956 data alone).

Outcross tests clearly show a high frequency of maternal haploid parthenogenesis, but not of the same magnitude as in self progenies:

Stock 6 (R^g) X R^r

Year	Haploids	Total	% Haploids
1955	6	1,085	0.55
1956	186	21,196	0.88
Both years	192	22,281	0.86

The percentage above may be a little below the true frequency, as it has been found that stock 6 occasionally shows a weak $\underline{R}^r$ expression. For $\underline{R}^r$ X stock 6, however, no difficulty in classification was experienced:

R^r X stock 6

R^g haploids	Total
0	6,946

No sperm-derived haploids were found. Haploid androgenesis probably does not contribute significantly to the high percentage of haploids in selfs.

A very high frequency of heterofertilization occurs in the line, and may be associated with the production of haploids.

5. <u>Test for non-homologous crossing-over in translocation heterozygotes</u>.

The test reported last year is negative. The single case proved to be spurious.

6. <u>Ds and sticky</u>.

Cross:

$$\frac{c\ sh\ wx}{c\ +\ +}, \frac{+}{st}, ac \ X \ \frac{C\ +\ +\ Ds}{c\ +\ +}, \frac{+}{st}, ac$$

compared with:

$$\frac{c\ sh\ wx}{c\ +\ +}, \frac{+}{st} \quad X\ \frac{C\ +\ +}{c\ +\ +}, \frac{+}{st}$$

No cases of activation of Ds by st were found in 1,818 kernels, where 1/16 are observable for concurrent losses of C Sh Wx on st kernels. Thus st does not carry Ac, and its effect of increasing stickiness in chromosomes does not result in massive activation. Whether this may be significant to the concept of Ds as consisting of modified heterochromatin is difficult to judge, but should be considered, in view of the "sticky" property of heterochromatin.

On one ear of the control cross, unusually strong st expression (pitted kernels) was found. Here, there were numerous non-concurrent losses of C and Wx, demonstrating clearly that st can result in endosperm mosaics.

7. High-amylose factors.

The ha gene reported by Kramer, and the ha_m gene (to be designated ha_2) both interact strongly with wx, giving highly collapsed kernels, variably translucent, very similar to bt_1 kernels. The effect of ha_1 is much greater than that of ha_2; in fact ha_1 wx kernels have a small amount of blue-staining starch, while ha_2 wx kernels do not. This property of ha_1 wx is similar to that reported for ae wx (News Letter 26: 5, 1952). The phenotypic effect of ha wx combinations suggests that new ha factors might best be sought on a waxy background, where their effects are easily distinguished phenotypically.

Using this interaction, the linkage of ha_1 with chromosome 5 has been confirmed, where wx T5-9c/Wx ha_1 X wx ha_1 shows very few collapsed kernels (4-5%). Linkage of ha_2 with chromosome 10 is also clear. Chromosomes 1, 2, 3, 4, 5, 6, and 8 show independence ratios with waxy translocations, but wx T9-10b/Wx ha_2 X wx ha_2 shows the following:

	Normal	Waxy	Tarnished	Collapsed
ear 1	(1)	53	(60)	1
ear 2	(5)	140	(122)	2
	(6)	193	(182)	3

9/384 = 2.3% crossing over, wx-ha_2, across translocation. Anderson (Genetics, 1938) reports wx-T as 5.7 units. The Ha Wx and ha Wx kernels are difficult to distinguish with certainty.

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8. Allelism and mutability of anther-ear 6923.

The an_{6923} mutant discussed last year has been tested and found allelic to an_1, as suggested (News Letter 30: 100, 1956). Since it is also allelic to bz_2^m, which responds to Ac (or M), a test of the