expected 1:1 ratio. Excluding the two highly significant ears, the sample was a rather uniform one as can be seen by the breakdown of the X^2:

	D.F.	X^2
Sum of 59 X^2	59	55.16
Pooled X^2	1	0.31
Heterogeneity	58	54.85

All three ears with significant X^2 had an excess of yellow kernels. The two ears with a highly significant X^2 gave a segregation of 0.59 yellow: 0.41 white. Since there is no reason to admit that these plants should have preferential crossing between them, this excess of yellow kernels must be due to some amount of selfing. It can be shown that in order to give that proportion of yellow and white kernels these two plants probably had about 36% of selfing.

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2. Some preliminary results on the effect of inbreeding on viability and variability in corn.

Morton, Crow and Muller (1956) gave a method for estimating the number of deleterious equivalents carried by a zygote in a given population, and we started work with this method in maize making crosses and selfings within a population of the race Cateto, in order to obtain different levels of inbreeding. 52 plants were selfed (F = 0.5) and at the same time outcrossed at random with individuals of the same population (control, F = 0.0). Some preliminary results can be reported:

a) Effect on viability as measured by germination rate - About 89% of the progenies obtained by selfing showed a nearly perfect germination, as did all those obtained by outcrossing, and 11% showed a decrease in germination of about 13%, i.e. a germination rate of 87%.

b) Effect on variability of seedling height

b.1) Seedling height (seedlings one week old) was measured in the greenhouse. In general, those progenies which showed decrease in germination rate, showed also a greater variability in height of the survivors. Thus it can be concluded preliminarily and for this material, that those genes, which act in increasing mortality of seedlings, are polygenes with a general deleterious effect on biological activity, showing cumulative effects.

b.2) The squared coefficient of variability $(C.V.)^2$ for height, within selfed progenies, ranged from 67.2 to 1444.0 while for the outcrossed the range was from 62.4 to 285.6.

b.3) As was shown by A. Robertson (1952), dominant genes act by increasing genotypic variability within inbred lines in the first generations of inbreeding (when compared to random mating conditions). Additive genes act decreasing the genotypic variance within inbred lines. In the present case it was observed that:

b.3.1) 26 progenies, obtained by selfing, showed a greater $(CV)^2$ than the respective "controls", which may be the result of the action of recessive genes in homozygous condition and also perhaps the result of homeostasis of the "controls".

b.3.2) 12 of these showed a significantly lower $(CV)^2$ than the "controls". This can be explained, if we assume that additive genes diminished the genotypic variability within inbred lines, in accordance with Robertson's argument.

b.3.3) 14 of the progenies obtained from selfing remained with the same variability as the "control" progenies. An equilibrium between dominant and additive genes can perhaps explain these observations.

The experiment will be repeated in order to obtain further supporting results.

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1. Crossing over and disjunction in trivalent configurations containing corn-Tripsacum interchange chromosomes.

In a 21 chromosome stock in which a portion of the short arm of the distal region of chromosome 2 has been exchanged for a corresponding region of a Tripsacum chromosome, trivalent configurations are found in 95-98 percent of sporocytes at pachytene. These trivalent configurations