2. Competitive pollen tube growth.

Competitive pollen tube growth studies provided by making use of pollen mixtures from yellow and white sources were reported previously (M. N. L. 1958; 1959). Pollen mixtures in which one or the other component was doubled in amount were studied and the results indicate that where the superiority of say the yellow component was clearly observed when equal amounts of the two components were used, the yellow pollen retained its superiority significantly even though the pollen from the white source was doubled in amount. Hence, it would appear that slight differences which would normally occur when making up pollen mixtures would not affect the results materially, and that the differences observed in such studies must be mainly of a genetic nature.

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3. Pollen tube growth and combining ability.

As reported in a previous number of the newsletter, our studies on the behavior of maize pollen in pollen mixtures (from plants carrying different endosperm colors) led us to suspect that a correlation existed between combining ability and the capability to produce an excess of progeny over that of the other pollen in the mixture. Certain Russian workers reported the same suspicion. This has been tested in a pollen mixture and yield trial experiment with 103 entries. It was found that no such correlation existed between the ratios of kernels produced by the two types of pollen and the ratios of the yields of the pairs of progenies. A significant correlation was found, however, between the ratios of progenies produced on different female parents by the same pollen mixture and the ratios of the progeny yields.

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4. Comparison of two methods for estimating additive and dominant components of genetic variance for yield.

In an experiment designed to test five open pollinated South African maize varieties for differences in additive (G) and dominant (D) components of genetic variance for yield, two methods were used. The first method was based on a comparison of intra-class correlations of full sib and half-sib families as proposed by Fisher (1918) as reported in last year's newsletter. The second method used is similar to that of Comstock and Robinson using biparental progenies, analyzed according to the method developed by Comstock and Robinson (Biom. 4:254). The results of both methods are given in table 1.

Table 1. Estimates, derived from two methods, of dominant (D) and additive (G) components of genetic variance for yield in different varieties of maize.

	First method (full sib-half sib comparison)			Second method (biparental progenies)		
Variety	No. of Progenies	D	G	No. of Progenies	D	G
Anveld	48	13.00	3.60	60	-2.48	6.84
Teko	52	1.20	7.72	116	-0.44	4.96
Sahara	48	-5.64	7.92	72	0.20	4.20
Robyn	48	0.12	8.20	80	11.16	0.16
American white flint	58	-6.92	4.16	75	-4.88	9.64