1. Concealed variability in South African maize varieties.

To determine the extent of concealed variability in different varieties of maize 25 locally grown open-pollinated commercial varieties including yellow and white dent and flint types, were used. Approximately 100 ears, taken at random in each variety were selfed. These selfed ears were examined and scored for defective endosperm and viviparous kernels. Thirty to forty kernels of each ear were subsequently germinated in the greenhouse and classified for recessive seedling mutants. The remaining kernels were planted in the field and the resulting plants observed for certain mature plant mutant characters.

The frequency of selfed families segregating for various recessive mutants in each of the 25 varieties is given in the table. Generally distinct 3:1 ratios were obtained.

It is interesting to note that the two synthetic varieties contain less concealed variability than the others.

A beginning has been made in testing for allelism of the mutants obtained in different varieties. The virescents of all the varieties were found to be allelic except those in White and Pale Boesman. Most of the glossies appear to be non-allelic. At least two distince loci condition striped seedlings. All the liguleless mutants were found to be allelic. The two lazies were likewise allelic. The dwarfs were transmitted at several different loci.

In the present season additional observations were made. A group of 932 S_1 lines derived at random from the variety Early Potchefstroom Pearl contained the following recessive mutants segregating in 3:1 ratios:

mutant	no. of separate occurrences
tassel-seed	30
male sterile	9
liguleless	3
brachytic	4
fine stripe	4
zebra	1
brown midrib	1