15. Instability of the α and β components of the A_1 locus.

A rather large population of A^b Sh_2 et/a-x2 Et plants, which were pollinated by a sh et in order to determine the types of mutants that would be produced without the conventional type of crossing-over, yielded a single dilute Sh seed with frequent full colored dots. Using Laughnan's α β designation of the components of the A^b locus this case appeared to be a change of β to an unstable recessive form while α remained unchanged. When the dilute mutant was placed in a marked heterozygote with a null allele for the a locus (α β^m Sh/a^s sh), and backcrossed to the recessive (a^s sh), four colorless Sh dotted seeds were obtained. Each appeared to have lost α but retained the unstable β. Subsequent tests showed that they had lost the dominant brown pericarp effect that is characteristic of α. There were no genetic markers to the left of α so there was no way of determining whether the loss was by mutation or by crossing over. These cases probably are examples of an unstable β by itself.

Another type of change was observed in two cases from α β^m. This type was colorless Sh but had both dilute and full colored sectors suggesting that both α and β had become unstable. The tests for pericarp color revealed that they retained the dominant brown expression of α. There is some indication that mutability of these components may be influenced by a second factor, but in any case it is neither Dt nor Ac.