recessive alleles. The frequency of the mosaic rogues is suppressed by temperatures above 80° F or when reciprocal crosses of the rogue in the Stringless Refugee background are made with the Bush Blue Lake variety.

One of the best known recurrent off-types is the "rabbit ears" rogue of garden peas that produces plants with pointed leaflets, upward-curving pods with fewer seeds, and narrow stipules (BATESON and PELLEW 1920). Self-fertilized rogue plants produce only rogues and all progeny of reciprocal crosses of rogue to "crop-type" are rogues. Selfs of these progeny continue to maintain the rogue phenotype. Progency of backcrosses, however, begin development with an intermediate phenotype but progressively change to "rabbit ears" in successively higher nodes. In most cases the change to rogue character is completed before formation of the floral nodes but in occasional plants flowers from the basipetal inflorescences transmit both the rogue and crop-type traits. In the same flower transmission of the crop-type phenotype is more frequently passed through the female gametes than by the pollen.

In 1923 BROTHERTON crossed "rabbit ears" rogues in the variety "Gradus" by the "English Mummy" variety, a line which never produces rogues. From these crosses and subsequent F_2 generations it became evident that the rogue plants were distinguished from crop-type plants by a single dominant mendelian factor. Even in heterozygotes with "English Mummy" there was some indication of a conversion of the recessive allele to the rogue character but at a much lower rate that observed in "Gradus". The tendency of the second allele to be converted following mutation of the initial allele is a common feature of some recurrent off-types in other species.

MANGELSDORF (1974) listed a number of reports of recurrent mutations that had been noted in established inbred strains of maize. As Mangelsdorf had studied mutations that arose as a result of corn-teosinte hybrids, he ascribed these mutations to introgressed teosinte germplasm residues remaining in the maize lines. SINGLETON (1943) studied a reduced stature variant identified in P39, a well-established sweet corn inbred. Although he did not stipulate that it was a recurrent mutation in P39, our own observations suggest that this is likely to be the case. The variant appeared to behave as a simple recessive trait but it showed an unexpected heterotic effect compared with the parental line when outcrossed to two other lines. SINGLETON (1914) also reported that when new inbred lines were "extracted" from crosses of reduced plants back to P39, a number of novel mutations were found -- all showed mendelian inheritance. Similar variants with simple inheritance were also examined by JONES (1945) in other inbred lines. It is unclear whether any of these were recurrent mutations, but at least one inbred, CI Kr 187-2, had a high propensity for producing variants. Jones found that all six variants he studied exhibited a heterotic effect when backcrossed to the parental line. Later SCHULER (1954) re-examined the question of heterosis resulting from single gene differences and concluded that in all cases the variants were likely to have also differed