5. Chimera in maize.

A corn plant, 6-601-7, was accidentally found in the corn field of the Blandy Experimental Farm, University of Virginia, in the summer of 1956 which possessed chimerical branches on its tassel. The normal diploid branches had the 2n number 20, while the chimerical branches were tetraploid, having 40 chromosomes in their pollen mother cells.

A detailed meiotic study was made on the tetraploid branches. Tetravalents in the form of rings, chains, or figures-of-8 were frequently found in diakinesis and first metaphase of the pollen mother cells. There was only one case out of 50 cells observed which had no tetravalent. One hexavalent, two octavalents, and two crosses-of-4 were found, which indicates that a reciprocal translocation is involved.

A morphological comparison between 6-601-7 and its sister plants was made. No gross morphological differences were found, but the spikelets and the florets of the tetraploid branches were slightly larger than those of the diploid branches.

15 seedlings, siblings of plant 6-601-7, were examined cytologically; all had somatic numbers of 20. The ear resulting from selfing of plant 6-601-7 had a full set of kernels. The progeny will be tested in 1957.

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1. Effects of the genes du and su_2 in sweet corn at eating stages.

These two genes have been introduced, separately, into several inbreds including P39A; P51B; Iowa 45, 2000, and 3001; Conn. 22 and 68; Maine 23 and 41; and into the varieties Hayes White and Luther Hill. Most of the lines have been carried through 4 backcrosses and 3 or 4 selfing generations. Studies of carbohydrate balance at eating stages in several of these inbreds indicate that the gene effects vary with the background. Table 1 shows the sucrose, water-soluble polysaccharide, and starch levels found at 5 sampling dates. On P39A background, sucrose was higher at each date when du or su_2 was homozygous than when they were absent; on the Connecticut 68 background these genes made little consistent difference in sucrose levels.