Inheritance of Accessory Involucre Mutant in American Upland Cotton, *Gossypium hirsutum* L.  

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A MUTANT plant was found by D. R. Hooton at the Cotton Field Station, Greenville, Texas, in 1935. This mutant, included in H. C. McNamara's collection of Heritable Abnormalities as number 7, has since been known by the designation HA7. The HA7 genetic stock has been maintained in cotton genetic collections, and its use as a genetic tool has increased in recent years. However, the value of this mutant as a genetic stock has been limited, because its existence has not been formally announced and its mode of inheritance has not been recorded in the literature. In 1948 a manuscript on results of inheritance studies with this mutant was prepared but it has never been published. Extensive use of HA7 in genetic experiments at College Station has resulted in an accumulation of current data on its inheritance. Furthermore, data from the unpublished manuscript mentioned above were made available. The older data have been combined with the current data in the preparation of this report.

In populations or stocks involving the HA7 character, first indication of the mutant expression is that veins at the base of the leaves are parallel which results in a constriction and folding of the leaf surface (Figure 1). As fruit forms begin to develop, further manifestation of the mutant character can be noted through the absence of the calyx and the presence of three trumpet-like growths (Figure 2), one between each of the bracts and enclosed by them. As fruits develop their carpel walls are devoid of pigment glands. Fleshy appendages are formed at the base of the fruits (Figure 3). The trumpet-like accessory involucre, are the most striking and consistent feature of HA7 and the one which distinguishes it from other mutants of similar general appearance.

HA7 plants exhibit a high degree of female sterility (Figure 4) but are pollen fertile. Cytological analyses were performed by cytologists of the Cotton Improvement Group of the Department of Soil and Crop Sciences to detect possible cytological aberrations. Analysis indicated that mutant plants had normal chromosome complements and normal chromosome pairing.

F₁ hybrids between HA7 and normal cotton plants had normal leaf venation, boll glands, fertility, and calyx, but they exhibited rudimentary forms of the accessory involucre (Figure 5); and rudimentary form...