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1. Further studies on the inheritance of cob-rachis diameter.

The initial experiment conducted with cobs alone, as reported in last year's MNL, was repeated in part in 1968 to include tassel measurements together with those of the cob. This has led to the characterization of the two recessive genes involved in the thick cob of Iowa 5125 in terms of tassel morphology. One of the recessives results in high condensation in the tassel branches followed by reduced branching while the other recessive produces profuse tassel branching. An interaction between these two genes in the double recessive condition produces the thick cob and normal tassel of 5125.

Another genetic system produces thick cob in the northern flint derived races. This involves a third recessive gene which operates independently of the high "condensation--ramosa" system. It is suspected that the derived southern dents, like the Corn Belt dents, have acquired a combination of these two systems which would require the homozygous recessive condition at the three major loci concerned.

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2. Cytogenetic correspondence of corn chromosome 9 and its *Tripsacum* homeolog.

The assemblage of loci on a *Tripsacum* chromosome (no. 7 or 8, see item 8) is closely similar to that on corn chromosome 9. Of the 8 loci tested with markers yg_2 , c_1 , sh_1 , bz_1 , $wx:gl_{15}$, bk_2 , bm_4 , all are common to the two homeologs. Many other loci are probably also common between these chromosomes because the *Tripsacum* chromosome may substitute for its homeolog in the corn genome. Pachytene analyses of addition disomics ($2n = 20 + 2$) have shown that this *Tripsacum* chromosome has a total length of 34.0 microns with an arm ratio of 4.0:1.0. Its long arm is terminated by a large knob. Both in its length and arm ratio, this chromosome differs from chromosome 9 of corn which is about 43.0 microns long and has an arm ratio of 1.8:1.0.