

4. Scutellum colour factor in short arm of chromosome 4.

Crosses of TB-4a on A158T reveal that a factor for scutellum colour is present in the segment of the short arm of chromosome 4 that is translocated to the B centromere region, namely the distal $3/4$ portion of the arm (the breakage point is proximal to su_1).

Table III. Results of crossing TB-4a on A158T.

No. of ears	No. of kernels			
	small		large	
	coloured scutellum	colourless scutellum	coloured scutellum	colourless scutellum
6	1899	0	369	437

These data suggest that the scutellum locus involved is possibly S_1 of Sprague (1932), whose data showed linkage with su ; from the available data it seems also that S_1 is distal to such a marker. It is interesting to note, also, that, among the large kernels, those having a colourless scutellum are slightly heavier than the other ones (mg 0.152 against mg 0.140): this indicates that, as expected, their endosperm is hyperploid, and that such hyperploidy results in larger endosperm.

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1. "Curing" maize of its cytoplasmic male sterility.

Lederberg (Physiol. Rev. 32 : 403-430, 1952) suggested that cytoplasmic male sterility could be the result of an alien virus in the maize plant, and that the male sterility was the symptom of the infection. Many experiments are suggested by this hypothesis. For instance, it is known that the shock of high temperature may inactivate or kill a number of plant viruses and thus rid the plants of their infection. An experiment in which cytoplasmic male sterile maize

seedlings were subjected to heat shocks produced encouraging results in 1959 in the form of four plants apparently "cured" of their cytoplasmic male sterility. The experiment was repeated in 1960 without success. The "cured" plants in 1959 produced abundant pollen and two were detected in time to be selfed. However, no marker genes were present and it is possible that the fertile plants could have arisen in some manner other than as the result of heat shock. For the record it is proposed to record the procedures followed in 1959. Somewhat different equipment and seed stocks were used in 1960!

A flint-dent hybrid which has been consistently sterile with T-cytoplasm was used. Fifty seeds were planted on $3/4$ of an inch of sand and covered with a like amount of sand in $4-1/2 \times 4-1/2 \times 1-1/2$ inch cardboard germinating dishes. After planting, the dishes were watered and placed in an incubator at 25°C . for 48 hours. Hot tap water was then added to heat the sand, and the dishes were moved to a laboratory oven set at 45°C . for about 30 hours. The dishes were then removed to a table in a well lighted room and allowed to recover for a few days. The survivors, usually 10 to 20 seedlings per box were transplanted into the field when about 2 to 3 inches high.

From a total of 3100 seeds (62 dishes) run through this cycle, about 120 plants reached the flowering stage in the field and of these 4 shed pollen. Field conditions at flowering time were not those usually associated with the breakdown of cytoplasmic male sterility. The weather was very dry and unusually warm for this region at the time of flowering and many instances of male sterility in ordinarily fertile plants were noted. It is not likely, therefore, that a favorable environment contributed to pollen shedding.

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2. Homozygous variegated pericarp with heterozygous variegated phenotype.

A variegated ear was found in 1959 which was as heavily striped as, and indistinguishable from, heterozygous variegated in the same inbred background, but with the variegated cob of a homozygote. Wood and Brink (P.N.A.S. 42, 1956) have substantiated the earlier observation of Emerson that maize plants heterozygous for variegated pericarp and cob (P^{VV}) and a stable allele (e.g. p_{wt} ; colorless pericarp and red cob) bear ears which are more heavily striped than those from homozygous variegated. In the background of inbred Wisconsin 9 this difference is quite clear.