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1. The tunicate locus further dissected.

In last year's News Letter I mentioned the possibility that one of the components, tu^d, of the Tu locus is itself compound. This now clearly seems to be the case. The two tu^d mutants associated with the su Gl_3 crossover genotype, which occurred in our previously reported dissection experiment, are quite different, one being quite strong in various phenotypic expressions of tunicate characteristics the other much weaker. These facts suggest that the Tu locus may have three components, tu^1, tu^m, and tu^d. We have made crosses designed to isolate the middle component, tu^m, and may obtain the desired genotype from our winter planting in Florida. In the meantime we can be reasonably certain from other results that the three components differ in their effects. Table 1 shows seven different genotypes arranged in order of the degree of expression of various tunicate characteristics:

Table 1
Tassels of Certain Tunicate Genotypes Ranked in Order of Degree of Expression of Tunicate Characteristics

Rank	Genotype	Components	No. of Components
1	Tu Tu	1 md 1 md	6
2	Tu tu^{md}	1 md md	5
3	tu^{md} tu^{md}	md md	4
4	Tu tu^1	1 md 1	4
5	Tu tu^d	1 md d	4
6	tu^1 tu^d	1 d	2
7	tu^d tu^d	d d	2

Comparison of genotypes 4 with 5 (4 components) and of 6 with 7 (2 components) show that tu^{l} has a stronger expression than tu^{d}. A comparison of genotype 3 with 4 shows that md is stronger than ll and since l is stronger than d, it would seem to follow that m is stronger than either l or d.

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2. The identification of the pollen of maize, teosinte, and Tripsacum by phase-contrast microscopy.

Size characteristics, both of pollen diameter and the pore-axis ratio have been used in the past to distinguish the pollen of maize from that of teosinte and Tripsacum. Use of measurements alone involves difficulties and size characteristics are affected to some extent by environment. Morphological characteristics of the exine studied under phase-contrast light give more conclusive discrimination even when dealing with a few grains. The pollen exine, which with ordinary light microscopy appears smooth, is shown with phase-contrast light to be beset with spinules. In maize these are regularly spaced, in Tripsacum they appear to be in clusters, in varieties of teosinte and in a maize-Tripsacum hybrid the spacing is intermediate. Quite regular spacing occurs in the fossil pollens from the Belles Artes core taken from 74 meters below the present site of Mexico City and in the pollen from the lowest level of Bat Cave. Regular spacing is also characteristic of the pollen of the Ancient Indigenous races of Mexico, Nal-Tel and Chapalote and of the primitive Peruvian races, Puneño and Confite Morocho. Highly tripsacoid maize represented by the race, Huesillo, has a pattern similar to that of the most maize-like teosintes. Lines of A158 and 4R3 modified by substituting chromosomes of teosinte for those of maize are more teosinte-like in their spinule pattern than the original lines. Guatemalan teosintes are more tripsacoid in their patterns than Mexican teosintes. Both maize and teosinte are easily distinguished from Tripsacum. Not all maize can be distinguished from all teosinte, but primitive maize can usually be distinguished from strongly tripsacoid teosinte.

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