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 x 4-1/2 x 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 ($\underline{P}^{vv}$) and a stable allele (e.g. $\underline{P}^{wr}$, 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.

The homozygous variegated plant on which this ear arose was the result of 6 backcrosses of the standard Wisconsin P^{vv} allele into inbred W9 followed by three self-pollinations. Only one ear in a progeny of 8 homozygous ears showed the darker "pseudo-medium variegated" phenotype. The ear had been pollinated with P^{wr} in 1959 prior to its discovery.

A progeny of 32 ears was grown out in 1960 from this ear of which one was red and 31 were variegated confirming the homozygosity of the parent ear. The P^{wr} male parent had only been backcrossed to inbred W9 three times and so it introduced some variability into the background with the result that the expected medium variegated phenotype of the progeny was somewhat more variable than in a highly inbred background. The suggestion of two distinct classes of variegation was nevertheless thought to be present (14 ears with variegated pericarp darker than the other 17). Which class corresponded with the standard medium variegated could not be determined at once.

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3. Blushed pericarp.

The variegated ears in two parallel lines of the ninth backcross of the standard Wisconsin P^{vv} allele into inbred W9 (P^{wr}) were observed to differ in phenotype in 1959. The one line appeared to be darker than the other, the lighter of the two representing typical medium variegated (P^{vv}/P^{wr}). The difference appeared to be due to an overall darkening of the pericarp and not to a change in the number or size of the red stripes although no exact measurements were taken. Within the line with the darker pericarp, one non-variegated ear with a pale orange or blushed pericarp colour was present. This ear had been selfed. In 1960 it produced 7 blushed pericarp and 1 non-blushed or typical colorless pericarp, red cob (P^{wr}/P^{wr}) progeny.

A medium variegated sib ear with the darker phenotype which has been backcrossed the tenth time with inbred W9 was also grown out in 1960. It produced 7 variegated, 7 blushed and two P^{wr} offspring. The variegated ears in this progeny appeared to consist of 4 darker and 3 standard medium variegated ears.

These observations may be explained if we assume a dominant gene for blushed pericarp which segregates independently of the P-locus, and which in combination with P^{vv} causes the overall phenotype of medium variegated to appear darker.

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