same ear. It was concluded from this result that the light colored area did not represent a mutation of the Df gene, but was a "pattern" effect. A family grown in 1957 from a similar colorless area, however, gave colorless offspring; whereas plants grown from typical Df kernels on the same ear gave typical Df offspring. The reason for these contradictory results remains to be found.

Family	Mating	Marker locations (Longley & Anderson)	Number of offspring: Semisterile Df	Semisterile df	Normal Df	Normal df	Per cent Recombination
12-465	Df/T1-4b x df	1S.55 4L.83	1	62	62	1	
-466	"		1	78	69	2	
-480	"		3	80	70	4	
Total			5	220	201	7	2.8
12-467	Df/T4-9b x df	4L.90 9L.29	6	75	61	20	
-468	"		4	55	41	7	
-469	"		2	41	58	2	
-481	"		9	88	97	10	
-482	"		5	28	30	1	
-483	"		2	78	76	12	
-484	"		1	30	59	7	
-485	"		2	63	106	4	
Total			31	458	528	63	8.7
12-470	Df/T4-5f x df	4L.50 5L.80	12	93	84	17	
-471	"		12	91	89	16	
-486	"		21	131	100	15	
-487	"		15	92	91	12	
Total			60	407	364	60	13.5
12-472	Df/T2-5f x df	2L.91 5L.10	41	61	50	41	
-488	"		61	63	62	51	
-489	"		60	70	46	58	
Total			162	194	158	150	47.0
12-474	Df/T2-3d x df	2L.67 3L.48	55	70	45	47	
-475	"		39	43	42	44	
-490	"		46	61	51	46	
Total			140	174	138	137	47.0

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2. Transallelic action of self-colored mutants from stippled (R^{st}) in heterozygotes with self-colored aleurone (R^{r}).

As previously reported, standard R^{r} is changed invariably to a weakly pigmenting form, termed $R^{r:st}$ in plants heterozygous for stippled

($\underline{R}^{r}\underline{R}^{st}$) (Genetics 41: 872). Marbled ($\underline{R}^{mb}$) has a similar, but not the same, effect on standard $\underline{R}^{r}$ in $\underline{R}^{r}\underline{R}^{mb}$ heterozygotes (PNAS 43: 1053). No evidence has been obtained to date proving that the action of stippled is altered in $\underline{R}^{r}\underline{R}^{st}$ heterozygotes. That is, the transallelic effect appears to be non-reciprocal.

Germinally transmissible mutations of stippled to self-colored aleurone (termed $\underline{R}^{sc}$ here, for convenience) occur in our standard stippled strain (inbred W22 background) with a frequency of about 2 per 1000 gametes (R. B. Ashman data).

All such $\underline{R}^{sc}$ mutants from $\underline{R}^{st}$ thus far tested have proved stable in $\underline{R}^{sc}\underline{R}^{st}$ heterozygotes. That is, they are refractory to the kind of genetic change which standard $\underline{R}^{r}$ invariably undergoes in $\underline{R}^{r}\underline{R}^{st}$ plants. It appeared earlier, on the basis of the results of a limited test, that these $\underline{R}^{sc}$ mutants from stippled likewise were incapable of "inducing" a heritable change in $\underline{R}^{r}$ in $\underline{R}^{r}\underline{R}^{sc}$ heterozygotes. (M.G.C.N.L., No. 31). This is known now to be incorrect. More extensive tests carried out in 1957 show that some self-colored mutants from stippled promote a marked change in color determining action of standard $\underline{R}^{r}$ in $\underline{R}^{r}\underline{R}^{sc}$ heterozygotes, and that others are either inactive in this respect, or only weakly active. Thus when stippled mutates to self-colored aleurone the capacity shown by the parent $\underline{R}^{st}$ allele to induce a genetic change in standard $\underline{R}^{r}$ in $\underline{R}^{r}\underline{R}^{st}$ heterozygotes, may or may not change also.

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1. Mutation spectrum of variegated pericarp.

A progeny test involving more than twenty-five thousand plants, was used to study the mutation rate of a common variegated pericarp allele ($\underline{P}^{vv}$) in homozygous ($\underline{P}^{vv}/\underline{P}^{vv}$) and heterozygous ($\underline{P}^{vv}/\underline{P}^{wr}$) maize plants in two otherwise near-isogenic stocks corresponding to inbred lines W22 and W23. The results were first reported in the 1956 News Letter (30: 137-138). Additional mutant types were observed in the study which were not relevant to the main problem and so were not included in the initial report. Data on the spectrum of mutation of a specific allele are rare in comparison with reports on the frequency of mutation, and it is now proposed to place in the record the complete data bearing on this point.