R^r/r^r than in R^r/Rg plants, at least in the generation immediately following that in which the crossovers occurred.

3. Additional tests show that the immediately resulting T2-10a R^r/r^r (crossover) offspring from Tr^r/R^r x r^rr^r matings, when testcrossed on rgrg ♀♀, do not yield R^rrgrg kernels exhibiting enhanced aleurone pigmentation, in contrast to TR^r/r^r plants from stock cultures in which T and R^r have been in coupling for at least two generations. Whatever the basis of the action of the translocation on R^r pigment-producing potential, therefore, there is a lag of at least one generation in expression of the phenomenon after the structural rearrangement is effected.

4. It was shown previously that R^r carried by a T2-10a chromosome (stock culture) is relatively insensitive to paramutation in TR^r/R^{st} heterozygotes. More recent experiments establish the additional fact that R^r retains this insensitivity to paramutation in R^r/R^{st} individuals after return by crossing over from a T chromosome to a structurally normal chromosome, at least for one generation.

-- R. A. Brink

3. The effect on R^r action of a reciprocal translocation (T9-10a) involving a break in chromosome 10 distal to the R locus.

Several of the experiments made with T2-10a (and T4-10b) which involve chromosome 10 breaks proximal to the R locus (10L.53 and 10L.57) have recently been carried out with T9-10a also. The break in chromosome 10, according to Longley, is at 10L.92 in the latter case, and thus distal to the R locus (R is probably located at about .7). It is significant that the effects of T9-10a on R^r action are closely parallel to those of T2-10a and T4-10b. In the T9-10a R^r/r^r (stock culture) combination, R^r, for example, shows enhanced pigment-producing action, and also is relatively insensitive to paramutation in T9-10a R^r/R^{st} plants.

-- R. A. Brink
-- N. K. Notani

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4. The paramutagenic action of the marbled aleurone allele (R^{mb}).

Selection within the uniform W22 inbred line in which marbled was earlier incorporated yielded marbled sub-lines differing in paramutagenic competence. The capacity of Rmb to alter standard R^r in R^rR^{mb} heterozygotes can be reduced by first passing the marbled allele through a heterozygote with stippled. Five independent self-colored mutants from marbled, on the other hand, retained the paramutagenicity of the parent R^{mb} allele.

Paramutability of R^r in heterozygotes with R^{mb} was greatly reduced by placing R^r in coupling with a large terminal heterochromatic knob. The return of R^r from the knob-carrying chromosome to a normal chromosome, by crossing over, resulted in an increased sensitivity to paramutation in R^rR^{mb} heterozygotes in the single case tested.

Attempts to change the amount of aleurone spotting in marbled plants by selection within the W22 inbred line resulted in the isolation of marbled families which differed not only in grade of marbling but also in rate of mutation to self-color. Marbled sub-lines which exhibited extensive aleurone pigmentation also showed high frequencies of germinally transmissible mutations to self-color. The

differences between the various sub-lines with regard to aleurone spotting tended to persist in recurrent matings to the W22 $\underline{r^r r^r}$ inbred strain.

A light marbled family was tested for frequency of mutation to self-color in homozygotes ($\underline{R^{mb}R^{mb}}$) and heterozygotes ($\underline{R^{mb}r^r}$). The mutation rates were 0.0×10^{-4} and 6.8×10^{-4}, respectively.

Two W22 marbled sub-lines differing in degree of aleurone spotting and rate of mutation to self-color proved to be indistinguishable in paramutagenic action in $\underline{R^r R^{mb}}$ heterozygotes.

-- Willem H. Weyers

(The above note, submitted by R. A. Brink, is a slightly paraphrased excerpt from the summary of Dr. Weyer's Ph.D. thesis. Dr. Weyers has recently returned to South Africa. His address is P/B 1021, University of Natal, Pietermaritzburg, Natal, South Africa.)

5. Paramutation of $\underline{R^g}$ mutants from standard $\underline{R^r}$.

A series of mutant genes designated $\underline{R^g_{-1}}$ to $\underline{R^g_{-10}}$ were derived from the standard $\underline{R^r}$ allele used in previous Wisconsin studies of paramutation. The mutants differ from $\underline{R^r}$ in that they produce green, rather than red, seedling and anthers. Comparisons were made of the aleurone phenotypes conditioned by each of the $\underline{R^g}$ genes, relative to that of standard $\underline{R^r}$, and tests were made for paramutability of the mutants.

The following test matings were made: (1) W23 $\underline{r^g r^g}$ ♀ x W22 $\underline{R^r R^g}$ ♂, (2) W23 $\underline{r^g r^g}$ ♀ x W22 $\underline{R^g R^{st}}$ ♂.

The aleurone pigmentation of the individual testcross kernels was scored by matching them against a six-kernel standard set selected so as to define seven pigmentation classes. The $\underline{R^g r^g r^g}$ and $\underline{R^r r^g r^g}$ classes of kernels from testcrosses involving $\underline{R^r R^g}$ plants were separated retroactively to scoring by germination and observation of seedling color. The $\underline{R^g r^g r^g}$ and $\underline{R^{st} r^g r^g}$ kernels from testcrosses involving $\underline{R^g R^{st}}$ plants were separated visually on the basis of aleurone phenotype, and only $\underline{R^g r^g r^g}$ kernels were scored.

A representative sample of the data obtained is shown in table 1.

Table 1. Mean aleurone color scores for $\underline{R^r r^g r^g}$ and $\underline{R^g_{-1} r^g r^g}$ kernels from the cross $\underline{r^g r^g}$ ♀ x $\underline{R^r R^g}$ ♂, and for $\underline{R^g r^g r^g}$ kernels from the cross $\underline{r^g r^g}$ ♀ x $\underline{R^g_{-1} R^{st}}$ ♂

Mating	Pedigree	No. of ears	Endosperm genotype	Mean score
$\underline{r^g r^g}$ ♀ x $\underline{R^r R^g_{-1}}$	W23 x J-79	4	$\underline{R^r r^g r^g}$	5.41
			$\underline{R^g_{-1} r^g r^g}$	5.45
$\underline{r^g r^g}$ ♀ x $\underline{R^g_{-1} R^{st}}$	W23 x J-36	4	$\underline{R^g r^g r^g}$	2.27