

$\underline{R}^f/\underline{r}^f$  than in  $\underline{R}^f/\underline{R}^f$  plants, at least in the generation immediately following that in which the crossovers occurred.

3. Additional tests show that the immediately resulting T2-10a  $\underline{R}^f/\underline{r}^f$  (crossover) offspring from  $\underline{T}^f/\underline{R}^f \times \underline{r}^f/\underline{r}^f$  matings, when testcrossed on  $\underline{r}^f/\underline{r}^f$  ♀♀, do not yield  $\underline{R}^f/\underline{r}^f$  kernels exhibiting enhanced aleurone pigmentation, in contrast to  $\underline{T}^f/\underline{r}^f$  plants from stock cultures in which T and  $\underline{R}^f$  have been in coupling for at least two generations. Whatever the basis of the action of the translocation on  $\underline{R}^f$  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  $\underline{R}^f$  carried by a T2-10a chromosome (stock culture) is relatively insensitive to paramutation in  $\underline{T}^f/\underline{R}^f$  heterozygotes. More recent experiments establish the additional fact that  $\underline{R}^f$  retains this insensitivity to paramutation in  $\underline{R}^f/\underline{R}^f$  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  $\underline{R}^f$  action of a reciprocal translocation (T9-10a) involving a break in chromosome 10 distal to the  $\underline{R}$  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  $\underline{R}^f$  action are closely parallel to those of T2-10a and T4-10b. In the T9-10a  $\underline{R}^f/\underline{r}^f$  (stock culture) combination,  $\underline{R}^f$ , for example, shows enhanced pigment-producing action, and also is relatively insensitive to paramutation in T9-10a  $\underline{R}^f/\underline{R}^f$  plants.

-- R. A. Brink

-- N. K. Notani

(Dr. Notani's permanent address is Biological Division, AEET, Indian Cancer Research Center, Bombay 12, India)

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

Selection within the uniform W22 inbred line in which marbled was earlier incorporated yielded marbled sub-lines differing in paramutagenic competence. The capacity of  $\underline{R}^{mb}$  to alter standard  $\underline{R}^f$  in  $\underline{R}^f/\underline{R}^{mb}$  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  $\underline{R}^{mb}$  allele.

Paramutability of  $\underline{R}^f$  in heterozygotes with  $\underline{R}^{mb}$  was greatly reduced by placing  $\underline{R}^f$  in coupling with a large terminal heterochromatic knob. The return of  $\underline{R}^f$  from the knob-carrying chromosome to a normal chromosome, by crossing over, resulted in an increased sensitivity to paramutation in  $\underline{R}^f/\underline{R}^{mb}$  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