A second testcross of the $\underline{R}^{r:mb}$ $\underline{r}^{g}$ or $\underline{R}^{r:st}$ $\underline{r}^{g}$ genotypes to $\underline{r}^{g}$ $\underline{r}^{g}$ was made of representatives in each of the groups and each of the categories within groups. Seeds were selected to represent the variability of intensity within ears and planted in sequence of intensity within rows. Plants were numbered so the harvested ears could be arranged in the same sequence as the intensity of seeds. Two samples were taken for the segregating for paramutation category: one from seeds similar to normal paramutation; one from seeds similar to no paramutation.

The sequence of increasing intensity between ears within a row does not follow too closely the order in which they were planted. In general the variability within a category is not transmitted. The no paramutation classes (dark purple) gave rise to rows in which all ears were segregating 50% dark purple and indicated there was no paramutagenic change in $\underline{R}^{r}$. The segregating for paramutation categories gave rise to two distinct groups: one very similar to the "normal" paramutation class and one similar to "no" paramutation. There was no overlap in these classes although they come from the same testcross ear. There is a segregation of the effect within the ears. The "increased" paramutation category was reflected by groups of ears distinctly lighter than "normal" paramutation in the second testcross. They were as light as and probably lighter than the degree of alteration induced by $\underline{R}^{st}$. The radiation induced alterations in paramutation expression have all been carried a second generation and they maintained their identity.

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2. <u>On growing Corn Belt inbreds in Puerto Rico</u>.

Experimental plots of corn have been planted on thirty-three different dates in the past two years. The majority of the material consists of genetic stocks used in the paramutation program and are in W22 background. They were originally obtained from Brink and had been backcrossed to W22 by him for several generations. The remaining materials are South American races and crosses of the races with W22 stocks.

As a general rule (with W22 material) pollinations are made 60 days after planting and ears harvested 30 days after pollination throughout the entire year. Plantings have been made in every month (except March by chance) and there may be a slight shortening of the cycle in plantings May-August but the difference is less than one week. Some of the South American races have longer growth periods with a few taking 110 days from planting to harvest. Some hybrids between South American races and W22 stocks were harvested 79 days after planting.

There have been two instances of crop failure. The very first planting was not harvested as insects got the material first. One planting in summer 1963 suffered from winds of the hurricane. There are several perils associated with genetic maize culture in Puerto Rico but each can be either controlled or tolerated. Insects are the major problem, but by routinely dusting with DDT we no longer have losses from them.

Helminthosporium turcicum is probably the major leaf disease. However, with the rapid maturation of the seed the disease may even work to advantage in assisting the drying of the plant. In any case the seed germination has been good in all plants if the only disease was H. turcicum regardless of severity. The only times difficulties have been encountered in seed germination have been when maturity corresponds to the summer, high rainfall months and premature sprouting of kernels occurs. This difficulty is reduced by husking the ears on the plants before maturity to assist drying and eliminate the water holding of the husks.

Many of the more serious problems associated with corn culture occur in the summer months. In the fall and winter plantings good seed with over 90% germination is now fairly routine. Pigment development in the aleurone is excellent except in heavily diseased ears even in the ears that matured 79 days after planting. Puerto Rico should be considered as a possible location for winter nurseries of experimental breeding and genetic programs.

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1. New pale green and virescent genes on chromosome 3.

A pale green mutant and a virescent mutant were found segregating in progenies of intercrossed foreign introductions. The expressions are variable in both cases but classification is good. The pale green remains as such throughout its life cycle. A normal color is restored in the virescent in early seedling stage.

The mutants were crossed to a series of waxy-marked translocations involving all chromosomes and F_2 waxy and starchy seeds were examined separately. An association was indicated between each mutant gene and translocations involving chromosome 3. The data from the pale green are as follows: starchy seeds gave 268 normals: 74 pale greens; waxy seeds gave 81 normals: 14 pale greens. The data from the virescent are as follows: starchy seeds gave 125 normals: 71 virescents; waxy seeds gave 38 normals: 0 virescents.

These data indicate that both mutant genes are located on chromosome 3. Tentative designations of pale green-774 and virescent-686 were assigned. Further studies are foreseen in order to determine more precise locations.

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