unfused nucleoli in the spore nuclei, three nucleoli were seen in each of two of the spore nuclei and only one in each of the other two. This distribution implies that non-disjunction occurred at division I. The pollen quartets in which a 3 : 1 distribution of nucleoli was observed comprise 2.42 percent of the total examined and can be taken to represent the percentage numerical non-disjunction of quadrivalents formed by chromosome 6. This value derived from the cytological data is close to the value obtained by Welch (1942) for chromosome 2 from genetical evidence. (See Welch, G. 1942 Linkage in autotetraploid maize. Ph.D. thesis, Cornell University.)

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1. Two recessive genes necessary for white seedlings.

Several different genes for white seedlings in maize are known. These are caused by monogenic recessives. Ten different rows segregating white seedlings were grown in 1962. Nine of these showed a monogenic segregation. It is not certain which genetic white seedling this is. Counts for these nine rows were: Green 690, white 228, compared with an expected ratio of 688.5 to 229.5, almost a perfect ratio. The other row showed a definite dihybrid ratio of 299 green : 20 white, almost a perfect 15:1 ratio. Here apparently two genes must be homozygous recessive to produce white seedlings. Seed is limited because of a drought in 1962 that killed all plants before pollen shedding. Reserve seed will be planted and plants selfed. Approximately 1/4 should be segregating for the two genes for white seedling, while another 1/4 should give monogenic ratios of 3:1. Has anyone observed a similar occurrence?

W. Ralph Singleton

2. Mutation CI to c:

In 1959 a plant which was B A_1 A_2 Pr Y Pl CI Sh Bz Wx R Og was radiated at the rate of 94 r/day for the period 29 to 15 days before the pollen was collected for pollination onto a stock which was A_1 A_2 pr y C sh bz wx R og. Among the resulting 12,000 seeds was one with a purple flinty endosperm. This was grown in 1960 and produced a plant which was B A_1 Pl Og. Pollen examination indicated 97.5% good pollen. The resulting ear had a full seed set and segregated +/y +/pr C/c +/sh +/bz +/wx. The colorless seeds were linked to the

Sh endosperms. In 1961 fifty of the colorless flinty seeds were planted Forty-one of the resulting plants were Bz, with two bz. Most of these plants were also B, Pl and Og. Forty of the plants were tested for c and CI. Thirty-two were cc, with two +/c and six not tested on cc stock Thirty-six were tested on CC stock with no evidence of the presence of CI. It was evident that the purple seed in 1959 was the result of a mutation from CI to c. In 1962, 10 of the 40 plants selfed in 1961 were tested for the response of the cc mutant to the action of Blotched. All ten of the lines tested blotched and were colorless when tested by c. As with the spontaneous CI → c mutant tested by Coe (Genetics 47: #6, p. 779 - 783, 1962), this mutant acted like normal recessive c. In 1960 two, and in 1961 three more mutants which appear to be mutations from CI to c were recovered from radiation experiments.

Alan Caspar

3. Summary of recovered endosperm mutations.

We have been attempting since 1952 to induce mutations of the endosperm genes in chromosome 9 of maize. Below is a summary of the mutants which have proved to be inherited without detectable sterility into the R_2 generation. In experiments where more than one dose of radiation was used or in which more than one stage of microsporogenesis was radiated the populations are bulked as too few mutants are found at any one dose or stage to determine rates. In the stage experiments no populations are included which were radiated earlier than 13 days before pollen shedding. We have yet to prove a mutant from these stages because of the lack of coincidence between the embryo and endosperm.

These data do not indicate that the spontaneous mutation rate in the male is any different from those recovered for mutants recovered in the female. Therefore it would seem that radiation can induce mutations in maize which are in all ways similar to those which occur naturally at rates which are at least ten times greater than the control.