vigorous and showed considerable variation with most of the ears intermediate between a flint and a dent. A number of these were selfed last year, both with and without the benefit of radiation, and we plan to grow a small isolation plot of this for several years to see whether any progress can be made toward reconstructing a good dent type. Selfed seed is available of the Canada flint, of the Virginia Gourdseed and of the F_1 hybrid.

W. Ralph Singleton

3. Mutable Pericarp and Plant Color.

Several years ago a mutation arose from an intensely pigmented plant color much more intense than the A B Pl. Also the character appears early in the seedling stage or shortly thereafter. In addition to the intense color in the plant the pericarp is colored very dark, almost black, which must be considerably darker than cherry pericarp. Like the cherry pericarp it has been observed only in stocks which are A B Pl. The silk color of plants possessing this character are deep wine in color. The anthers usually are a sort of mottled dark and light red. One of the interesting things about this character is that we have not yet been able to get a homozygous stock of it. It keeps mutating back to the normal A B Pl color. It is almost but not quite completely recessive when crossed with other stocks. There is almost a complete correlation between the type of pericarp color and the type of silk and anther color, although classification is somewhat difficult and not completely satisfactory. Seed is available.

W. Ralph Singleton

4. Height Potential in Brachytic-2 and Brachytic-3 Types.

Both brachytic-2 and brachytic-3 are mutations from the inbred R4. They are about equal in height, 114 centimeters for br_2 and 113 centimeters for br_3 in 1958. In crosses back to the R4 they contribute about equally to the height of the plant, giving hybrids that were 227 and 230 centimeters, respectively, for br_2 and br_3 hybrids. However, almost without exception, when these two inbreds are crossed to unrelated stocks the brachytic-3 contributes much more height to the hybrid than does the brachytic-2. Crosses with an unrelated type, reduced 38-11, gave the following types: rd38 x R4 = 273 (av. 2 rows), rd38 x R4br_2 = 241 (av. 4 rows), and rd38 x R4br_3 = 304 cm (av. 3 rows). When crossed with wf9, the following heights resulted: wf9 x R4br_2 = 233 cm (1 row), wf9 x R4br_3 = 265 cm (av. 2 rows). These data agree with our observations in previous years. More extensive tests are planned. In addition to being somewhat shortened br_2 hybrids usually show some of the enlarged stalk characteristic of brachytic-2.

In the brachytic-2 inbreds themselves, there is considerable variation for height from about 80 cm for the shortest to 170 cm for the tall type in 1958. In crosses between the short and tall types, tall is dominant, a fairly good segregation occurs in F_2 and test-crosses. The height relationships of brachytic-2 types are being investigated further.

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1. Location of gene responsible for nutrient element uptake in corn.

Certain inbred lines of corn have been found to require different amounts of mineral nutrients for optimum growth. Dr. J. D. Sayre of the United States Department of Agriculture sampled field-grown plants for magnesium content and found a sevenfold difference between the highest and the lowest lines. Other inbred lines have been shown to be low accumulators of calcium, potassium and phosphorus. Under low or sometimes where normal mineral nutrition is provided, inbred lines with these characteristics will show leaf deficiency symptoms first, when grown with other lines which are high accumulators.

Studies were initiated to determine, if possible, the location of the gene character responsible for this differential uptake of magnesium and other elements. A number of inbred lines were crossed to the waxy translocation series in 1956. The inbred lines used were as follows: Oh 28, Oh 33, Oh 40B, Oh 51A, Cl 187-2, L-317, Ind WF9, and Ill A.

In 1957 the F_1 were backcrossed to the related inbred lines and to the available waxy inbred lines.

In 1958, due to limited space, only two of the lines from crosses were planted. These were Ind WF9 and Ill A. Tissue samples were collected for analysis when each plant was approximately one meter in height. The WF9 line is being tested for high magnesium and low phosphorus accumulation. Ill A is being tested for low calcium accumulation. Data from the tissue analysis will be used in an attempt to locate any major gene affecting the uptake of these elements.

Walter H. Hesse