HERITABLE VARIATIONS IN MAIZE.

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During the last ten or twelve years genetic researches have identified and determined the mode of inheritance of more than ninety distinct and heritable characters in maize. At the present time more than sixty hereditary factors in this plant are known and their genetic inter-relations fairly well understood. These factors are concerned with the development of characters which find expression in various parts of the plant and at different stages in its ontogeny. Thus sixteen are concerned primarily in the development of the seed, of which nine affect aleurone color, five endosperm texture, and two endosperm color. Seventeen are concerned primarily with chlorophyll development. Of these, four are responsible for characters that are visible in the seedling stage only, nine for those that show only in fairly advanced stages of maturity, while four others may be identified in both seedling and mature stages. Two others, in connection with various combinations of two of the aleurone factors, are responsible for no less than thirteen types of plant as respects mature plant colors. Another is concerned with silk color and still another forms a series of allelomorphs for pericarp and cob color. Ten are concerned with height, seven with various morphological characters affecting the leaves, ten with various ear characters, and eight with tassel characters.

Most, if not all, of these variations in maize have been found apparently by chance, at least no systematic search had been made for them. Many of them have been found in the classes for freaks at various corn shows, some have been found by chance in fields, others have appeared in cultures of different investigators, while still others have been found in seed obtained from Indian reservations in the United States or imported for various purposes from foreign countries.

The fact that so large a number of variations in maize had been found apparently with little effort led the writer to think that such variations in maize have been described recently in the Journal of Heredity. Descriptions of others are to appear in the same journal in the near future.