Within the species Zea Mays several anthocyanin plant colors occur. All the important dent varieties and many of the sweet and pop corns grown in and adjacent to the corn belt of the United States, however, belong to a single color class, viz., dilute sun red. It is an interesting question whether the presence of this particular pigment is purely fortuitous or whether the color was chosen because it was thought to confer some advantage on the plant. The early literature on corn is singularly devoid of reference to pigmentation other than that of the kernel, and it seems likely, therefore, that little notice was taken of the plant colors. The early corn breeders, doubtless, were interested largely in characteristics whose relation to yield in heterogeneous material is more or less obvious, and the anthocyanin colors are clearly not in this category. No evidence has been found, moreover, to indicate that at any later period in the history of corn improvement the possible physiological significance of the different anthocyanin plant colors has been considered.

It is the primary object of the present communication to show that the plant colors play a rôle in the development of certain qualities which it is the object of breeding to enhance, and that, in the further improvement of corn, anthocyanin colors other than dilute sun red may possibly be used to advantage.

In a series of experiments extending over more than a decade and noteworthy for the wide range of material embraced, the detail to

1Paper No. 166 from the Department of Genetics, Wisconsin Agricultural Experiment Station, Madison, Wis. Published with the approval of the Director. Received for publication January 24, 1934.

2Professor of Genetics. This work was completed while the author was on a research appointment made possible by the Wisconsin Alumni Research Foundation. The author wishes also to acknowledge the aid given in the experiments by H. R. Albrecht, Assistant in Genetics.