Crop investigators have realized for some time that considerable inherited variability is encountered within a single variety of wheat. Some varieties are known to be less uniform in type than others. Natural crossing and mechanical mixtures no doubt play an important part. Later investigations have shown that in some cases cytological aberrations are associated with variability. Huskins (3) explains the occurrence of speltoids in wheat varieties as being due to chromosomal aberrations. Powers (4) has found that certain cytological aberrations occurring during microsporogenesis of parent plants of Marquillo are associated with variability within the offspring. Cytological aberrations have been reported as occurring in other varieties of wheat by Sapehin (5), Hollingshead (2), and Powers (4). It is of importance to the breeder to determine the extent of variation in the occurrence of cytological aberrations within varieties, the possibility of using the frequency of occurrence of any one aberration as a criterion of the others, the relationship between these aberrations and field characters, and the possibilities of reducing the amount of cytological aberrations. It is believed that the studies reported here aid in the solution of these problems.

MATERIAL AND METHODS

Marquillo, Marquis, and Minn. No. 2303 were the varieties used in this investigation. Some of the results previously reported (4) for Marquillo have been summarized for comparison with those obtained in the studies with Marquis and Minn. No. 2303. Marquillo and Minn. No. 2303 were obtained from the wheat breeding studies conducted cooperatively by the Minnesota Experiment Station and the U. S. Dept. of Agriculture. Marquillo is a selection from a cross made in 1914 between Marquis, a common bread wheat, and Iumillo, a durum wheat. It is resistant to black stem rust, of desirable agronomic type, but is somewhat inferior in color of loaf, although this can be controlled by bleaching. Marquis is a selection from a cross.