The F_1 kernels were examined for changes of a single component of the $\alpha\beta$ Sh segment, more particularly of β alone which may be considered as gene mutation, and of losses of more than one adjacent component which would indicate chromosome breakage.

The viruses used were bromegrass-mosaic (BMV), wheat-streak-mosaic (WSMV), and sugar-cane-mosaic (SMV). Inoculations were made by the leaf-rubbing method. Plants inoculated with BMV showed early local-lesions followed several days by systemic symptoms which were so severe that all the infected plants died. Plants inoculated with WSMV failed to develop any symptoms and were not used further. About 85% of the plants inoculated with SMV developed clear systemic symptoms. These were used to produce the data recorded in Table 1.

The results which constitute an adequate test clearly show that infection with SMV does not increase the frequency either of mutation of the components of the A locus or of breakage of chromosome #3. The contrast between these results and those reported with barley-stripe-mosaic virus (Sprague et.al.) are striking, indicating that viruses may differ in their relationships with the host genetic material. Similar negative results have been obtained with SMV by Sprague and McKinney (personal communication).

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2. Infection and movement of sugar-cane mosaic virus (SMV) in certain chlorophyll-deficient mutants of corn.

Virus infections in higher plants, in a majority of cases, induce a yellow-green mosaic pattern of symptoms indicating possible interaction of viruses with chloroplasts and/or chlorophyll content of plants. Several investigators have suggested that chloroplasts are the sites of virus-biosynthesis or virus-maturation processes. It is of considerable interest, therefore, to study infection and multiplication of viruses in chlorophyll-deficient plants as such a study would be helpful in establishing relationships if any, between chloroplasts and virus multiplication. In preliminary trials, we tested albino mutants lw_1, lw_2, cl_1, W8629 and lw_a with several plant viruses. In this report, results of experiments using albino lw_a and SMV, a virus easily transmissible to corn, are presented.

Seeds were sown in white sand and seedlings regularly irrigated with Hoagland's solution fortified with micronutrients. Of the several methods tried to supply sucrose solutions to albino plants, feeding 10% solution through cut-ends of leaves was found most satisfactory. Inoculations were made by the leaf-rubbing method with plant sap extracted from SMV-infected green plants on the first leaf of 8-10 days old seedlings.

Symptoms appeared on green seedlings 4-5 days after inoculation. No visible signs of infection, however, were evident on albino seedlings supplied with or without sucrose. However, SMV was recovered from albino seedlings when the inoculated and non-inoculated leaves of these plants were tested for the presence of virus by back-inoculations to susceptible plants, indicating thereby, transmission and movement of the virus in albino plants. The virus was not recovered from the roots of green and albino plants indicating possibly the presence of a virus-inactivating system in the roots. The virus recovered from albinos appeared similar to the one originally used to infect these plants and apparently SMV was not changed on passage through albino hosts.

Studies are in progress to determine to what extent SMV multiplies in albinos and with which particulate cell component (chloroplasts, nuclei, ribosomes, etc.) the virus is most closely associated.

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1. Chromosome 9 mapping.

New 2-point data, combined with earlier data for the same intervals, are presented in Table 1. New 3-point data are presented in Table 2.

The order Wx-V-Gl_{15} is firmly established; new orders Wx-V-Ms_2 and Wx-Ar-Ms_2 are strongly indicated by recovery of one wx v ms crossover strand from