knobs on the long arms of chromosomes 1 and 3 were small. Large knobs each on the long arms of chromosomes 4 and 7 and on the short arm of chromosome 5 were present. The knob on the first knob position of the long arm of chromosome 6 was also large. However, the two knobs on the long arm of chromosome 8 and the one on the second knob position of the long arm of chromosome 6 were medium-sized. All of these knobs were intercalary.

There was a second type of chromosome 4 in which two large terminally located knobs were observed. This was found in only one plant.

A paracentric inversion on the short arm of chromosome 8 was identified. It was designated as In 8 of Guanajuato teosinte. The average length of four separate measurements of the inverted segment was 8.0 u. It occupied about 60 per cent of the short arm of this chromosome, and it is the same In 8 as that found in maize and the other teosintes. Bridges and fragments were observed at anaphases I and II. No duplication on the short arm of chromosome 8 was found.

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2. The effect of EMS on haploid and diploid maize.

Since last summer the well-known mutagen EMS (ethyl methane sulfonate), an alkylating agent, has been employed to treat haploid and diploid maize seeds. In order to break dormancy the seeds were presoaked in tap water one day before treatment and kept on a moistened filter paper in a petri dish. Two strengths of the aqueous mutagen solution were prepared; one was 0.5 per cent, the other 0.25 per cent. For each treatment, 100 ml of the solution was applied. The seeds were soaked in the solutions for four hours. Then they were rinsed in tap water seven times and placed on a filter paper overnight. These seeds were again rinsed seven times and planted.

Last summer, 50 diploid and 50 haploid maize seeds were treated with 0.5 per cent EMS, and a duplicate sample was treated with 0.25 per cent of this mutagen. At the same time, 50 diploid and 50 haploid maize seeds were selected as control. The control seeds were subjected to the same treatment procedures except that the EMS solutions were substituted by tap water. All of the seeds were planted in the field on the same day. Subsequently, all of the surviving haploid plants showed a chlorophyll-defiency characteristic, and it varied in degree and extent from plant to plant. As compared with untreated sibs, these haploid plants were consistently shorter and less tillered. Among the diploid plants, 25 per cent of those receiving 0.25 per cent EMS treatment showed chlorophyll deficiency, while 75 per cent of those receiving 0.5 per cent EMS treatment manifested the same symptom. No chlorophyll-deficiency mutants were observed among the controls.

This experiment was repeated last November in the greenhouse. The same effects were found. In addition among the surviving haploid plants receiving 0.5 per cent EMS treatment, 60 per cent showed a slashed-leaf (sl) appearance. No plants of the controls demonstrated this characteristic.

Pachytene chromosomes from 5 diploid and 6 haploid M_1 plants, as well as from over 20 F_1 plants involving the cross of both diploid and haploid M_1 plants with the inbred Wilbur's Flint, were cytologically investigated. No gross chromosome aberrations of any kind were consistently found.

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3. Lethal homozygotes of T6-9t.

During the last three years, over 120 maize plants from the selfed progeny of plants heterozygous for T6-9t were cytologically studied. No plants homozygous for this interchange were identified. Last summer, 36 seeds (bz/bz) from the same pedigree, were planted in the field. As reported previously, the gene bz was located within the translocated segment of the short arm of chromosome 9. It was found that none of those seeds was viable. Thus, it suggests that the T6-9t homozygotes are lethal.

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