Leaves were borne oppositely, 2 per node, those of one node being rotated 90° to those of the preceding node, in perfect symmetry. Leaves were of normal size and conformation, with the nodal pair being of equal rank to each other. Being id/id, the plant was not ear fertile, but it produced pollen which was used to outcross. Selfed progeny is available for observation in the summer of 1967.

D. L. Shaver

4. When is hybrid vigor? (a)

Maize workers are accustomed to the fact that the F_1 between two inbred parents is not only much larger because of hybrid vigor, but flowers 10 to 14 days earlier than its parents.

In two summers of work in the unique Salinas Valley climate, it has been found that earliness is not an aspect of hybrid vigor. While F_1 progenies show the typical increase in plant size, they flower at the same time as their inbred parents. If a cross is made between an early and a late line, the F_1 flowers at a time intermediate to its two parents. Rather than condition of vigor, the number of plant parts to be cut off, in other words, leaf number, is the more reliable index to maturity.

A typical midsummer day in the Salinas Valley has a high of 82° which occurs as a rather sharp temperature peak soon after midday. Nightly temperature invariably drops into the low 50's. It would appear that this regime imposes a limitation upon the growth cycle which is not relieved by heterosis.

Only one important exception to this generalization has been found. F6, an apparently heat-loving Florida line, grows more slowly than its leaf number would predict. It spends much of its juvenile period in a condition of nearly stagnant terminal growth while tillers are freely produced. These grow out rhizome-like, showing little or no geotropism. Finally both the primary and secondary culms become geotropic, elongate rapidly, and flower, the tillers being equal in size to the first culm, each bearing two normal ears. The production of 10 large ears per seed planted was not unusual.

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5. When is hybrid vigor? (b)

Crosses between Florida teosinte and maize are typically freely tillering. The Salinas Valley environment accentuates this tendency both in maize and in its hybrids with Florida teosinte. In one case, however, the F_1 of a cross between Mangelsdorf tester and Florida teosinte produced no tillers at all among a progeny of 15 plants. Each leaf produced by this hybrid had limited viability. As judged by the formation of anthocyanin, sugar translocation was so impeded that each leaf died in turn, and only 4 or 5 functioning leaves were present at one time. Both parents were growing in the nursery in adjacent locations. The teosinte parent (Shaver's Florida teosinte inbred 2) grew normally, though slowly, and produced a typical