# NOTE ON A SEEDLING VARIATION IN SUNFLOWER

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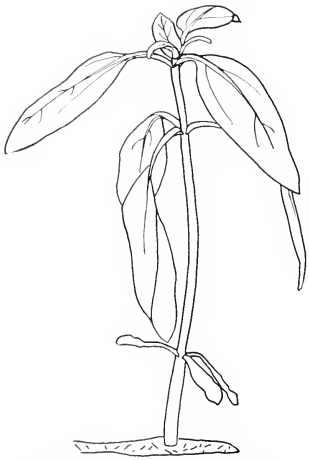

Fig. 1. Seedling sunflower with three cotyledons.

In the winter of 1931 the writer found among seedlings of sunflower (*Helianthus annuus* L.), grown from seed from a local seed store, one plant which had three cotyledons and three leaves instead of the usual two at the first few nodes (Fig. 1). This sort of variation is fairly common and has been mentioned in the literature. The writer has observed it often, particularly in alfalfa.

Since he had not seen any statement concerning the heritability of such variations in the sunflower, this plant was transplanted into a large jar and placed out of doors for further observation. After some vicissitudes it matured a small head filled with small but plump seeds.

These seeds were the result of self-pollination, for, while the flowers were not artificially pollenized, the plant was grown at a great distance from all other sunflowers and flowered out of season. If, therefore, the peculiarity under study were the expression of a simple heritable dominant factor, it would be expected that either approximately three-fourths or all of the immediate progeny should show it; if it were recessive, all of the progeny should show it.

The seeds were planted in the garden in 1932, but none of the plants showed the variation in question. Twenty-one reached maturity under conditions which permitted cross pollination among themselves, and perhaps to a very minor extent, among other plants of the same species. Due to late planting, the plants and the heads produced were small.

The seeds of these plants were planted in 1934, and some thousands of seedlings were secured, ranging in number from a very few to several hundred per plant of the preceding crop. None of these had three cotyledons.

Except for the unlikely possibility that outside conditions prevented the variation, these two seasons' examinations definitely dispose of the possibility that this is a simple heritable variation. They do not eliminate the possibility of a multiple-factor situation, since the number of plants in the first generation was conceivably too small to obtain the few variant plants which might be expected. This possibility seems remote, however, especially since no plant with the peculiarity was detected among the thousands of individuals in the second progeny where some such would be expected, even in the absence of any in the immediate progeny.

The evidence from this work is, therefore, that the three-cotyledon variation of sunflower which was studied is not heritable.