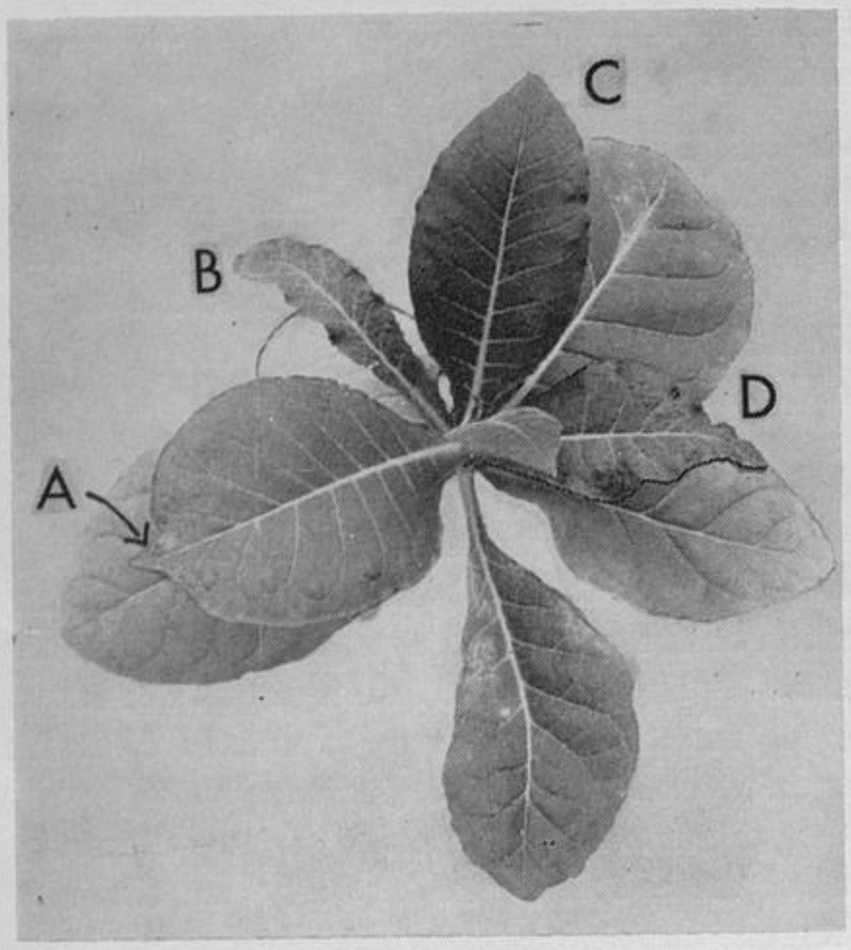

Fig. 1.— A chlordane-treated tobacco plant.

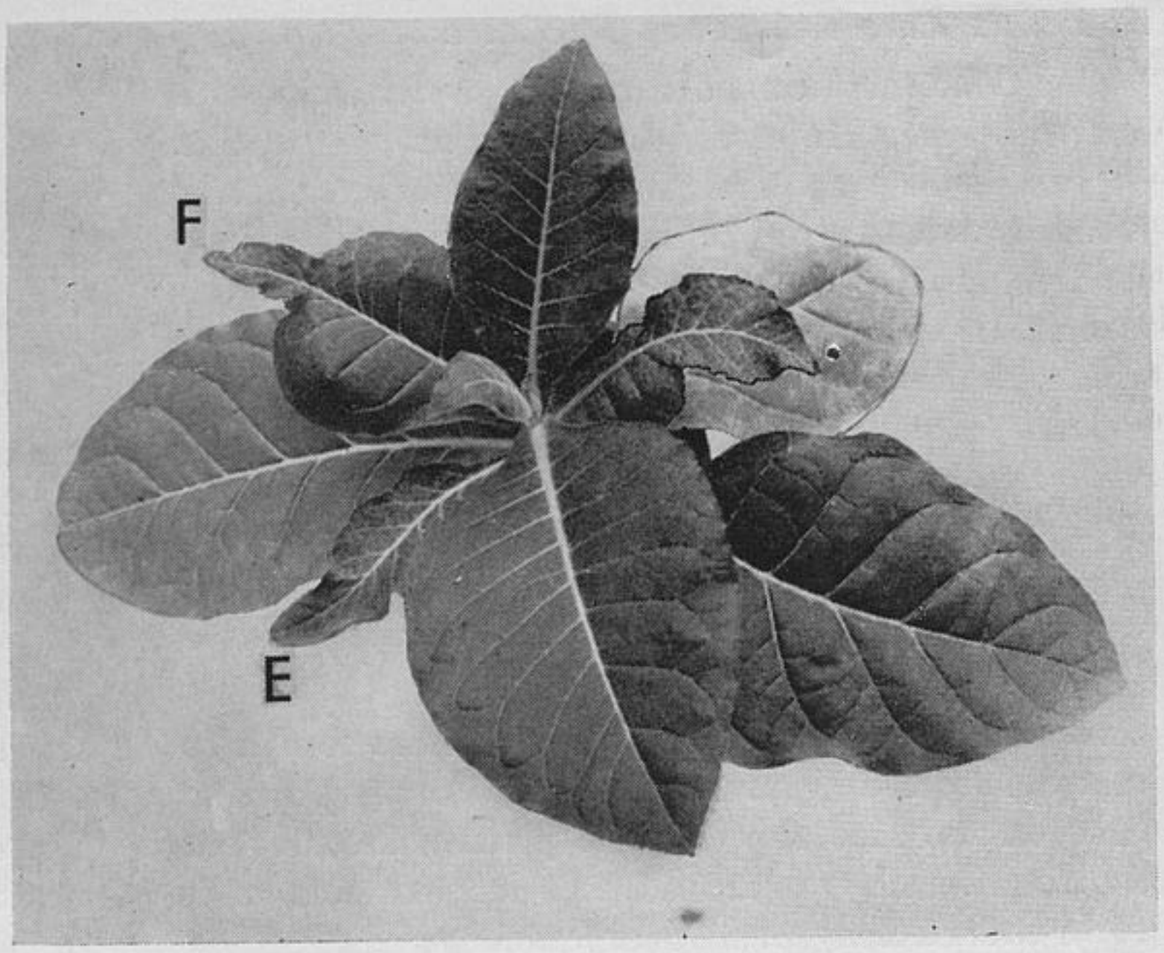

Fig. 2.— Another chlordane-treated tobacco plant.

Figs. 1 and 2.— These two photographs illustrate the distortion in some tobacco leaves caused by dipping the plants in chlordane solution before setting. The leaves which were formed immediately after transplanting were the ones which were affected. Compared with the normal leaf (C), note the strap-like leaves (B and E), and the distorted tips (A, D and F).

Malformed Tobacco Leaves

Laboratory work verifies field observations and seeks to determine the role of two insecticides, chlordane and lindane, in producing abnormal leaves

By RICHARD THURSTON

Malformed tobacco leaves (similar to those being sent to the Experiment Station by farmers and county agents) were noticed in 1954 in experimental field plots of tobacco. These were found in plots where the tobacco roots had been dipped in suspensions of either lindane or chlordane before being transplanted. About 10 percent of the chlordane-treated plants and 35 percent of the lindane-treated plants had malformed leaves about 2 weeks after transplanting. The leaves present at the time of treatment remained perfectly normal in shape. Those formed immediately after transplanting were abnormal, but normal-appearing leaves were eventually produced by all the affected plants. Although the affected plants outgrew the development of malformed leaves, these plants were stunted and did not grow so well as the unaffected plants.

The abnormal leaves observed on lindane-treated plants were narrow and strap-like, but the malformed leaves observed on chlordane-treated plants were normal except at the tips, which were curved sharply inward, forming small, sharp-pointed nubs.

Laboratory tests were conducted to verify these field observations and to find out if the insecticide or some material used in formulating the insecticide was causing the leaf malformation. Two emulsion concentrates of both insecticides were formulated in the laboratory from technical chlordane and technical lindane. The leaves and growing buds of Kentucky 35 burley tobacco seedlings were dipped for 10 seconds in diluted water emulsions of these insecticides. Plants were also dipped in the same manner in "blanks" (water emulsions containing all the ingredients except chlordane or lindane).

All of the plants dipped in the emulsions containing lindane or chlordane produced abnormal leaves. Those dipped in the blank emulsions did not produce ab-