

## THE WHITE FLY AND THE REMEDY

THE white fly has proved one of the most serious insect pests encountered in the winter forcing of tomatoes, says Mr. Wm. Stuart, of the Vermont Agricultural Experiment Station, in his annual report, which has just reached *The Horticulturist*. This fly does not succumb to the ordinary remedies such as are employed against red spider, aphids and thrips. This immunity to the ordinary fumigants such as tobacco stems or dust, aphid punk, nicotine, and sulphur fumes, or to the liquid insecticides applied as a spray, is largely due to the fact that during its immature stages of existence it is less easily destroyed than are the other pests mentioned. The experimental crop was started rather late in the season of 1902-03, and hence fewer insects appeared on the young plants than occurred the next year and they were more easily managed.

Frequent fumigation with nicotine did not rid the plants of the fly during 1902-03, but kept it from great increase or from actually doing serious injury. In 1903-04, however, the plants being started earlier and the insects seemingly more prevalent, fumigations with nicotine seemed to be of slight avail. Trials were made of aphid punk with meagre results. Fir tree oil, lemon oil, X-all and soap solutions were next tried, at strengths in some cases considerably in excess of those recommended, but with little avail, as the insects seemed to increase rather than decrease. It was decided as a last resort to try hydrocyanic acid gas fumigation. The dose employed was at the rate of 0.2 grains of 98 per cent. potassium cyanide to each cubic foot of air space, or at the rate of about two-thirds of an ounce to each

1,000 cubic feet. Fumigation with the dose mentioned destroyed both the nymph and adult forms of the insect and did no injury to the bearing plants. In all cases the room was fumigated in the evening and remained closed until the following morning. This remedy must be handled with great care.

In fumigating a second crop of plants just beginning to blossom and set fruit, it was thought best because of the tenderness of the plants to use a weaker dose, the amount being cut down to about .014 grams potassium cyanide per cubic foot, or 50 grains to the room. Notwithstanding this very material decrease in amount of cyanide used, considerable injury was done, for the most part confined to the tender growing shoots and blossoms. This outcome seems in part due to the higher temperature of the house during the fumigation, it having stood at 70 degrees F. instead of 60-65 degrees as at the first treatment. This tendency to injury in high temperature fumigations is corroborative of observations made by others. Subsequent trials with the same strength at lower temperatures did no injury to the plants, yet destroyed the insects.

Cucumbers, lettuce and a mixed lot of plants have been fumigated in the same manner as just outlined with equal satisfaction. Fumigation with light doses, half ounce per 1,000 cubic feet of air space, at temperatures not over 60-65 degrees F. and long exposures is effective, and, in the hands of the ordinary person, is perhaps on the whole more satisfactory than strong doses and short exposures as a remedy against the white fly.

Peas which have been eaten by the weevil may grow, as the insect does not always injure the germ. The plant, however, will be less thrifty, because it should get a good start from the seed, which it cannot get from a half eaten seed. Better feed such peas to the chickens and sow perfect seed.

Damping off of hot-bed melons is caused by closing the hot-bed too soon after watering, especially on warm days. The cells at the surface of the ground become injured and a fungous disease called damping off is induced. Admit fresh air and apply air slacked lime.