

be quickly filled with grass rather than with weeds. The kerosene spray had no effect on other lawn weeds.

The grade of kerosene used apparently determines in a large measure the success of the treatment. The use of impure distillates showing a yellow coloration resulted in a complete kill of bluegrass and white clover sod. Consequently, only the clear or so-called water white products can be used and even among these some appear to be more toxic to bluegrass and less harmful to weeds than others.

These workers found that the per cent of unsaturated hydrocarbons determines the toxicity of the product to bluegrass and its efficacy in weed control. They consider that for the best weed control with the least injury to grass the product should contain 2.5 to 4 per cent of unsaturated hydrocarbons and should have a boiling point of 180° to 250° C. (356° to 482° F.).

Experiments conducted by the Green Section with kerosenes from several sources so far have given inconsistent results. In some cases good control of dandelions was effected. However, this was accompanied by an increase in the amount of crabgrass. In other cases, although very little control of dande-

lions was secured, the amount of crabgrass was still greatly increased.

LEAD ARSENATE NOT INJURIOUS TO GRASS SEED

In connection with the use of arsenic compounds as described in this issue, and especially with reference to the work of Welton and Carrol as reported here, it is of interest to note from the Journal of the Board of Greenkeeping Research that Dawson and Ferguson at Bingley, England, found that lead arsenate applied with the seed did not prevent germination. They mixed 2 ounces of the chemical to the square yard with the surface 1-inch of soil and seeded fescues, bents, Poas, perennial ryegrass, and crested dogtail. This rate equals 14 pounds to 1,000 square feet. No significant differences were noted between the germination of seed in the control pots and that of seed in the treated pots. With the exception of crested dogtail, there was no material effect on the subsequent growth of the grass.

The rate of application was lower than the rate used by Welton and Carrol (20 to 25 pounds to 1,000 square feet). The germination of the seed was complete in 30 days after the application of the arsenate, while in the Ohio work several weeks or months elapsed between the appli-

cation of the arsenate and the time when crabgrass seed usually germinates. This may have given time for the arsenate to become soluble. In a few Green Section tests at the Arlington Turf Garden and elsewhere, some retardation of germination has been noted in areas receiving as little as 5 pounds of arsenate of lead to 1,000 square feet, but in most cases the results have been in accord with the Bingley observations.

A DISTINCTIVE COLOR FOR ARSENATES

The Paris green with which we used to kill potato beetles had a distinctive color and could not be mistaken for flour or sugar. Lead and calcium arsenate, however, look too much like flour or sugar to make them safe to have about the house. In fact, many cases of poisoning have been reported because of error in the use of the arsenate. Three states, Louisiana, South Carolina, and Tennessee, have legislation requiring that poisons which resemble foodstuffs or any ingredient of foodstuffs, shall be stained. Through the voluntary action of the manufacturing chemists' association such coloring will be made general, as the association has announced that both lead and calcium arsenate will be colored pink. This action is to be commended, as

it will help to decrease deaths due to mistakes in the identity of the poison. The color will not interfere with the effectiveness of the poison.

SODIUM ARSENITE AND SODIUM CHLORATE RENDER SOILS STERILE

Perhaps there is no part of the United States in which there has been more interest in chemical weed killers than in the West. Chemicals are used extensively on the Pacific Coast to kill weeds in cultivated fields but the problem of sterilizing soil so completely that vegetation may be excluded from tennis courts, drives, walks, and waste places is of special interest. Crafts in California made a study of the relative toxicity of sodium arsenite and sodium chlorate in four different California soils. The reports on this work appeared in *Hilgardia*. The soils varied from a heavy clay loam and adobe loam to a sandy loam and a fine sandy loam, and the results varied considerably in the different soils.

Varying proportions of arsenite were added to the soils and oats were planted to indicate the degree of sterility. Taking a growth of one gram in weight for 10 oat plants in 30 days as indication that the soil was practically sterile, it was found that the quantity of arsenite required