It will be noted that the amount of kerosene recommended by these investigators is slightly greater than that used by Loomis in Iowa when using kerosene alone for dandelion control. The addition of the mercurated-ethyl-stearate materially increased the cost of the treatment. However, the solution has been recommended for the control of various weeds, whereas the kerosene is said to be specific for dandelions.

Preliminary experiments with this substance at the Arlington Turf Garden have not given any too promising results. However, further work will be necessary before definite conclusions can be drawn. Our tests have shown that while it controls the dandelions somewhat more effectively than does kerosene alone, it causes a marked increase in the injury to the turf grasses with a resultant increase in crabgrass later in the season.

Control of Turf Weeds in Great Britain

At a symposium on the chemical control of weeds held in Great Britain the past season most of the papers dealt with the control of weeds in cultivated fields. R. B. Dawson, Director of the St. Ives Research Station, however described the English method of controlling weeds in lawns and fine turf. This and the other papers given at the symposium were published in the Annals of Applied Biology. Apparently in England they continue to get good results from a combination of three parts of sulphate of ammonia and one part of calcined sulphate of iron. The calcined sulphate of iron is our copperas or green vitriol with the water of crystallization driven off. These substances are mixed with 20 parts of soil, compost or other carrier, and applied six times a year at the rate of 4 ounces to the square yard (28 pounds to 1,000 square feet) for the more easily controlled weeds. This is similar to the remedy for turf weeds that has been used in South Africa for many years under climatic conditions widely different from those in England.

For weeds such as dandelion, plantain and cat's ear that are harder to control, a stronger preparation of three parts of sulphate of ammonia to two parts of calcined sulphate of iron is mixed with five parts of carrier and applied at the rate of 3 to 4 ounces to the square yard (21 to 28 pounds to 1,000 square feet).

Sulphate of iron alone or mixed with ammonium sulphate has been used in the United States for a great many years. Under certain conditions it gives satisfactory control of

weeds, but under other conditions it is not effective. At the Arlington Turf Garden combinations of sulphate of iron and ammonium sulphate, particularly when applied during the summer months, have invariably given discouraging results.

Crabgrass Control with Lead Arsenate and Calcium Arsenate

Arsenic compounds are rather widely used as weed killers, and any information showing that the use of these compounds can control crabgrass, the worst turf pest in many regions, is welcome. Welton and Carroll in Ohio conducted experiments in which they used lead arsenate and calcium arsenate applied in late fall, early spring, or summer. A report on this work appeared in the Journal of the American Society of Agronomy. The crabgrass plants on the treated areas were counted in October after the applications were made and checked against those on an area which was not treated. While there was some variation in effectiveness, the date of application was not an important feature. Rates of application less than 20 pounds to 1,000 square feet were not as effective as higher rates, whereas rates higher than 25 pounds were but little more effective than the 20 to 25-pound rates and were more injurious to the bluegrass. The best rates, therefore, were 20 and 25 pounds to 1,000 square feet. In 1933, 20 pounds of lead arsenate were applied to 1,000 square feet on various dates, and in October, 1934, and again in October, 1935, counts were made of the number of crabgrass plants on the treated areas. In 1934 the treated plots contained only 4 per cent as many crabgrass plants as the untreated areas. In 1935 the number on the treated plots had increased to 14 per cent of that on the untreated plots. Even at the 20-pound rate of application there was some injury to the grass, but this did not appear until a year or more after the application and was overcome by a liberal use of fertilizers high in nitrogen.

Calcium arsenate was, pound for pound, more effective than lead arsenate. Fifteen pounds of calcium arsenate did as good a job as 25 pounds of lead arsenate. When used at rates in excess of 15 pounds to 1,000 square feet, calcium arsenate was hard on turf, in fact it killed some of the grass.

As was pointed out by the authors, the reports on the use of arsenate of lead for the control of weeds in the different districts have been variable.