

Your plan of applying the lead arsenate to the greens as an ingredient of the topdressing in April is o. k. and many clubs are following this system. You could, if you so desired, apply the lead arsenate to the greens by mixing with sand and broadcasting the mixture as per above.

*B. R. Leach.*

Dear Mr. Leach:

We have soft grass greens (blue grass and red top) and have been using the following as compost: 50 per cent peat and 50 per cent woods dirt with 5 lbs. of sulphate of ammonia to the 1,000 sq. ft. and occasionally a liberal supply of milorganite. Our greens are not what they should be, especially the latter part of the season. We have a great deal of trouble with weeds and crab grass. Do they come from the use of the "raw" peat and wood dirt? The compost is mixed just as we need it. The greens are top dressed every ten days or two weeks and well watered.

*E. L. (Indiana)*

### Reply

Red top is a comparatively short-lived grass and disappears from the average golf green a year or two after seeding. Blue grass (Kentucky) prefers rich soil above all else and seems to do best when the soil is neutral, neither acid or alkaline. Would suggest as a future policy that you swing over to seeded or stolon-bent greens as they are much easier to handle and maintain and the turf is more desirable for putting-green purposes.

The topdressing mixture you are using at present is not a desirable one. It is too heavy in inert organic matter. Peat and woods dirt both contain very little available plant food. As a source of organic matter a small percentage in the topdressing mixture is permissible but never more than 10 per cent at the most. Would suggest a topdressing mixture: friable loam, 85%; well rotted, screened manure, 15%. If you cannot obtain friable, medium loam soil in your locality and have to depend on clay or silt would suggest the following mixture: clay or silt, 20%; sand, 70%; well rotted manure, 10%.

In order to correct the sour condition of the green caused by the persistent application of peat, woods dirt and ammonium sulphate would apply 10 pounds of ground limestone (not hydrated lime) per 1,000 sq. ft. of turf after each topdressing during the coming year.

For fertilizer would discontinue the application of ammonium sulphate during

the coming season and instead apply synthetic urea, milorganite, pulverized poultry manure or any other good organic nitrogen fertilizer. Follow directions supplied by the manufacturers of these individual products. Would go very light on the application of any of these quick-acting fertilizers during the warmer portion of the growing season.

Your weed problem is due in a large measure to the fact that the turf is thin due to improper soil conditions with the result that the crab grass and rank growing weeds are able to obtain a ready foothold. Correct the soil conditions, thicken up the turf and your weed problem will again become normal. Arsenate of lead will aid greatly in weed control but would not apply this chemical to your greens until you have them entirely back into shape.

*B. R. Leach.*

### Arsenate Will Not Kill Ruf

In reply to a recent communication regarding fear of the latent toxicity of lead arsenate in soil, would make the following suggestions:

Commercial lead arsenate is an acid salt, its formula being  $PbHAsO_4$ . When it is acted on by certain salts in the soil such as soluble phosphates and carbonates, you get a mixture of phosphoric acid, carbonic acid, sodium, potassium or other forms of soluble arsenic and tribasic arsenate, namely  $Pb_3(AsO_4)_2$ . Now this last named compound is just about as inert a commodity as we have; in fact, you can feed it to insects and animals with very little ill effects. Consequently, it has no effect on soil one way or the other. I have grown various crops in soil treated with 5,000 pounds of tribasic arsenate of lead and grown them normally.

The soluble arsenates resulting from the above reaction do not remain as such but react with the salts of iron, magnesium and other metals in soil, forming ferrous or ferric, magnesium, or other arsenates, many of which are as inert as tribasic lead arsenate and consequently do not affect either the soil or the plants.

Such a chemical cycle continues until finally all the lead arsenate applied to a given piece of soil is converted into these inert forms of arsenic.

*B. R. Leach.*

### Chickweed Eradication

Sir: In GOLFDOM last year you discussed the eradication of chickweed by the use of arsenate of lead. Last fall, I