

## Earthworms, Grubs, and Rich Soil

By rich soil in this case is meant soil containing much organic matter, particularly humus and manure. In such soil earthworms and grubs are most abundant. All animal life must have organic matter available in some form to sustain life, differing in this respect from plants, which are able to subsist alone on the inorganic contents of the soil when they have access also to light, air, and water. The attraction of rotted manure to earthworms and grubs is readily noted on golf courses. Much therefore can be done in controlling these pests by the use of inorganic fertilizers alone, particularly ammonium sulfate and ammonium phosphate. The evidence seems to indicate that fine turf can be maintained by the use of inorganic fertilizers alone. Of course there is no way known by which the organic content of a soil can be extracted in a single operation without destroying the growing turf. Steam sterilization and baking of soil will destroy the vegetable and animal life in the soil, but will not remove the organic matter unless sufficient heat is applied to reduce the organic compounds to pure carbon.

This is a feature which may well be borne in mind in the matter of fertilizing turf, but especially so in the matter of preparing soil for growing new turf.

### QUESTIONS AND ANSWERS

All questions sent to the Green Committee will be answered in a letter to the writer as promptly as possible. The more interesting of these questions, with concise answers, will appear in this column each month. If your experience leads you to disagree with any answer given in this column, it is your privilege and duty to write to the Green Committee.

While most of the answers are of general application, please bear in mind that each recommendation is intended specifically for the locality designated at the end of the question.

**1. Improving poor fairway turf.**—Three of our fairways have large areas which are entirely bare, and on the remaining 15 fairways there is about a 25-percent stand of Kentucky bluegrass. The soil is very poor, which is doubtless the reason for the bad condition of the turf. It is our purpose thoroughly to renovate the turf this season, if it can be done, and we are requesting that you outline a program which we can follow with hopes of success. (New York.)

**ANSWER.**—We would recommend that you thoroughly disk manure at once into the bare areas to which you refer, then smooth the surface with a spike-tooth or chain harrow, then sow a mixture of equal parts of Kentucky bluegrass and redtop seed at the rate of 150 pounds to the acre, then cover the seed with a weeder or light harrow, and then roll. On the remaining fairways, on which there is about a 25-percent stand of bluegrass, we would recommend that you apply bone meal to these at the rate of about 300 pounds to the acre, then sow a mixture of equal parts of Kentucky bluegrass and redtop seed at the rate of 100 pounds to the acre, then cover the seed and bone meal with a weeder or light harrow, and then roll. After the new growth of grass is well established, you can hasten its