

## QUESTIONS AND ANSWERS

All questions sent to the Green Section 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. If your experience leads you to disagree with any answer here given it is your privilege and duty to write to the Green Section. While most of the answers are of general application, it must be borne in mind that each recommendation is intended specifically for the locality designated at the end of the question.

**Treatment of putting greens containing considerable annual bluegrass (*Poa annua*).**—Annual bluegrass is giving us considerable trouble in our greens. Some greenkeepers object to it and try to get rid of it while others do not seem to mind it. What are your suggestions? (New York)

**ANSWER.**—Annual bluegrass makes up a large percentage of the turf on some of the most famous golf courses in the country. It is at its best in spring and fall. When a green contains also bent grass, there is a gradual change in late spring and early summer from a large percentage of annual bluegrass to a large percentage of bent. The bent predominates during summer, and in fall the annual bluegrass returns in abundance. Greenkeepers who have mixed annual bluegrass and bent greens have varying success in bringing the bent grass in as the annual bluegrass disappears in hot weather and in keeping the annual bluegrass in good condition during the seasons when it is most in evidence. Apart from general observations, little is known regarding the best method of culture for annual bluegrass. It is possible to have very fine annual bluegrass putting turf in spring and fall. The grass adapts itself fairly well to most cultural methods. Often it is necessary to cut annual bluegrass greens twice a day. The grass requires frequent watering, but not to the extent of keeping the soil saturated. Also frequent light applications of fertilizer are advisable; it is better to apply small amounts of fertilizer every two weeks than large amounts once a month. If the annual bluegrass produces a great deal of seed and becomes bumpy, the turf can be improved by dragging it with steel mats, followed by close cutting, in order to eliminate as many of the seed heads as possible. Also a light top-dressing at that time will improve the putting surface.

The undesirable feature of annual bluegrass is that it may become weak or even die out very quickly in summer. The fact that it can not be depended upon to provide good turf in certain sections of the country through summer seems important enough to some clubs to endeavor to prevent it from becoming established in their greens, particularly by paying special attention to means of preventing this when the greens are first planted. No doubt large quantities of seed of annual bluegrass are carried to putting greens through top-dressing material. Also seed of it may be washed from plants on higher elevations, to a putting green, unless sand traps or grassy hollows are provided to catch the surface wash before it reaches the green. When annual bluegrass has become thoroughly distributed in a putting green and makes up a large percentage of the turf, there is no practical method of getting rid of it apart from removing the turf and replanting the green.

**Value and use of marsh muck.**—We are sending you a sample of a fertilizer said to consist of dried and screened leaf mold to which a small amount of gypsum has been added. Surprisingly good results are claimed by the use of this fertilizer. It is offered at the same price we pay for activated sludge, which is \$30 a ton. How does it compare in fertilizing value with activated sludge? (Michigan)

**ANSWER.**—The material you sent is not leaf mold but marsh muck. It contains considerable woody material and hence has a high percentage of organic matter. It is very well decomposed and evidently has been under cultivation for a number of years. It is an excellent source of organic matter, but does not compare with activated sludge as to fertilizing value. The latter contains 5½ per cent nitrogen, 21½ per cent phosphoric acid, and up to ½ per cent potash. Marsh muck in its native state may contain about half as much nitrogen as activated sludge, but its nitrogen is in so insoluble a form that it is of little value to growing plants. Muck contains only a trace of phosphorus and potash, and its fertilizing value as far as these are concerned is negligible. The addition of gypsum to the muck gives it some calcium and sulphur. Peats and mucks of this kind are generally sold at about \$10 a ton, and although \$30 a ton is a fair price for activated sludge the material you sent is not worth anything like that price. Peats and mucks are valuable chiefly for their organic content, and can be used to great advantage, if the price is right, for mixing in soil beds or placing in compost piles in order to bring up the organic content of top-dressing material. A certain amount of such organic matter mixed, together with sand, with heavy clay soils, will greatly improve the physical texture of the clay; and mixed with sand, such organic matter will raise the water-holding capacity of the sand.

**Objections to layer formations in building putting greens.**—Our soil is a very heavy clay. We have exhausted the supply of our best lighter loam but have an abundant supply of muck available. It has occurred to us that this muck might be advantageously used in building our new greens. Our plan is to lay down first a gravel bed of about 8 inches for drainage purposes, and then on top of that a layer of about 18 inches of muck. This we will then let settle over winter, and in the spring will roll it down with rollers as heavy as can be handled. The top 6 inches, or seed bed, will be a screened mixture of muck and clay loam, which will also be rolled, and then lightly raked before seeding. We should like to have your suggestions in the matter. (New York)

**ANSWER.**—The idea of building greens with layers for various reasons received considerable attention years ago, and in almost every case greens built along these lines have proved unsatisfactory and have since been torn up and rebuilt. Experiments in soil physics clearly indicate that layers of gravel, peat, or muck, especially in putting greens, are injurious on account of their interfering with the natural fall and rise of soil moisture. In constructing your greens we would suggest that you build up the base with your natural soil, installing tiles for drainage purposes since your soil is heavy. The top soil on the fill should be made to a depth of at least 6 inches. Considerable organic material and sand should be disced into this top soil so as to obtain a fertile soil of a sandy loam consistency.



No. 11 hole (185 yards), Burning Tree Club, Washington, D. C.



**It is well to emphasize the material benefits that come from well-directed scientific research, because the work requires material support. Nevertheless, a narrow view of the purposes of science tends to defeat its object. Scientific investigations are sometimes most fruitful when directed merely toward the discovery of fundamental principles. Hence the ultimate justification in utility may be remote rather than immediate. Results will come, which can not be reckoned in advance. Results achieved as an unexpected by-product are often more important than those originally contemplated.**

**Arthur M. Hyde**

