

or more persons, at an annual expense of not more than the fees named above for each class of players. If Britain can give good golf on 18-hole courses for five or six guineas, we can give it in Oberlin on a 9-hole course for twenty dollars.

The Use of Bromcresol Purple in Testing Soil for Acidity

It has long been known that soils noticeably acid in character will produce good turf of bent, fescue, and certain other grasses, and at the same time will be unfavorable for the invasion of commonly troublesome turf weeds. This fact has frequently been brought to the attention of readers of THE BULLETIN, particularly in the discussion of means of controlling chickweed, white clover, and crab grass in bent greens. For the production of the desirable degree of soil acidity and at the same time providing suitable fertilizer for thin turf, the use of ammonium sulfate has been recommended. The question has at once arisen, How can one tell whether he is making progress in the acidifying of his soil for the discouragement of the growth of weeds?

To a chemist this is an easy problem, but not so to a greenkeeper. We are indebted to Dr. Edgar T. Wherry, of the Bureau of Chemistry, United States Department of Agriculture, for the working out of the following simple method by which soil may easily be tested for the desirable degree of acidity, by the use of bromcresol purple, a dye which may readily be secured through any dealer in chemicals.

First get one ounce of a 1 per cent solution of bromcresol purple. Then obtain some distilled water and wash thoroughly in it all of the utensils which will be used in the test until they are free from lime or other alkalis. The presence of alkalis on the utensils will necessarily lead to erroneous results in the testing of your soil sample for acidity. In place of distilled water, clean rain water will answer very well. Hard water should be used in no case, on account of the mineral salts it contains.

Place about one-half ounce of the soil to be tested, in a wide-mouth bottle or small jar, and to this add about two ounces of the distilled water or clean rain water. Mix the soil and the water thoroughly, by shaking or stirring, care being first taken to wash thoroughly the jar and the stirring utensil in the distilled water or rain water. Let the mixture settle for several hours. With a medicine dropper or small glass tube, which likewise has first been washed, withdraw five or ten drops of the clearest portion of the watery extract, and place these drops on a white dish after it has likewise been cleansed.

With the medicine dropper or glass tube add some of the solution of bromcresol purple to the watery extract in the dish, a small drop at a time, mixing after each addition, until the liquid becomes distinctly colored. The addition of large amounts of solution must be carefully avoided.

If the mixture of soil extract and the solution of the bromcresol purple assumes a purple or dull brownish color, the acidity of your soil is not great enough to keep your bent greens free from weeds. Applications of ammonium sulfate to the soil should then be resorted

to. After such applications the soil should be tested again at intervals. When finally the mixture of soil extract and the solution of bromcresol purple yields a clear and bright yellow color, the soil has reached a degree of acidity which is usually injurious to the weeds commonly troublesome in bent greens, and beneficial to the bent.

It must be borne in mind that soil which is not acid naturally, will tend to return to its natural non-acid condition, and that therefore continued applications of ammonium sulfate must be made, as needed, in order to keep the soil in a desirably acid condition.

The Value of Well-Kept Approach Areas

By Irving Hill, Lawrence (Kansas) Country Club

While it is true that every green committee must draw a line somewhere around each green to indicate a limit for spending money on the upkeep of the green, it should not be overlooked that in the end it is actually more economical to be liberal in the drawing of this line than to attempt to effect savings by restricting the area of upkeep for the green within too narrow bounds. Furthermore, what is more offensive to the eye or distasteful to the player than to approach a green encircled with coarse turf, bare spots, piles of rubbish, rock, bushes, tile ends, exposed pipe, fittings, hose, or what not? On our own 9-hole course, where we maintain fairly good bluegrass fairways and putting greens on an appropriation of \$3,600 a year, the tendency is to draw this line of upkeep at the edge of the putting surface itself, which encourages and tolerates not a few evils. As a matter of fact, if that line were drawn to include the area about the green within which a player is entitled to try for a chip shot to the hole, it would really prove more economical and certainly more satisfactory.

As a player draws near the hole, the character and frequency of play becomes concentrated. Balls and players cross a line, which means a change of clubs for the player and of tools for the greenkeeper. By evening up the bumps and draws usual in these approach areas, the fairway mower can then come in close, thus enabling the greenkeeper to fix a line, depending on the size of his green and the slope of the hump, so that there will be no middle-ground or dividing line between the fairway mower and the green mower. This line is simply a cutting line for the two kinds of mowers. A common mistake is to use it for a limit line of top-dressing, surfacing, raking, smoothing, weeding, and watering. Siftings are disposed of on or near it. Instead of mowing one to four times around the green to make the turn of cross mowing vary, the mower is turned and manipulated always along that line. That makes bare spots. Water erosion enters the edge of the green. This means additional work and care. There are cuppy lies and subsequent divots.

Fertilizer from the green makes the fairway grass grow unevenly along that line. Fertilized spots grow tall, while other spots remain short. Moreover, crab grass and weeds are only too frequently allowed to run wild in these bunches of long and short grass, making the doorway to the green look unkempt and being unfair and uneven to the ball. Especially in the most-played entrance to the green is it necessary that the weeding, smoothing, and fertilizing be