

It is safe to say that not more than 5 per cent of the members of any golf club take the trouble to study the treasurer's report; but 95 per cent are deeply interested in the standard of golf course maintenance. If that standard is poor, the members are unhappy and there is no pleasure for the board, the golfers, nor the staff. At the end of such a season, who cares whether the balance reported by the treasurer is \$1,000 or \$2,000, one way or the other?

Surely the reduction of greens staff for the closing months of a golf season, with the inevitable drop in maintenance standard in order to keep costs within a budget, is of the utmost folly. Perhaps one day some one will ask a far more important question—"What proportion of the club's income is spent on the golf courses and essential facilities of a golf club, and what proportion on the trimmings that go to make a country club?" It is far easier to obtain appropriations for such items as orchestras, interior decorations, and the like, than for such essentials as fertilizer or new greens equipment. Very frequently the equipment at the disposal of greenkeepers is of poor quality and inadequate, and rarely indeed is the greenkeeper furnished with proper buildings for storage of equipment and supplies.

The success of a golf club depends almost entirely upon the quality of the golf course. Yet the greens budget is the one that is cut to the lowest possible figure, and today club houses usually consume more of the club's income than the game for which the clubs were founded and to which they owe their existence.

In many large clubs, the cost of running the club house exceeds the costs of maintaining *two* golf courses. In addition, the club-house restaurant has a loss running into several thousands of dollars while green fees received from the courses run to nearly half the maintenance budget. The net result is something to ponder over. Such a situation might be expected in a community country club, where golf is but one of its attractions; but it often happens that clubs allow themselves to drift from "golf" to "country clubs" until they become neither one nor the other. In these days when golf clubs are so numerous there is real competition, and the one that falls behind in its standard of golf course or courses is apt to see a declining membership and declining income—a very serious situation for the club encumbered with many country club facilities and activities which are not self-supporting.

QUESTIONS AND ANSWERS

Injury to greens from excessive fertilization.—Our putting greens, which are creeping bent planted one year ago, are now, in June, in poor condition, some being so poor that there is no place for a cup. Last year we fertilized them only with sulphate of ammonia, at the rate of 75 pounds to a green, the greens being 5,000 to 6,000 square feet in area. We watered them about three times a week, and cut them as often to about 5/16 inch. Last September they suffered as if from brown-patch. They came up pretty well in April of this year, but about May 15 the grass began to die. We have fertilized them this spring with activated sludge at a rate of about 250 pounds to each green, and we have now just completed fertilizing them with a mixture of 40 pounds of activated sludge and 3 pounds of sulphate of ammonia to each 1,000 square feet. We have top-dressed each green

twice this year, using about $1\frac{1}{2}$ cubic yards at each application. We do not think the injury is due to brown-patch, for the reason that we have been treating each green twice a month with a combined fungicide and fertilizer, the fertilizing element being urea. We have at times thought that the grass might have been scalded by the sulphate of ammonia that has been applied. Do the greens require lime? We are sending you a specimen of our turf and shall be glad to have your advice in the matter. (Michigan)

ANSWER.—An examination of the specimen of your turf indicates that the soil contains plenty of lime. The grass roots do not penetrate below 1 inch. There is considerable organic matter mixed in the top inch of soil. This may be muck used either in the construction of the greens or in the top-dressing applied, or it may have been occasioned by the application of too much activated sludge. The soil below the top inch is a sandy loam and should be a good medium in which the roots may develop. There is no doubt that something is dwarfing the root system of the grass, and from what you write we are inclined to think that the main trouble is the use of too much fertilizer. From your letter it appears that so far this season you have applied a total of about 90 pounds of activated sludge to each 1,000 square feet of surface. In addition, each 1,000 square feet has received 3 pounds of sulphate of ammonia, and also the urea contained in the combined fungicide and fertilizer. It is a wonder that the turf is not completely ruined by this extremely heavy fertilization. The application of 40 pounds of activated sludge and 3 pounds of sulphate of ammonia to 1,000 square feet would be sufficient at certain times to ruin a green. In hot weather we would not apply activated sludge at a heavier rate than 20 pounds to 1,000 square feet on putting greens, and would certainly not risk the application of sulphate of ammonia along with the sludge on putting greens during hot weather, since it is likely to cause burning. We would recommend that you do not fertilize your greens again until September, and that you make use of a fungicide which contains no fertilizing element, at least until the greens are in a healthy condition, since if they are now overloaded with nitrogen from the fertilizers it would not be good practice to continue to apply nitrogen. There are a number of fungicides on the market which are not combined with fertilizer and may be advantageously used by following the directions supplied with the fungicide. In place of these, however, you could apply corrosive sublimate at a rate not exceeding 2 ounces to 1,000 square feet in hot weather. You will probably have to use any of these fungicides as often as every 2 weeks, or more often, to keep brown-patch under control, as it is necessary to apply a fungicide with each appearance of the disease.

Renovating fairways.—Our fairways, which are on sandy soil, have not been dressed or seeded for twelve years and are getting very thin and patchy. The following method of renovation has been suggested to us and we should appreciate your advice in the matter. It has been suggested that as soon as play is over for the season we take an adjustable disk-harrow, attach weights to it, and adjust the plates straight so that it cuts but does not turn the soil. This is to be drawn in four directions over the turf. A certain commercial fairway fertilizer and shredded cattle manure are then to be broad-

cast at the rate of $\frac{1}{2}$ ton of each to the acre, and worked in by dragging with a large bundle of tree branches. A mixture of colonial bent, Chewings' fescue, and redtop seed is then to be sown at the rate of 75 pounds to the acre, and this also dragged with tree branches. The fairways are then to be rolled. (New York)

ANSWER.—On most established fairways we do not recommend reseeding unless there are large areas several inches in diameter with no grass. From what you say your fairways seem to be suffering mostly from lack of fertilizer. Hundreds of golf clubs have found that the same amount of money put into fertilizer will improve fairways far more than if put into seed. It is therefore suggested that you concentrate this year entirely on a heavy fertilizing program and perhaps follow it next season with further fertilizing of the areas that are still thin. Another year it might be desirable to put seed into the areas where the turf is still patchy. If established turf is poor due to lack of fertility there is no reason to assume that seedlings resulting from new seed will make any better turf. Old starved turf can quickly thicken and give a fine fairway if sufficient food is supplied. Sandy soils are much more apt to be starved than clay soils, due partly to the fact that plant foods are more rapidly washed out of sand than out of clay. All in all we consider the program you outline as a rather expensive method of treatment. On sandy soils there is usually little to be gained from disking established turf. In hard baked clay fairways there is some value in disking if it is proposed to work into the soil manure, other forms of organic material, or sand. When manure is applied to fairways it is better to do the disking after the manure is applied, so as to work it into the soil. Manure lying on the surface, whether the surface has first been disked or not, soon dries out and thus loses most of its value. Moreover, shredded cattle manure is one of the most expensive fertilizers you can use for the results to be obtained. You could probably use mushroom soil to much greater advantage than shredded cattle manure, and if this were disked into your fairways you would no doubt get much better results, since mushroom soil in addition to the manure it contains also contains some clay, which greatly improves very sandy soil. We suggest also that you get prices on other fairway fertilizers, such as activated sludge, poultry manure-tankage, cottonseed meal, bone meal, and a number of trade mixtures of which you know the composition. On page 112 of the Bulletin for June, 1928, you will find a list of the common fairway fertilizers, showing their relative fertilizer values and rates of application, and with the figures there presented and the prices you can get on the various fertilizers delivered you will be able to determine which fertilizer you can use to best advantage.

Treatment of peat deposits for utilization as top-dressing material.—We are sending you a sample of soil of which there is a large deposit available for our use. We are thinking of trying this soil on our fairways which, due to their sandy nature, suffer much from drought in summer. Your recommendations on the proper use of this soil will be appreciated. (Massachusetts)

ANSWER.—The material you send is very largely sedge peat. It would be of some value applied directly to your fairways but would

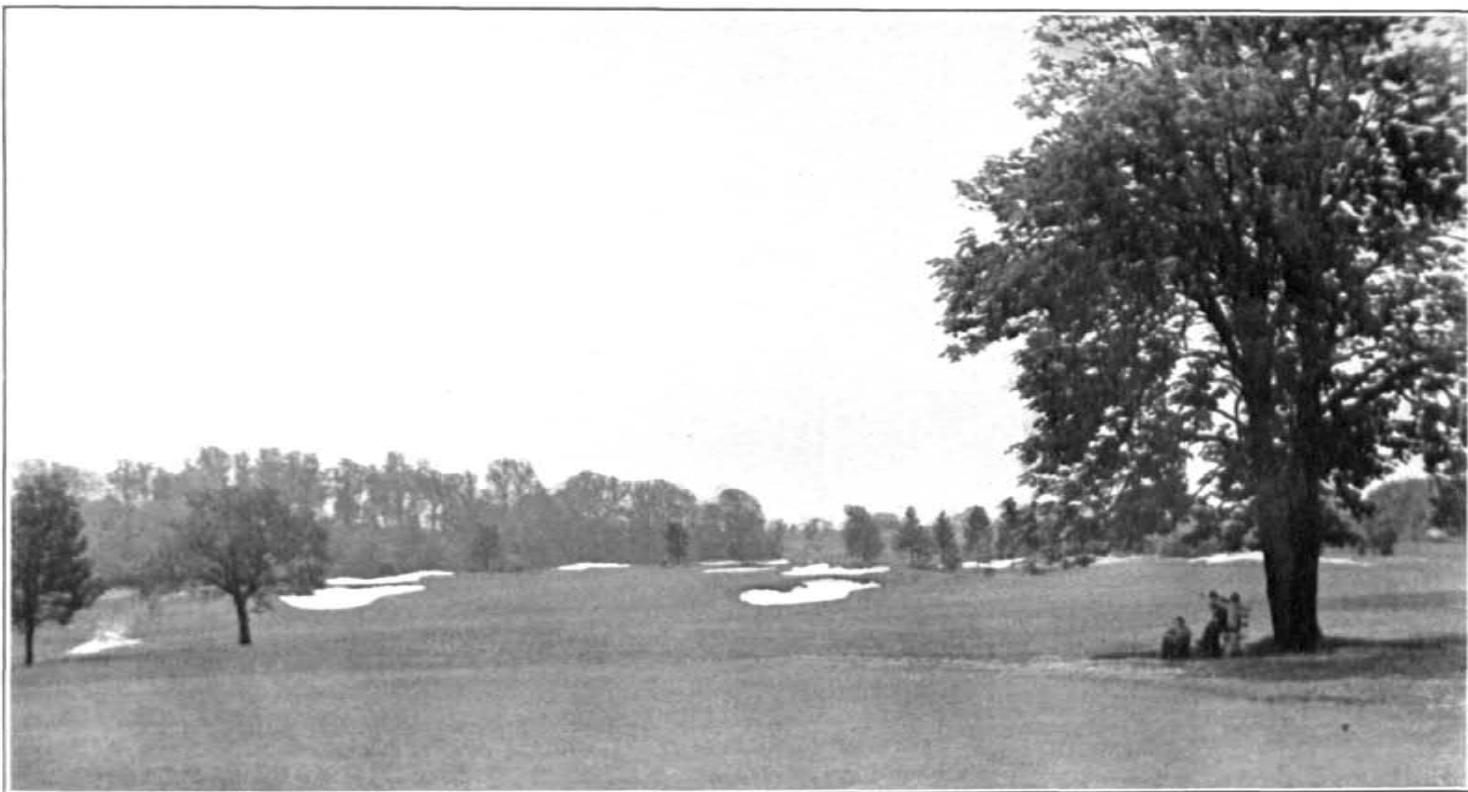
be much more effective if it could first be composted or cultivated for about a year. It is very acid and not well decomposed. By composting it or cultivating and adding lime to it, its decomposition would be hastened and thus a very fine material would be obtained for use as top-dressing. The cheapest way to prepare it properly, provided it is possible, would be to drain the bed of peat and cultivate it where it lies. By running a few lines of tile or open ditches across the bed, provided with good outlets, the moisture would soon be drained out so that the peat could be plowed. It would then be well to apply about $\frac{1}{2}$ ton of limestone to the acre and plow it in as deeply as possible. After the plowing another $\frac{1}{2}$ ton of limestone to the acre should be spread and disked in. A disk or cultivator should be run over the bed every few weeks to keep it well stirred and aerated. After a year of such treatment the top layer of the bed would be ready for spreading on the fairways. If the bed is deep, the treatment as described above could be repeated and another layer prepared for the following season's use. If it is not practicable to cultivate the material in this manner in the bed where it now occurs, it could be spread on a piece of the rough or some abandoned land and then mixed with soil. A layer of the peat should be spread to a depth of 3 or 4 inches and then plowed into the soil after an application of limestone at the rate of 1 ton to the acre has been made. It should then be disked occasionally. After a few months this mixture of soil and peat should provide an excellent top-dressing material for use on your fairways. If neither of these plans is practicable, the peat may be applied to your fairways as a thin top-dressing, and limestone then applied at the rate of $\frac{1}{2}$ ton to the acre.

Meaning of fertilizer formulas.—What does the 6-8-2 as applied to a fertilizer mean? (Massachusetts.)

ANSWER.—These figures represent the percentages of nitrogen, phosphoric acid, and potash respectively contained in the fertilizer. A fertilizer analyzing 6-8-2 therefore contains 120 pounds of nitrogen, 160 pounds of phosphoric acid, and 40 pounds of potash in each ton, the remainder of the weight being made up of inert matter, which is not considered as plant food. Further information on this subject will be found in the article entitled *The Fertilizer and the Bag*, on page 113 of the *Bulletin* for June, 1928.

Controlling mole crickets.—Can you give us instructions regarding the best method of controlling mole crickets? (Florida.)

ANSWER.—Probably the best method of controlling the mole cricket is by the use of poison bait. Both Paris green and arsenate of calcium have been used successfully as the poison element, but for some reason the moles will not readily feed on bait containing arsenate of lead and consequently it is not as effective. Poison bait is made up of 100 pounds of cottonseed meal, 100 pounds of rice flour, and 10 pounds of arsenate of calcium, moistened with a cheap molasses solution. The bait is made crumbly and applied at the rate of 15 pounds to a putting green or 150 pounds to an acre.



Looking from the tee on No. 1 hole, Merion Cricket Club, Haverford, Pa.



All that I have accomplished, or expect, or hope to accomplish, has been and will be by that plodding, patient, persevering process of accretion which builds the ant-heap—particle by particle, thought by thought, fact by fact.

Elihu Burritt

