

village dump. All that is needed to complete the picture is the tin cans, broken bottles, and waste paper. Every green the expert put down went bad; so they were plowed up and are being reseeded. And the reason they went bad and *will stay bad* is obvious—poor drainage.

I must go to work now. But let me tell you I never thought I'd live to see the work of a real expert—not a theorist, mind you, but an expert who makes theory and science a servant rather than a master, and who boasts of the refinery in which theory and practice are refined into the pure stuff. There's a sucker born every minute. And the expert will find a fresh field to work on while the poor beggars who are on the course I am telling you about will be working twenty years to clean up the damage the expert did in one.

I know the best of us make mistakes, even though I tell my wife I can't remember back far enough to recall one of my own. But an honest mistake is one thing, even if made by an expert; and rank incompetency is another thing. And fools still rush in where the footing is bad. I wonder how the experts keep up their sucker list!

Yours,

BILL.

The Green Committee of the U. S. Golf Association is always glad to publish items showing how work around courses can best be done.

Questions and Answers

All questions sent to the Green Committee will be answered as promptly as possible in a letter to the writer. 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.

1. *Our new fairway, seeded in October, 1919, has a light gravelly soil. It was formerly woodland of scrub oak and pine. This fairway is very hard and has a great many bare patches. What treatment do you advise? J. A. C., Massachusetts.*

It will be rather difficult to improve the texture of the soil now that your fairway is seeded. Our advice would be to apply as such fine compost as you can. Under this treatment the fairway should gradually improve, as you are in a section where the fine turf grasses volunteer.

2. *We are sending under separate cover today two cans containing some samples of earth. We have just made a large water hazard by installing a dam at the end of a swamp on our course. The bottom of this swamp is made of vegetable matter which some of our people think would be valuable for covering the greens during the winter to feed the grass. We do not want to take the responsibility of this unless we receive some expert advice that it is satisfactory for this purpose. H. S. W., Connecticut.*

Soil gathered from the bottom of swamps is frequently found to be toxic to grass growth. The presence of toxicity can readily be detected by a test of a sample of the soil with grass seeds. We will perform such a test with your samples when they arrive, but it will be some weeks before the results can be ascertained, as it is necessary to sow grass seed in the samples,

wait until these germinate, and see what they do for a week or so following germination. Grass seeds will often germinate well in toxic soil, but the seedlings will be killed by the soil after they have started to grow. We suggest that you conduct such a test with several samples of the soil taken from different locations in the swamp, some near the edge and some at the center. Small boxes (even cigar boxes) can be filled with the soil and set in a warm and lighted place, and sown with grass seeds, kept watered, and the results can be observed. It would be well for you to conduct such tests. If you find the soil toxic, it should be spread out and allowed to leach during the winter from the effects of rain and snow, and then tested again in the spring before you make use of it. If it is not found to be toxic now, we would suggest that you apply it as a fine top-dressing to the turf in the spring; it will be more needed by the turf then than during the winter.

3. *I am sending you two samples of commercial fertilizer which I would thank you to have analyzed for ingredients as stated below:*

No. 1	No. 2
Potash (potassium oxide)	Potash (potassium oxide)
Phosphoric acid (total)	Phosphoric acid (total)
Nitrogen (from sodium nitrate)	Magnesium oxide
Magnesium oxide	Sulfur
Sulfur	Lime
Sodium oxide	Sodium oxide
Lime	Iron oxide
Iron oxide	Manganese oxide
Manganese oxide	Titanium oxide
Titanium oxide	Alumina
Alumina	Silica
Silica	
Potash soluble in distilled water	

G. H. B., Massachusetts.

We have had your samples analyzed for nitrogen, phosphoric acid, and potash content, but not for the other constituents listed. The analysis is as follows:

	Sample No. 1	Sample No. 2
Total nitrogen, N.....	0.81%	1.03%
Total phosphoric acid, P ₂ O ₅	4.20%	5.36%
Water-soluble potash, K ₂ O.....	2.69%	3.54%

The value of a commercial fertilizer is based on its content of nitrogen, phosphoric acid, and potash. We believe that a fertilizer containing a relatively greater proportion of nitrogen than these contain would give better results in the growing of fine turf grasses. In ordinary mixed fertilizers the potash and nitrogen vary up to about 5 per cent and the phosphoric acid to 10 per cent.

4. *We have two ponds on our golf course, the water of which in places is thickly covered with a form of vegetation which we desire to get rid of. It occurs more abundantly on the smaller of these ponds. I am sending you a sample of the plant under separate cover. Can you suggest a remedy? F. J. W., Vermont.*

The plant you send is a form of alga bearing the scientific name of *Chara*. It is not easily killed with the usual treatment of copper sulphate, especially the species which contain more or less lime, which is the case with the species you have in your ponds. We would suggest that you try the copper sulphate treatment on your small pond before attempting

it on the large pond. The best way to apply copper sulphate is to put it in a coarse bag and drag it about in the water until dissolved; this requires about an hour. A safe limit of application is 1 pound of copper sulphate to 1,000,000 gallons of water, in case the ponds are stocked with fish which you do not desire to destroy. Of course you will have to estimate with reasonable accuracy the amount of water which the pond contains and then apply the appropriate amount of copper sulphate.

5. *I am sending you herewith a sample of coco or nut grass that comes in the sandy soil in this section. Can you suggest any method by which the same can be obliterated? C. B. B., Texas.*

We regret to say that we know of no method of eradicating nut-grass. Unfortunately, it seems to be a matter of hard work and constant vigilance. This weed is discussed fully in a circular of the U. S. Department of Agriculture, which can be obtained free on application.

6. *Will you kindly give us your views as to the use of pulverized sheep manure for use on putting greens and fairways? We refer, of course, only to the use of that grade of sheep manure that is thoroughly kiln dried and on behalf of which the manufacturers claim there are absolutely no weed seeds. T. W. W., Virginia.*

We think there can be no question that powdered sheep manure is a valuable fertilizer, but so far as turf is concerned our experiments indicated that it was not nearly so efficient as mushroom soil, and the cost is considerably higher. From our standpoint, the problem of its use is largely that of economy—that is, the price of the sheep manure as compared with that of mushroom soil. The prices being the same, we should have to recommend the mushroom soil, in the light of our present knowledge. Of course, the powdered sheep manure has an advantage in the matter of convenience, but not, we believe, sufficient to overcome the differences.

7. *It may be of interest to you to know that certain of our greens have been visited for a short period by the grub of a species of cut-worm of darkish green color and about an inch long, which seems to have done some damage to the grasses, but the period of activity of these grubs or worms seems to be only from 10 days to 2 weeks. We gave a specimen to an entomologist, who pronounced it to be the grub of the giant daddy-long-legs, and also gave information to the effect that its life would only be a short period and that it had a habit of visiting newly sown greens. We used what is known as "Maggotite Worm Destroyer," but I have no direct evidence to prove that this was effective. We immediately reseeded our greens and gave them a thorough topdressing, consisting of certain proportions of sharp sand, leaf-mould, ground peat, and fertilizer; the result has been very marked in that the greens are again assuming a very healthy color, and the new seed, consisting of redtop and fescue, is making a strong appearance. These grubs seem to have run their limit of existence and disappeared. We found that the high portions of the greens were mainly affected and that the affected greens were in the proximity of oak trees and other foliage. H. W. W., California.*

The larvae of the daddy-longlegs flies sometimes do serious damage in turf, but only very rarely. It is highly probable that the remedy that has been found so effective against grubs that work just under the turf will work perfectly with the daddy-longlegs grubs. This is 7 ounces of sodium

cyanide dissolved in 50 gallons of water, this amount of water being sprinkled on an area of 200 square feet. You may get a slight burning of the grass, but it will be purely a temporary effect, and the insects are pretty certain to be killed.

8. *We are told that the grub of the southern June-beetle does not injure greens that are regularly topdressed with sand. Is this true? A. J. C., Pennsylvania.*

The suggestion is an entirely new one to us, and we have no information, either positive or negative.

(If any reader can give us any experience throwing light on the subject we shall appreciate it greatly.)

9. *We would also appreciate your advice relative to the seeding of our bunkers and rough, which have not yet been seeded at all. R. A. Y., Indiana.*

The best grass to use for your bunkers and rough is sheep's fescue.

10. *Some of our fairways are partly covered with sheep's fescue growing in bunches on a sandy loam and which makes cuppy-lies. We shall be glad to know what is the best way to eradicate this nuisance. E. M., Ontario.*

We agree with you that this grass is very undesirable on fairways but think it quite possible to do much in the way of overcoming the cuppy-lies for which it is responsible, by disking or harrowing the portions of the fairway which you desire to improve and sowing seed of the bent grasses, either so-called creeping bent or Rhode Island bent. If this is done it should be done in your latitude early in the spring, and a good dressing of compost or some suitable fertilizer applied. Our suggestion would be that you try a few areas—for example, some of your worst areas that catch shots from the tee. Early fall reseeding is quite satisfactory farther south, and we think it might prove satisfactory in your latitude. Bent grasses are aggressive, and if a thin stand is obtained they have a tendency to spread to the exclusion of other species. Do not use any lime in connection with them.

11. *I am sending you a sample of some spent tea leaves we are getting from a chemical company for fertilizer. We would like to know their value as a fertilizer as compared with ordinary farm manure. It seems that this chemical company extract some chemical from these leaves, and we are getting the refuse, which we are using on our golf course instead of farm manure. They usually dispose of this refuse to certain fertilizer companies, but owing to the general business depression the fertilizer plants are not able to take all that the chemical company produces. The freight, however, is high, and we do not want to take any more until we get your report. T. D. W., Illinois.*

The sample of spent tea leaves you submit contains the following percentages of fertilizing elements: Nitrogen, 1.87; phosphoric acid, .46; potash, 1.22. The sample could not be considered to possess high fertilizing value. We have no data on the value of spent tea leaves as a form of humus, but are inclined to think they would be at least as valuable, pound for pound, as ordinary bog peat, provided it is found they are not toxic to growing grasses; this can easily be determined by a test on your own grounds. It is our opinion that unless you can purchase the leaves at a very low cost you would not be justified in using them.