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. 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. Cinder layers in greens; fescue as a putting green grass.—Our new greens were constructed and seeded a year ago last September, consisting of a cinder base, layer of sod, and then the seed bed, planted with a mixture of seeds supposedly to foster the propagation of New Zealand fescue. It was stated at the time that within a year or less the various grasses and weeds, redtop, white clover, etc., would be crowded out and that only the very fine grass of the fescue seed would predominate. Up to this time it has not happened and it takes a very careful search to find any of the fescue grass at all. Will the fescue crowd out the other grasses in time, as guaranteed? (Missouri.)

We are strongly averse to building greens in the form of artificial layers, as all of our experimental work with such greens has been unsatisfactory. A layer of sod is not so bad as soon as it is converted into real soil. The cinder base we regard as undesirable altogether apart from its expense. We have looked over the putting greens of a good many courses in your vicinity and find no fescue. Your conditions there are much like ours here at Washington. Here we can grow pure fescue, as we have done in experimental greens, but the bents soon invade the greens and eventually crowd it out. On old putting greens fescue seed has been sown abundantly many times but we do not know of a putting green on a golf course around Washington that has an appreciable amount of fescue in it. In short, we regard red fescue as utterly unfit for use on a golf course in the latitude of Washington and St. Louis, and even farther northward we do not consider it desirable except on sandy and sandy loam soils. On the clay soils the bents do much better and are much more desirable grasses.

2. Value and use of humus in compost.—Our course has tons and tons of "humus" on hand—the commercial kind—and your Bulletins warn us that this may be of no real value. We are at present making tests to ascertain if anything will grow in it or not. We also have tons of sulfate of ammonia, and we hesitate to use it until further investigations regarding it have been made. We also found that there wasn't a single pound of compost on the grounds, and a woeful lack of even good top soil. We also found on hand several carloads of matter that came out of hotbeds, but seemingly so spent that the indications are that it is not even so good as good dirt. We are establishing a compost pile and would like to know if we can safely incorporate the above-named ingredients in it. (Missouri.)

Commercial humus is not of much value, and the cost is entirely out of all proportion to any value it does possess. Inasmuch as you have some on hand I would advise you to utilize it in connection with your compost piles. A compost pile consists of about equal parts of loam and manure, or

if you use the humus then say, one-half loam, one-fourth manure, one-fourth humus. If your soil is of the nature of a stiff clay, as much of it is about your locality, then use one-third top soil, one-third sand, and one-third manure and humus mixed.

3. Treatment of ash dumps for turf growing.—We have a proposition on hand where the land has been used as a dumping ground for ashes. This fill has been in place for a period of five years or more, and about 75 per cent of the area has vegetation on it, largely weeds. Have you any information available on the success of growing turf on fills made from ashes where no additional top soil was placed on it? (Illinois.)

Concerning the growing of turf on land which has been used as a dumping ground for ashes we can not think offhand of any piece of such land being covered with good turf. Usually on such land there is a vigorous growth of weeds and also many grasses such as redtop, bluegrass, timothy, etc., all of which leads us to believe it will grow good turf. Such land, however, would be a little bit undesirable for the fairway of a golf course, because the ashes usually contain a lot of cinders sufficiently large to deflect the club. It would be very much better if the ash bed could be covered with a thin layer of soil, or failing this, to take all of the coarser material out of the top two or three inches. We believe that even without a top soil you will be able to grow a very satisfactory turf, but it would be safer and more desirable to top-dress it with an inch or two of soil.

4. Exterminating dandelions.—Will you kindly advise us what is the best way to handle the dandelion problem? (Wisconsin.)

Perhaps the best method of handling dandelions on putting greens is to impregnate the crown of the plant with sulfuric acid. This is done with an ice pick. Dip the point of the pick in the acid and stick it into the crown of the plant. This kills the plant, and if done carefully will do no injury to the grass. The acid should be carried in a small, flat-bottom bottle, securely held in its place in a wooden box. If the bottle is tipped over, any acid that is spilt will kill the grass it touches; it will also eat through clothing or take the skin off the hands of the workmen if great care is not used.

5. Possibility of burning grass through use of liquid manure.—We have a concrete pit into which is drained the urine from horses and cows and also the leachings from their solid excrement. For how long a time before using should this liquid be stored in order to prevent burning of the grass when it is used? (Missouri.)

We do not believe that any ordinary liquid of the kind you mention will burn grass. When considerably diluted, however, we believe that such a liquid would still greatly stimulate the growth of grass; but we could see nothing to be gained by diluting it further than to get a liquid of a dark brown color.

6. Use of sulfate of ammonia as a liquid spray with Bordeaux mixture and sulfate of copper.—Would you advise the use of sulfate of ammonia with sulfate of copper and Bordeaux mixture as a spray for turf? (Illinois.)

Sulfate of ammonia should not be mixed with Bordeaux mixture, as the resultant reaction will be the liberation of the ammonia. Sulfate of ammonia alone, or Bordeaux mixture alone, can be used to advantage as

a spray for turf. Sulfate of copper alone should certainly not be used, as it will injure the grass badly.

7. Possible injurious after-effects from use of corrosive sublimate as a worm exterminator.—Kindly give me your opinion on corrosive sublimate for the eradication of worms in putting greens, both as to its efficiency as an exterminator and its effects, if any, upon the turf. I have heard that this chemical is injurious to turf. (Michigan.)

In our experience corrosive sublimate is the best of all of the worm eradicators, the best from the standpoint of getting the largest number of worms and also because of its cheapness. It does not injure the turf unless used in excessive quantities, and there are no deleterious after-effects. You will find this matter fully treated in the May, 1921, number of THE BULLETIN.

8. Depth advisable for top soil of putting green.—In the construction of a new green we are making a fill. What depth of top soil do you advise for this green? (New York.)

We have yet to see any evidence that there is any advantage in having more than four inches of good soil on the surface of the ground for turf growing. The matter of water, fertilizing, etc., can be completely controlled from the top, and there is no advantage in having a deep, rich soil. The basis of this conclusion will be published later with a lot of details from experiments.

9. Difference between European red fescue and New Zealand red fescue.—What is the difference between European red fescue and New Zealand red fescue, and which of the two will stand sprinkling the better in the hot summer weather? (Illinois.)

Most of the European red fescue is genuine *Festuca rubra,* while all of the New Zealand (or Chewings') red fescue is *Festuca rubra* variety *fallax.* The two are very similar, but in our plantings the European red fescue is slightly superior. The differences are however so slight that they can only be detected by constant and careful observation. There is practically no difference whatever in the putting surfaces produced by the two. We have never observed any difference in the relative abilities of the two to stand watering.

10. Wood ashes as a fertilizer.—I would greatly appreciate some advice as to the value of wood ashes on our golf course. We can get about one cubic yard of wood ashes per week merely for the price of hauling it half a mile. The ash comes mostly from soft woods, spruce, balsam, etc., and practically none of it is from hard wood. If the ashes are worth hauling, would it be more beneficial to broadcast them on the fairways or greens, or would they be of more benefit if mixed with manure and soil in our compost heap? (Quebec.)

The value of wood ashes as a fertilizer is mainly on account of the potash which it contains, although it does contain small quantities of phosphorus. It is considered valuable in gardens. It has a good mechanical effect in addition to the benefit derived from the potash and phosphorus contained. We should think that the wood ashes that you can get would be a good investment for your club provided it does not cost you over say $6 or $8 per ton delivered at the course. In our judgment it would be much more valuable mixed in your compost heaps than spread

alone, but even if spread alone it should be a good investment at the prices we have suggested.

11. Legumes for improving soil.—We have prepared two acres of ground on which we plan to sow a crop of Whippoorwill cowpeas just as soon as the ground is warm enough, aiming to plow the crop under and then reseed with a winter crop. Should this not give us a good grade of top soil next spring? (Missouri.)

There is no question but that plowed-under legume crops in the top soil greatly increase its richness. Another plan, however, which is very admirable, is simply to sow the land to grass and then use the sod in your compost piles. Most greenhouse people use a compost made of about equal parts of sod and manure.

12. Winterhardiness of bent grass.—Some of our club members have the idea that the stolon method of using bents for putting greens results in a turf that is too tender or too delicate to stand the winters in our locality. Have you any information on the subject to give us? (Massachusetts.)

We have never found any evidence of the bents winter-killing in New England or any other part of this country. They are strictly northern grasses, and Washington is about the southern limit for their natural growth. We do not think you will have any trouble from this source. The grass makes a wonderful growth as soon as the warm weather comes in the spring.

13. Use of hops in compost heaps.—We have an opportunity by which we can get a large quantity of hops from a nearby brewery, with no cost other than the hauling. We had thought of trying some in our compost. With what materials should they be composted? What is your advice concerning the advisability of the scheme? (Ohio.)

Your hop question is a brand new one, but we see no reason at all why these hops should not be very useful things to put in compost heaps and allowed to decay thoroughly. Such a compost heap should consist of about one-half good top soil or sod, one-fourth manure, and one-fourth hops put in comparatively thin layers so that in the rotting process the whole thing becomes thoroughly inoculated from the manure and breaks down rapidly.

14. Prevention of Bermuda and wild grass growth in sand bunkers.—What can we use to keep Bermuda and wild grass from growing in sand bunkers? Is there a solution we can use for this? (Tennessee.)

The cheapest weed killer of all is common salt, and this applied liberally will kill Bermuda or any other grass. Other substitutes used are mineral oils of various kinds, but these are highly undesirable in bunkers, as they will cake the sand. Another very common weed killer is sodium arsenite—probably the most effective of all but more expensive than common salt, which should prove entirely satisfactory.
