

# Bulletin of the Green Section of the U. S. Golf Association

Vol. I

Washington, D. C., December 16, 1921

No. 12

## A MONTHLY PERIODICAL TO PROMOTE THE BETTERMENT OF GOLF COURSES

ISSUED BY THE GREEN COMMITTEE OF THE  
UNITED STATES GOLF ASSOCIATION

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### **Annual Meeting of the Permanent Members and the Delegates to the Green Section**

As the Annual Meeting of the United States Golf Association will be held on Saturday, January 14, 1922, at the Drake Hotel, Chicago, Illinois, it has been found advisable by the Green Committee of the United States Golf Association to hold the annual meeting of the permanent members and the delegates to the Green Section at the same time and place. The exact hour and place of this meeting of permanent members and delegates will be decided later and announced at the meeting of the United States Golf Association.

A report will be made on the work of the Green Committee of the United States Golf Association for the past year, and a new Green Committee for the ensuing year will be elected. All matters of interest to the Green Section may also be discussed at this meeting.

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### **The Green Section Extends Thanks**

With this number of THE BULLETIN the Green Section of the U. S. Golf Association closes the first year of its existence. How well the organization has served the purpose for which it was created, only those who have sought help from it are competent to judge. If its efforts have not been fruitful, the blame is easily placed, for surely the response from the golf clubs of the country to the appeals for cooperation have been whole-hearted and enthusiastic enough to acquit them of any responsibility for failure. But the Committee in charge of THE BULLETIN and Service Bureau has ample evidence that at least a measure of success has attended the movement, and it desires, at the close of the first year, to express its most sincere thanks for the cooperation the subscribing clubs and interested individuals have given in every phase of its endeavors. Without this help and encouragement the efforts of the Green Section would have crumpled and fallen flat.

In the course of the year the membership of the Section has reached 385 clubs. It is true this is not even a majority of the clubs of the country, but it is an encouraging number; and when the inertia of the business machinery of clubs is taken into account, the securing of a membership of 385 the first year is a heartening accomplishment. Of the clubs which seriously considered subscribing, not more than five decided unfavorably; this is regarded as an excellent record.

The Green Section is most grateful for the spirit with which its efforts have been received; and it earnestly solicits a continuation of generous cooperation for the coming year. It should be clearly understood that the work which the Section has undertaken has altruism alone for its motive, and no one connected with it stands to gain financially from anything he may contribute. Furthermore, it should not be forgotten that the object of the movement is to promote the betterment of golf courses, and that every club should join quite as much to help others as to be helped. This type of activity is unique in the history of golf, and if it is properly directed and supported it will constitute a landmark in the field of outdoor sports. The members of the Green Section propose to do their part. One year's experience will be exceedingly helpful in the future conduct of THE BULLETIN and Service Bureau. The Committee in direct charge will try always to be on the job. Like the country editor, it will "keep its eye on the machinery and crank the arrangements right through," provided it is made to feel that the work is getting somewhere, and that it is filling a real need. With the hope of such cooperation and encouragement as the clubs have given in the past, the future seems very bright indeed.

## Preparation of Green-Committee Budgets

The time is now at hand for the preparation of green-committee budgets for the coming year. It is believed that nothing tends so much toward economical and efficient management as the study and preparation of a budget. But how to go at it is the troublesome question.

Obviously the first step is the collection and arrangement of the facts upon which judgment must be reached as to the work to be done and expenditures to be made. Without facts as a foundation, a budget will be mere guesswork and worthless.

The work on no two courses can be the same. So first the club book-keeper will have to go through the books for, say, five years and list in detail under appropriate classifications all items of expense, labor, seed, fertilizers, worm eradicator, tools, rakes, horse-feed, and what not. These lists should show quantities as well as prices.

Labor, for instance, should be set up by months and in hours, rate of pay, and dollars. After the experience of, say, five years has been set up, properly classified, in columnar form, for ready comparison, the next step would seem to be an inventory of tools, equipment, and supplies on hand.

The next move is to obtain from the green-keeper an estimate of his requirements for the ensuing year. He knows, or should know, the condition of his equipment and his requirements for the year. He ought to know pretty well what materials will be required.

When the green-keeper's report is made up it should be compared with the experience of previous years; and by discussions of the committee and green-keeper, the year's requirements should be determined with fair accuracy. Each item should be studied by itself. If the item is seed, the committee should consider the necessity or desirability of seeding, and the rate and area. Hundreds of dollars are thrown away every year in the purchase and use, or rather misuse, of seed. Two or three pounds of the very best seed ought to be enough to put on an old, well-established green; to put on twenty, forty, or sixty pounds, as some so-called experts have advised, is simply criminal. If fairways are to be seeded, the same study should be made, and the budget should be based on actual conditions and known areas. It could not possibly take the green-keeper, with the assistance of a workman, more than a day to measure up all fairways, so that the square feet or yards or acres will be known closely enough for all practical purposes. The work to be done in the ensuing year should be considered in the light of what is desirable as well as what is in line with the past. Strictly maintenance items should not be confused with new work; and that should be covered by a separate estimate.

The preparation of a budget necessarily involves study of the past and consideration of the future, and not only the figures of the past but the actual condition of the course. Perhaps the course has been starved to support a "white elephant" in the form of a club-house; or perhaps former committees have been wasteful.

The net result of all this study should be expressed in the budget. In order that the work and study of one year may be made available for the best use in future years, the budget should be accompanied by schedules

or exhibits showing details. For instance, if an item is shown for new equipment, the exhibit should show what is required, and why.

The green committee that does not plan its work and budget its expenditures is doing less than its duty.

An index to the current volume of The Bulletin is in preparation, and we hope to have it ready to mail out with the January number.

### Greens Without Grass

C. V. PIPER and R. A. OAKLEY

Putting greens are not necessarily made of turf, nor are they necessarily green. On some golf courses the greens are made simply by scalping off areas of suitable size and using the soil as it exists for the putting surface. On others, putting areas are sanded; in some cases the sand is oiled; in most cases it is not. Sawdust has been used with fair results; also other



A putting-green made from cottonseed hulls. Tlahualilo, Mexico

materials; and there are doubtless a great many common waste products that could be used very satisfactorily. It is surprising indeed that more experimentation along this line has not been conducted since there are so many parts of the country where grass greens can not be maintained or can be maintained only at a prohibitive cost.

Dr. W. D. Hunter, of the U. S. Department of Agriculture, tells us of an interesting golf course which he had the good fortune to visit last spring. The course is located in central northern Mexico near a small town named Tlahualilo, about 40 miles from Torreon. It is the property of an Anglo-American company extensively engaged in the planting of cotton and in

the manufacture of products from cotton seed. The topography of the country is flat, being the bed of a prehistoric lake, and the annual rainfall is something less than 8 inches. No grass will grow under the existing conditions, and sand greens are out of the question because of the high winds, as they would require constant resurfacing. After some thought, the manager of the company, Mr. T. M. Fairbairn, concluded to try cotton-seed hulls as a surface for the greens. The hulls consist of the outer shell-like covering of cotton seed, to which considerable lint is attached. They are cheap, and are produced in abundance in connection with the process of manufacturing cotton seed products. The method which Mr. Fairbairn uses is simply to place the hulls on the ground, tamp them well by hand, and then roll the mat thoroughly. By this method he has succeeded in getting a permanent and fast surface very much like that of a billiard table. The hulls of the seed act as a bed and the adhering lint as a binder. No weeds penetrate the mass, and the water from the occasional rains is shed successfully. The lint binds the mass of hulls together sufficiently so that it is not disturbed by the strongest winds. Dr. Hunter says he has putted over these greens and finds them very satisfactory indeed.

Mr. Fairbairn's method is being tried in this country and doubtless we will have more to report on the subject a little later.

Possibly our readers are familiar with or have heard of other methods of making greens without grass. If so, we would be pleased to hear from them, and would like, in addition, photographs showing the essential features, if they can be obtained.

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#### TURF GRASSES FOR SHADY PLACES

In the north the best shade grasses for turf are red fescue, fine-leaved fescue, and rough-stemmed bluegrass. The first two are especially desirable for sandy or gravelly soil, but if sown alone succeed well in clay. The last is generally the best in clays or loams. Seeds of all of these come from Europe, and are generally obtainable, but not in large quantities. In the South the best shade turf is made by St. Augustine or Charleston grass; this grass is propagated wholly by vegetative methods, as the seed has never been handled commercially.

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#### BANK HOLDERS

It sometimes happens that it is desirable to cover steep banks not on the playing part of the course, with an attractive covering. Japanese honeysuckle is excellent for the purpose, but it is difficult to eradicate in places where not desirable. The Wichurian rose (*Rosa wichuriana*) is extremely desirable, because of its attractive foliage and its pretty habit; it is easy to handle and not difficult to destroy. The common periwinkle (*Vinca*) is also a very attractive plant for use on steep banks even if very shady.

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Bills for 1922 membership fees in the Green Section will be mailed out to golf clubs early in January. It is hoped that prompt action will be taken on the bills so that early remittances may be received by the Treasurer of the U. S. Golf Association.

## Sand and Water Boxes for Tees

NORMAN MACBETH

Little thought has been given by green committees to the design of tee-boxes, and as a consequence it is seldom that golfers find the supply of sand and water conveniently arranged for them. It is also seldom that the containers for these necessities are not ugly in appearance, detracting from the appearance of golf courses which in other respects are beautifully kept up.

From the average green committee it would be difficult to learn the origin of the design used in making its tee-boxes. The work was probably left to some carpenter, long deceased, but to whose memory there remain eighteen tributes even more unsightly than the standardized grave marker in the local cemetery. The position, arrangement, shape, and color of tee-boxes, each has its effect upon golfers, and I therefore feel justified in offering some opinions for the benefit of green committees.

### *Position of Tee-Box*

The placing of the sand-box in relation to tee-markers is quite important. Almost all golfers become fidgety on the tee if people are moving indiscriminately behind their backs or behind the line of play, but few are worried if other golfers and caddies are grouped beyond the marker at the right-hand side of the teeing ground. Most players are right-handed and the position of the tee-box should be decided in favor of this majority. As players and caddies waiting at a tee will gravitate towards and tend to be in a group around the box, its position in relation to the player can not be ignored. With the tee-box and all seats placed in front of the players on a tee, it is unlikely that anything will be done by caddies or bystanders to interfere with a stroke.

### *Arrangement of Tee-Box*

In giving my ideas as to the arrangement of the box I will presume that it is placed in accordance with the above suggestion, and that the player whose turn it is to tee off has walked up to the box. As he represents the vast majority of players, he wishes to use his right hand in making his tee. The sand should therefore be placed in the right-hand side of the box, and at a convenient height so as to avoid the necessity for stooping. The player will have a club in his other hand, so that it should not be necessary to raise a lid.

Whilst a player is making a tee his opponent or a caddie will probably be engaged in cleaning a ball, for which purpose water, a brush, and a towel will be used if the green committee has provided them. The water should therefore be so placed that anyone using it will not get in the way of a player wanting sand, and so that the cleaning of balls can go on without disturbance to a player in the act of making a stroke. Anyone using water, the brush, or the towel should be led to keep the box between himself and the player who is making a shot. If the box is a barrier between them the movements of the person cleaning a ball are not likely to distract the player's attention.

A great many tee-boxes are provided with lids which must be raised to get at the sand or water. Some protection from the sun, wind, and rain is necessary if the sand in the box is to be kept at an approximately even

state of dampness. But it should not be necessary for players to lift lids. If that is required it so frequently happens that they are left open; and it is a nuisance which can be avoided.

The boxes should be arranged so that both the sand and water can be removed without turning the box upside down. If water is held in a movable container made of galvanized iron, the tee-box will last much longer without repair and the container can be cleaned and filled with ease. If the container is not removable, then the dirt collecting from the continual washing of balls is seldom removed, and players must accustom themselves to having dirty water, dirty towels, and dirty hands.

### *Shape*

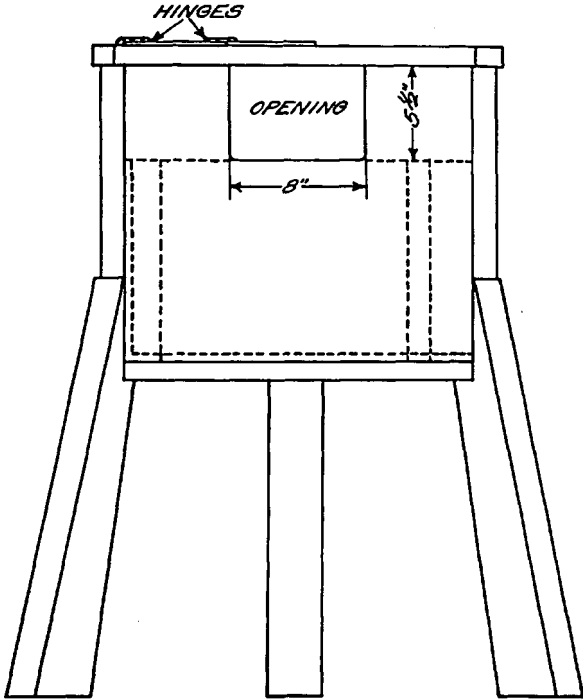
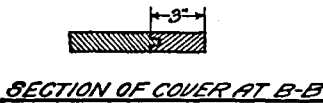
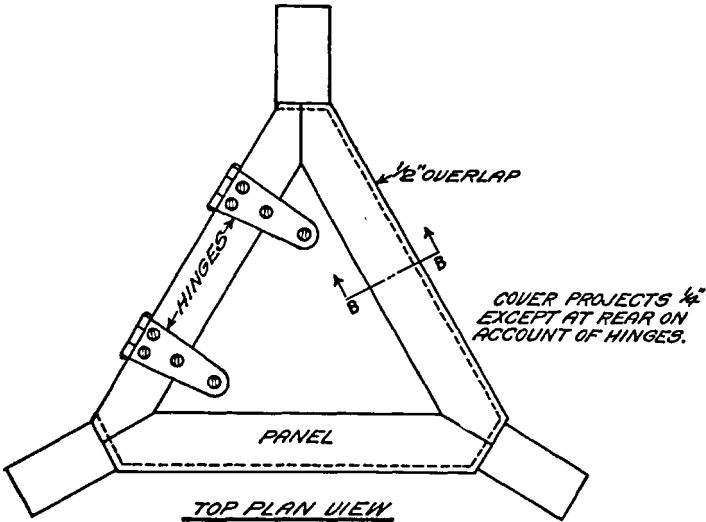
Most tee boxes are rectangular, and placed so that the longest side of the rectangle is parallel to the line of play. It would not be easy to make a



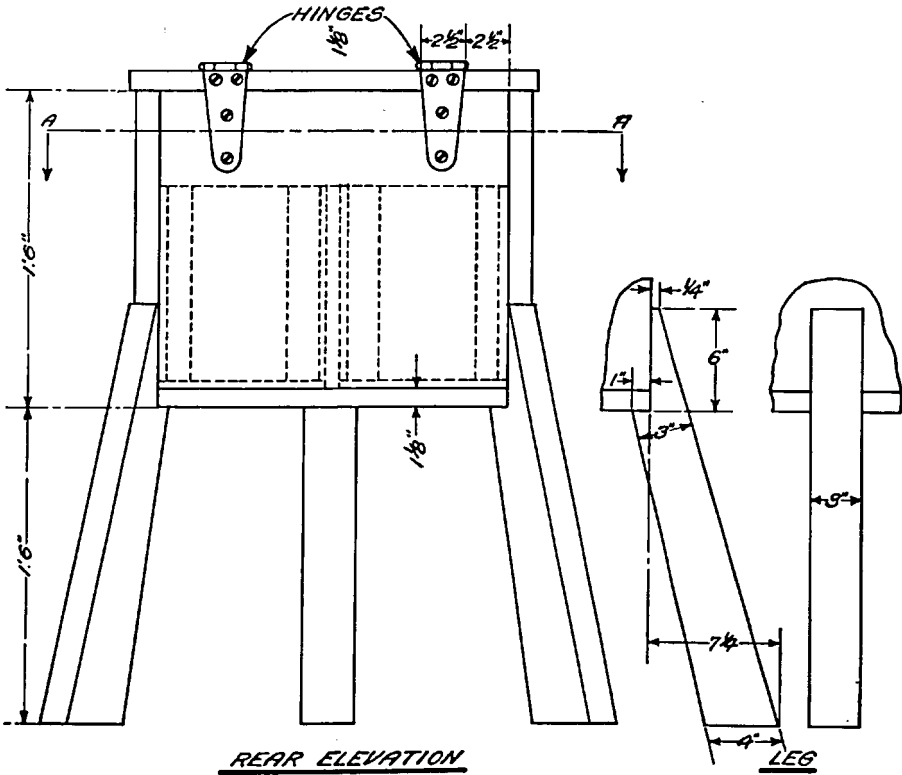
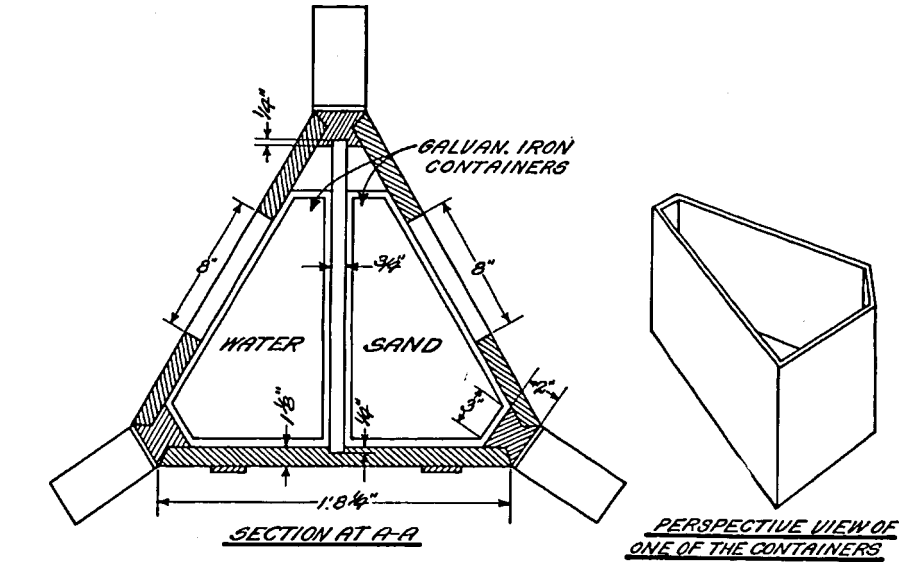
tee-box a thing of beauty which would be "a joy forever"; but most are far more abominable than need be.

If a teeing-ground is rectangular in shape, and the lines of it are slightly diagonal to the line of play, many a golfer will complain that he can not drive straight because "the tee is crooked." Undoubtedly straight lines which catch a player's eye in addressing do affect his ability to hit away from them. I believe that a rectangular tee-box which is set somewhat diagonally to the line towards the hole, will affect a player in just the same way that he is affected by what is called a "crooked" tee. If a ball is teed near a rectangular sand-box the player may be affected by the angle at which the box is set, but is probably quite unconscious of it. I do not wish to exaggerate the importance of this, but think it a sufficient reason for avoiding rectangular boxes if it can be done without greater ugliness or expense.

The shape of the box to a large extent decides the method of placing







it at the tee. If the box is rectangular most people will attempt to place it with the larger sides paralleling the line of play. This means that care must be taken every time the box is moved. If it is round or triangular not nearly the same care need be exercised. A rectangular box nearly always has four legs, whereas a round or triangular design can be made with only three. It is much easier to get a three-legged box settled firmly on the



ground; and stabilizing is essential unless the boxes are made of great weight.

The boxes should be easy to move, otherwise greenkeepers will neglect to change them every time the tee-markers are moved. If they are stationary or fixed into the ground, as on a great many courses, not only do golfers have to walk out of their way to get sand, etc., but the ground around the boxes becomes worn and untidy.

The illustration on page 250 shows a triangular tee-box placed as recommended—that is, just beyond the tee-marker (the white ball) which is in front of a right-handed player when on the tee. If you will imagine yourself on the tee, you will see that the opening in the right-hand side of the box contains sand, convenient to your right hand. You will see that the left-hand opening contains water, that there is a brush attached to the box

just below the opening, and that the person standing there is using a towel, also attached to the box. The man is in such a position that he does not interfere if you want sand, and he is in a correct position to avoid interfering with you when you are driving. Note that whilst the box has a lid, players do not need to open it. Note that the box has tripod legs and is easily moved so as always to be kept in correct relation to the white ball used as a tee-marker. Note the figure showing the length of the hole, painted on the box in such a position as to be seen when you stand on the tee or approach the box. Note the convenient height of openings, brush, and towel.

From the illustration on page 247 it will be seen that the tee-box has no lines which the player might consider parallel to the line of play. If the box were somewhat twisted out of position there would still be no lines to confuse the player.

On pages 248 and 249 are drawings containing detailed plans for the construction of such a tee-box.

#### *Color*

Most boxes are painted white. There is no necessity for this, and it has the disadvantage of making ugly things more obvious. It shows up more plainly the scratches, pencil writings, and carvings of caddies. To my mind, tee-boxes should be painted a color which suits their surroundings, and for the average course an olive-green is perhaps most suitable; it looks well whether the paint is fresh or faded.

### **A Labor-Saving Device for Screening Top-Dressings**

E. J. MARSHALL

It seems to be the consensus of opinion of the best qualified green-keepers that nothing is so beneficial to greens as frequent top-dressings. Every one top-dresses spring and fall and many top-dress once a month or more frequently during the season, the amount and kind of material to be used depending upon conditions. In no other way can greens be kept true. Rolling will never do it any more than rolling can compress Pikes Peak to the level of the Great Plains. It has been proved that frequent top-dressings are beneficial in the restraint of brown-patch and that a heavy weeding should always be followed by a dressing. It is desirable also to top-dress tees and approaches and the spots on fairways where the wear and tear is heaviest.

To prepare and screen material for all this work is next to an impossibility and is entirely too expensive to be practical if it must be done by the old-fashioned method of working the material through screens by hand. There are on the market a number of small motor-operated riddles commonly used in foundries by means of which the screening can be done quickly and at a minimum cost. The illustration shows a gyratory type which is operated by a half-horsepower



motor connected to an ordinary lamp socket. The screens are interchangeable, so that any degree of fineness can be obtained, and the apparatus is so built that the coarse and refuse material is automatically separated from the fine stuff. Such a machine costs about \$200, and will enable one man to do the work of five. A yard or so of material can be prepared in less time than it takes to talk about it; and with reasonable forethought, top-dressing material can be prepared on rainy days and a supply can be kept available in good condition for use at any time. Such a machine should save its cost in a year if the proper amount of top-dressing is done.<sup>1</sup>

## Damage at Pine Valley From Grubs of the Southern Green June-Beetle

ALAN D. WILSON

In August, 1920, we began to notice small mounds of earth scattered over the greens and fairways. We knew these were caused by a grub, as we had had them in small quantities in previous years, but never until 1920 had they come in serious numbers. Then, however, we began to find them very generally throughout the course, and at once took steps to ascertain what they were and how they could be destroyed. The Department of Agriculture identified them as the grub of the southern green June-beetle. This species has only a one-year life-cycle. The beetles appear late in June or early in July, lay their eggs, which a few weeks later turn into grubs, which become active and begin to do damage in mid-August. This continues until cold weather, when they cease operations until early spring, and then again do some damage, but not to the same extent as in the fall. In June the grubs go into the pupal stage, to emerge as beetles late that month, or early in July, and so complete the cycle.

These grubs, which are nearly as big as one's little finger, and which make mounds of earth at the entrance of their burrows, must not be confused with the small white grub barely an inch long of the May-beetle, or June-bug, which has done so much damage at Merion and other golf courses in this vicinity this year.

The Department of Agriculture in their circular letter E-84 recommends a 7½ per cent kerosene emulsion as an effective cure. This we tried, with little or no success, due probably to the fact that our soil is so light and sandy that the grubs burrow easily and are apt to go down too far for the emulsion to reach them; we have found them six feet below the surface.

The use of carbon bisulphide squirted into the burrows with a long-nozzled oil-can was also recommended. This we tried, but not with much success until, after the injection of the bisulphide, we plugged each hole with clay to prevent the fumes from escaping.

We further tried picking the grubs by hand when they came to the surface morning or evening or after heavy rains; and also killing them by sticking a sharp iron implement down the burrow; but this latter was not very effective, as the burrows were not always straight. All in all, we succeeded in protecting our greens fairly well during 1920 by the use

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<sup>1</sup>Information as to the types and cost of gyratory and other riddles can be obtained from any foundry supply house.

of carbon bisulphide; but it was not practical to use a hand-method of this sort on the large fairway areas.

We kept constantly experimenting, in plots two feet square, with other things, such as bichloride of mercury, cyanide of sodium, applications of lime, nicotine, and flooding heavily with water, with the idea of bringing the grubs to the surface and picking by hand; but none of these gave us any practical result.

The theory is that these grubs live on decaying organic matter and that they like a light soil in which to burrow. We had the light soil naturally, and in order to grow grass on what was to all intents and purposes sea-sand, we have for years fertilized heavily with cow-manure. In some portions of the course this was applied as a top-dressing, but wherever possible it was spread heavily and plowed in; and it is interesting to note that this latter method, which undoubtedly grew better grass, also seemed to produce areas which were particularly attractive to the grubs. In the fall of 1920, therefore, we were brought to a realization of what looked to be a fact,—that we were building up an absolutely perfect environment for these grubs; so we accordingly determined to stop using animal-manure and to try to get our result, for some years at least, by the substitution of a chemical fertilizer (bone-meal), which routine we have since followed.

With the first warm days of early spring in 1921, the grubs which were hatched in August, 1920, began work again. But we suffered very little damage until the middle of August, when the new crop, hatched from the eggs laid in July, began to appear. Since then they have been all over the course, in numbers which made anything we had had before seem perfectly trivial. Whole fairways were almost uprooted by them, and it was easy in many places to count five or six mounds to the square foot. They have kept pretty constantly at work up until the present writing, December 2.

We have kept after them most actively on the greens, with carbon bisulphide, and have succeeded in controlling them reasonably well, but with great labor and expense. We have not, however, been able to find anything with which to destroy them on the fairways. We have kept the course in fairly good playing condition by constant rolling; but while this has done away with some of the results of their work, it has in no way injured the grubs.

The only real guardians of our fairways have been a flock of eight Canada geese which live on our lakes. In some unknown way they seem to know at just what hour of each day the grubs will come to the surface. At the appointed time you may see the old gander put his head on one side as if listening. When he seems to hear a noise like a grub, he swims majestically to the shore, followed by the flock, and they all solemnly leave the lake, waddle to the bordering fairway, and catch and eat grubs literally by the hundreds. Unfortunately, they will not go to the higher fairways, and now they have also become fat and lazy from overeating of grubs. If nothing better offers, we may have to buy more geese; but they have their disadvantages. Twenty movable goose-hazards on the run-up ground to a green might annoy a membership even so amiable as that of Pine Valley.

The whole purpose of this article is to emit a loud cry for help, the hope being that some one who reads THE BULLETIN may have had similar experience and may have discovered some remedy which will kill the grubs

and which is practical to use over large areas, and will not kill the grass. If any one has such a remedy, we trust he will be good enough to give us the benefit of his experience.

## Producing Turf on Poor Land at Pinehurst, North Carolina

LEONARD TUFTS

The following account is in the nature of a history of our troubles and our attempts to overcome them. I am in hopes, however, that it may have suggestive value to all who are confronted with similar problems of turf-growing.

The first thing we discovered was that our soil at Pinehurst, N. C.—wretchedly poor sand-hill land—was not made for growing turf grasses. At the suggestion of Mr. Frederick Law Olmstead we engaged the services of a scientific German experimenter from the Emperor's gardens in Berlin, whom we brought to this country for the purpose of conducting experiments with grasses and other plants for our course; this was over 26 years ago. This man was employed for a good many years. As a result of his experiments it was learned that Bermuda grass and Texas bluegrass were the only grasses that would live through our summers, even with the assistance of watering and fertilizing. Our early experiments with Bermuda in our fairways, however, were so unsuccessful that it was seriously considered by some of the well-known golfers that it would be better to keep the fairways clear of grass and keep the sand smooth by the use of rollers. Frankly, it looked to me as if that was about the only solution. We did not, nevertheless, abandon our efforts with Bermuda grass at this point, but started in to use a mixed fertilizer at the rate of 200 pounds to the acre, and on some of the greens we applied clay which we shipped in from the Piedmont section, into which the fertilizer was mixed; this was on the advice of the State experiment station and Federal soil experts. We also used the local clay (which is 75 per cent sand) with the soil, and we hauled 6 inches of what is known as muck here onto some of the holes. The grass slowly improved under this treatment, but it was far from satisfactory.

Our first real step forward was the application of nitrate of soda. We used 200 pounds to the acre, in two applications during the summer, and the course began to improve. After a few years, however, the turf went back again, notwithstanding these applications. We discovered then that the grass roots were very close to the surface. We next started in with applications of barnyard manure, plowing it into the turf, and we found that after two or three years of treatment in this manner and continuing the use of the nitrate of soda at the same time, we would get a fair stand of grass; during the first one or two years, however, the crab-grass took everything, which, dying in the winter, would leave bare sand spots.

We then began the use of a spike-tooth harrow on the land immediately after applying the manure, plowing and rerouting. We continued the use of the harrow until the Bermuda grass had completely covered the ground. At first this is a very discouraging thing to do, because it seems as if you are raking out every root that had been planted; but it keeps the crab-grass down and it produces a nearly perfect mat the first year. This solved our problems temporarily. Our custom was to manure very heavily, and plow every three or four years, and keep the harrows going. A new invader, however, appeared in the form of nut-grass; and as the use of a

harrow does not harm nut-grass, the latter practically took our entire fairways in certain places. This compelled us to dispense with the plowing, as that in itself encourages the growth of nut-grass.

We selected one piece of land for an experiment with extraordinarily heavy applications of manure, thinking that thereby we could make it so rich that subsequent fertilizing would be unnecessary. We manured this very heavily for three successive years, plowing it under, but after three or four years it was in no better condition than plats we had manured only once in the same length of time.

While conducting our experiments in manuring and plowing, we discovered that we could obtain nearly as good results with very heavy applications of cotton-seed meal before plowing. We then began the application of cotton-seed meal as a top-dressing, which we now use, alternating it with fish-scrap, making two or three applications each season at the rate of from one-half ton to one ton to the acre. If in spite of this treatment a fairway gets weak, we fence off a small area, perhaps an acre of the fairways, and in the enclosure put about twenty head of cattle for a month, feeding them heavily. In other words, we make a cow-yard of the fairway. We drag-harrow this yard every day so as to spread the manure. The cattle are fed and watered in this yard, their feeding places being moved frequently. We thus get an even distribution of fertilizer, without any litter, and at the same time the cows keep the weeds and grass down so that in a week or so after the cattle are removed the grass comes back in excellent shape.

To summarize, I might say that in this wretchedly poor sand-hill land we find that Bermuda is the only permanent grass, and that the application of barnyard manure, with plowing and continued harrowing, gives a very good turf within one year, and an excellent turf within two years. Two or three applications of cotton-seed meal and fish-scrap during the summer, alternated, holds the turf fairly well; but making a cow-yard does better. Small applications of balanced chemical fertilizers are valueless. Large applications of nitrate of soda have not been successful. Applications of clay and muck have not produced results. Harrowing with a cut-away harrow has been useless. Watering, except occasionally in very dry time, is of no value. So we have decided that we can not make this poor sand-hill land support turf unless it is fed heavily and often in the manner above stated.

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#### SPECIES OF GRASSES

There are about 5,000 species of grasses in the world, and some of them occur in every region where flowering plants grow at all. The greatest number of forms is in the tropics, but as individuals they are most abundant in temperate regions. Natural grass-regions are as a rule great producers of live stock.

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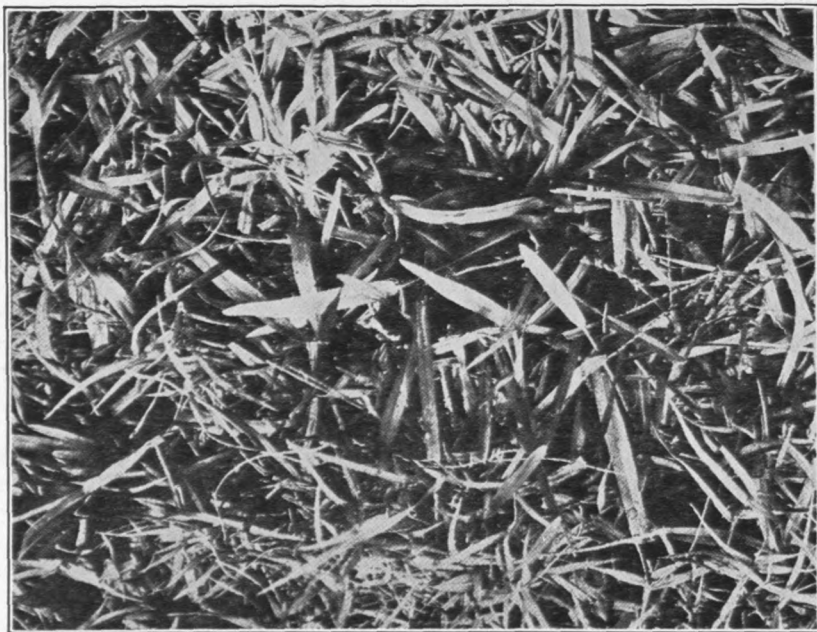
#### POOR OR GRAVELLY PLACES IN THE FAIRWAY

Not infrequently certain spots in a fairway may be very gravelly or stony, or for some other reason will not grow good turf. It is best to treat such spots radically. Plow or spade them up deeply, remove the stones by screening, if necessary, then enrich the soil with manure, and seed or sod. If plenty of good rich soil is available it is sometimes cheaper to cover up such poor spots with 4 or 5 inches of good soil, and then seed.

## Carpet Grass

C. V. PIPER

Carpet grass is the best of all grasses in the South for fairways. It makes a dense, uniform turf even on pure sands, and the leaves are stiff enough so that the ball is always well off the ground. The only other grass to compete with it is Bermuda; but under conditions where both

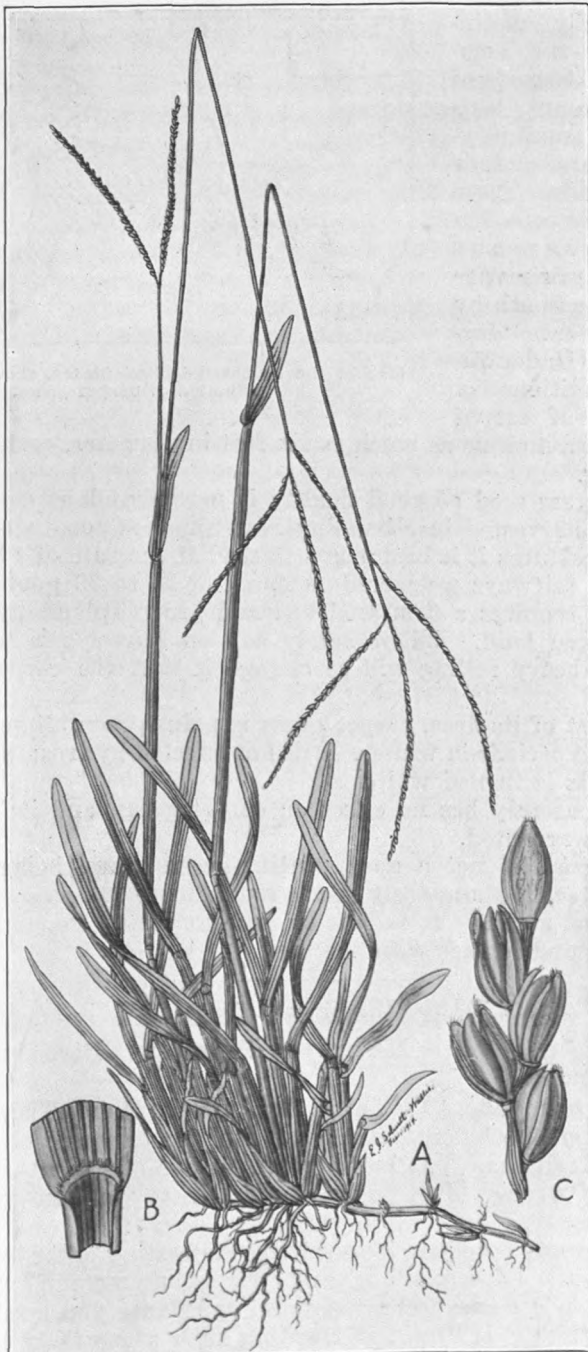


A sod of carpet grass, showing the dense turf it forms.

will grow, carpet grass makes far superior turf. The adaptations of carpet grass are not quite so wide as those of Bermuda. The latter will grow farther north, and furthermore will thrive on sandy soils too dry for carpet grass, which requires a rather large supply of moisture. Perhaps the wisest thing to do on a new course in the carpet-grass area is to seed the fairways to a mixture of carpet grass and Bermuda. If the former will thrive it will completely dominate the Bermuda. The rapidity with which carpet grass spreads is surprising. In May, 1921, the fairways of the Cape Fear Country Club, at Wilmington, N. C., which were covered with a thin turf of Bermuda, were seeded with carpet grass without plowing. By November 1 the carpet grass covered all the lower ground with a dense turf, and the highest ground was about half covered. Without doubt, all the fairways will be solid carpet grass before the end of next season.

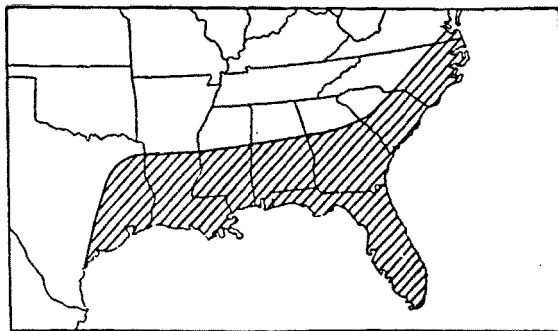
Carpet grass is a West Indian plant which was accidentally introduced at New Orleans prior to 1832, when specimens were collected by Drummond. It has now spread to nearly the whole area shown on the accompanying map.





Carpet grass, *Axonopus compressus* (Swartz) Schlechtendahl. A, Entire plant; B, junction of blade and sheath, showing the structure of the ligule; C, branch with five spikelets, enlarged.

It is really distinguished by the compressed two-edged stems, the blunt leaf-tips, and the small flowers in two, three or four branched heads. These characteristics are important, as various broad-leaved grasses are known in the South by the general term "carpet grass." Under favorable conditions a single plant of carpet grass will form a circle as much as six feet in diameter, each runner several feet long.



Map of the southern United States, showing the distribution of carpet grass.

Carpet grass seed of good quality is now abundant on the market. Most of it is harvested in Mississippi, but supplies come also from Australia. For pastures it is customary to seed at the rate of 10 pounds per acre, but for fairways we would recommend 20 to 30 pounds per acre. Carpet grass requires a firm seed bed and grows splendidly if sown on clean, unplowed land. Where sandy soil on fairways is too loose for carpet grass, heavy rolling will so change it that the carpet grass will thrive.

Over most of its area, carpet grass remains green all year except in unusually cold periods in winter. It is not affected by frosts so heavy that Bermuda grass is turned white.

Lime apparently has no effect on carpet grass, and its use for this grass is not warranted.

Carpet grass is not a good putting-green grass, being rather too coarse. As it seeds abundantly in the rough, more or less seeds find their way to putting-greens. It is best to cut out plants that appear in the putting-green and replace with fine turf.

## Dear Chauncey Letter II

HAZELWOOD FLATS, IND., December 1, 1921.

DEAR CHAUNCEY:

Why get so hot about the few kickers in your club? They do not represent anything—not even themselves. It's a poor waste of time to pay any attention to them. You know when you are right and when you are wrong or half wrong. Just be right yourself, so you can go to a show-down any time.

It seems funny for me to be reversing the batting order by giving you advice; and while I freely admit your rank as an amateur greenkeeper, I insist that when it comes to mental poise or balance you must let me get under the spotlight. If President Harding knew of my tactful, diplomatic disposition he'd have me take charge of several important embassies from some sort of a central office.

Just as long as weeds grow on golf courses there will be kickers. And as soon as you get one set or crop killed off, another will spring up. So don't let them disturb you.

It's getting near the end of the season, and I suppose you'd like to know what I've learned during the year. Well, in the first place, I've learned that green-keeping is a real business and that the expenditure of roughly a third of any club's revenue rests between the chairman of the green and the green-keeper. It certainly is the height of nonsense for any golf club to overlook the fact that the proper treatment and care of its course requires just as much business sense, good management, and special training as the operation of its club-house. You notice that the clubs which do not show a deficit in the operations of their restaurants have some one on the job to see that the work is done right. Those that let the club-house take care of itself run into a deficit every year; and then the poor golf course suffers. Some one ought to start a correspondence school in club management. If I ever get out of my present job I think I'll call myself a club efficiency expert and go around the country at some unholy price per day telling clubs how to cure deficits; all I'll tell them will be to quit being fools and get down to business. Getting back to what I've learned during the year, I'll say I've absorbed a lot of stuff that isn't digested yet, and I suppose a good part will turn sour.

I've learned for keeps that the expert is a faker—*triple A, three-star class I*; and in this day and age if one falls for any expert stuff, he ought to be locked up with the mentally deficient, for sooner or later some one will sell him a half interest in the post office. I wouldn't buy a nickel's worth from a concern that claimed to have a stable of experts, or even one expert. *I'm often them experts now worse than you are!* That's the big lesson; and in learning that I've learned to find out things for myself, so I understand what I am doing—not that I get right every time, but before I start anything I know the facts and the percentage of risk in the proposition. If any mistakes are to be made, I'll make them myself so I'll know them the next time; and I know I can buy seed and supplies enough cheaper so I can afford a few mistakes.

I laid aside the letter at this point, Chauncey, because I had to go out of town. But, Heaven be praised! I saw what I've been looking for—a course built by *experts*, not by common, ordinary experts, but by the kind who concede no equal—the world's greatest, on whose work and works (and those who have been worked) the sun never sets. It was a grand sight, Chauncey; and I had a wonderful afternoon. I don't know where to start to tell you about it. It is so indescribably bad, and you ought to see it.

The place where the fairways ought to be are covered with everything but grass. How in the world any one could gather in one batch so many different kinds of weed seeds is beyond me. And it's a cinch the weed seeds were sold by the experts, because there are varieties of weeds in the fairways that are not known by the oldest inhabitants of the neighborhood. It is going to be harder to get rid of these weeds than it was to do the work.

I saw some big piles of commercial humus that cost \$20 a ton delivered, lying alongside of piles of old rotted manure that cost not over \$2.60 a ton; and if that manure didn't have six times the humus value of the so-called humus, then I'm way off.

Talk about artificial looking work! *I saw it.* There we were up in the hills where one can look in any direction and see how nature would build a bunker. But the expert knew better; so he dug some non-drainable gashes and holes, and made some humps, so that the place looks like a

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

Potash (potassium oxide)  
Phosphoric acid (total)  
Nitrogen (from sodium nitrate)  
Magnesium oxide  
Sulfur  
Sodium oxide  
Lime  
Iron oxide  
Manganese oxide  
Titanium oxide  
Alumina  
Silica  
Potash soluble in distilled water

No. 2

Potash (potassium oxide)  
Phosphoric acid (total)  
Magnesium oxide  
Sulfur  
Lime  
Sodium oxide  
Iron oxide  
Manganese oxide  
Titanium oxide  
Alumina  
Silica

*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, $P_2O_5$ .....	4.20%	5.36%
Water-soluble potash, $K_2O$ .....	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.

## MEDITATIONS OF A PERIPATETIC GOLFER

A course which was "maintained" for half of the expense of others—and it showed for itself why—you can't get nothing for nothing, nohow.

Two pot-traps—one on each side of a new green—just alike, reminded me of twin girls dressed the same way—probably was harder to construct them so than to leave them irregular in shape as the Nature intended them to be there.

Tees built up to resemble the base of a monument—steps to climb to the top. Why not be natural and simply level off a piece of ground? Imagine what the first Scotch tees were like. At least round off the angles if you must have raised tees.

A stupendous pile of old manure standing alongside of impoverished fairways. Horse-manure and horse-sense go together in the upkeep of any course.

A green which had been forked to loosen the soil—it will take years to restore the surface—cheaper and better to remove the turf, fix the soil to suit, and then returf.

Red fescue at 75 cents a pound being sown where it hasn't a Chinaman's chance to survive the heat.

A beautiful tree dying of canker. A little tree surgery would save it for many years.

A bowl-shaped green where every ball rolls near to the hole. Such are said to be very popular on hotel courses.

A mashie-shot green on a full 2-shot hole. There should be some reasonable sort of relation of the target to the shot.

Mounds and ridges about a green that deflect bad shots toward the hole. There are freak shots enough in the game without multiplying their chances.

An unbunkered green for a mashie-shot hole. There is nothing to a mashie hole if the mental hazard is absent.

A putting-green with gradient so steep that a putted ball gathers momentum. I saw one ball roll off the green.

A green in a ravine suffering from seepage from both sides. It is well to remember that 75 per cent of all putting-green troubles are due to lack of drainage.

A course where every green was bordered with a prettily undulated ridge. Another where none of the greens had any sort of border. Some of each kind is preferable to too much sameness.

A "blind" hole where it was avoidable. On any undulating golf course there will be blind shots enough without making them purposely.

Large piles of compost scattered at convenient places about the course. You can pretty nearly guess the character of the greens on any course by the quantity and quality of the green-keeper's compost piles.