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A MONTHLY PERIODICAL TO PROMOTE THE BETTERMENT OF GOLF COURSES

CONTENTS

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The Annual Meeting of the United States Golf Association and of the Green Section

In this number of THE BULLETIN will be found the address of the retiring president of the United States Golf Association, Mr. Howard F. Whitney, which we are sure will be of interest to all concerned in the progress of golf.

As a supplement we are also publishing in full the proceedings of the annual meeting of the Green Section held at the Drake Hotel, Chicago, January 14, 1922. It is only right that those who could not be present at this meeting should have the benefit of full knowledge of what transpired. There is much in the report that will be of general interest. Don't fail to read it.

Address of Mr. Howard F. Whitney, Retiring President of the United States Golf Association

The Green Committee is fortunate in being able to present to the readers of THE BULLETIN this address of President Whitney's, which was given at the luncheon of the Executive Committee of the United States Golf Association at the Drake Hotel, Chicago, January 14, 1922. Mr. Whitney, in his address, has touched upon a number of points near to the hearts of all lovers of the game and which we have felt will be of deep interest to the many who could not be present on the occasion. The address in full follows:

This luncheon is given by the Executive Committee of the United States Golf Association in order to place before you gentlemen who represent the government in golf through various sectional and district associations in the country, certain matters pertaining to the game which our Committee deems of vast importance to its welfare, and also briefly to summarize our stand and opinion on several subjects pertinent to the game, and our reasons for taking the positions we have on these matters. I would like to impress upon you that no action of the United States Golf Association has ever been taken without first making a most thorough investigation of the conditions surrounding the problem, and the decision in each case has been reached only after the most careful study from all angles with the one view in mind—the best interests of the game of golf.

The first subject that I would like to approach is the control of the game, and I would like to give you the views of the Executive Committee, of which I have been a member during the last seven years. The ruling bodies in golf should be composed of men of responsibility who play the game of golf and who understand the principles upon which the game is based, and its traditions and fundamentals. No man who benefits in any way, directly or indirectly, should have a voice in the policy of any golf association. The officials should be representative of the golfers in the country, and it is their duty to keep the game a clean and purely amateur sport. It is their further duty to take all steps necessary to prevent inventors or manufacturers from exploiting championships or prominent players in championships in order to sell their goods.

The Executive Committee of the United States Golf Association is made up of men in widely separated districts throughout the United States. They are the trustees for the Havemeyer Cup, the emblem of the amateur championship in this country. A player who enters the United States Golf Association Championship must look upon the winning of the title of champion as an honor and a glory only, and not as an opportunity. The game is too fine, too inspiring, to allow any other spirit to prevail; and no man can be bigger than the game itself. There has been a growing practice among some dealers to exploit our champion-

ships by giving presents to the prominent amateurs competing. It is a vicious practice when men who happen to be good players receive their golf equipment free, while men of slightly inferior ability, and the public, have to pay the bill. The first consideration should be always, in receiving an entry for a championship, that a man must be a gentleman and a sportsman. These characteristics should come first, regardless of the quality of his game. There has been too much hero-worship in this country for a great many years, both by the press and the public, who seem to think that if a man is a good player that that alone is sufficient for eligibility.

One of the most difficult problems that our Association had to meet was that of the definitions of *amateur* and *professional*. We have now worked this out with the Royal and Ancient so that it appears to us to be far more satisfactory than any heretofore written. Some golfing bodies have, in our opinion, regarded reinstatements too lightly, and have not given due consideration to the protection of the amateur. Our rule now makes it necessary for a recognized professional to wait three years before he can be reinstated. If he has been a recognized professional for five years or more, he never can be reinstated. A player must definitely be one or the other. We believe that the best interests of the game are not served when a man can turn from the amateur to the professional ranks and vice versa at will. No exploitation of an amateur will be tolerated. The Amateur and Professional rule has made a definite demarcation line between the two. A player cannot be both professional and amateur or half professional and half amateur; he must be either one or the other. There is no place for a quasi-amateur or a semi-professional; these are not wanted by either the bona-fide professional or amateur.

When the Special Committee of the United States Golf Association arrived in England, the thought uppermost in the minds of the committee we met there was to come to an agreement on the limiting of the power of the golf ball. We had previously given this matter a great deal of thought, and were aware that the time had arrived when it was most necessary to work out a limit on the balls, as they were being manufactured to increase in distance every year. These lively balls were gradually undermining the game. Manufacturers had but one idea in mind; that was of increased distance, thereby sacrificing durability for this. The length of a hole as laid out as a proper distance for 1, 2 or 3 shots was completely thrown out of balance on account of the increased flight of the ball. Courses were getting too long to play comfortably two rounds on any one day; it made it too tiresome for the player. The expense of upkeep and purchase of more property and of reconstruction of the course was getting to be a hardship to many clubs. Most important of all, the science of the game was being spoiled; a poorly played shot would often be as effective as one properly played. It was also equalizing the play in the way of bringing the scientific player and unscientific player nearer on a par with each other. We came to a happy agreement on the point of limitation with the Royal and Ancient; and all the manufacturers have fallen in line and are devoting their energies to improving the quality of the ball; and they have given up the idea of trying to discover some freak that would go yards farther. They are all more than satisfied with this arrangement for they now know where they stand and they do not have to spend a lot of extra money on new machinery for new inventions.

There is a growing tendency in this country among players to make the game easier and to waive penalties. It is the duty of the governing bodies in golf to educate the players to realize the importance of maintaining the traditions and fundamentals of the game and not to allow misguided opinion to sway their judgments. The game of golf has two basic principles. First: In the play from tee to green, take your chances with the wind. rain, and the lie of the ball. Golf is founded upon tradition, and the player's philosophy should be to play the game and take the breaks, good or bad, as they come, like a sportsman. Second: You must do nothing to take advantage of your opponent. The charm of the game rests on these two principles. I have heard some amateurs and professionals both who want to play winter rules all the year round; who have no conception of the real game of golf; who want to tee up every ball that is not in a good lie. This type has not the spirit of the game in any sense of the word. If the governing bodies of golf listen to this type of golfer and change the rules to conform to his mistaken ideas, the game would soon lose its great attraction.

You must keep in mind that golf has been played for hundreds of years and that its present state is the result of play over all this time. I believe what we have today in the game is the best that has survived. It is now seasoned to a point that very few of the suggestions made in the last year or two for changes in the rules are desirable. There do exist local situations where local rules are necessary; these local rules should not be made general rules of golf. The written text of the rules should be the same the world over. No end of confusion will result in having sets of rules in different localities; one would never know what game he was playing. Only harm can result to the game unless we all get together on a uniform code of rules, and that code in conformity as near as possible with the code adopted by the Royal and Ancient. I want to say this after careful study by our Committee, both here and on the other side. International golf is the greatest factor for the development of the game; and international golf would be killed if the two countries played a different game. We who have been abroad know this to be a fact. There is another reason for uniformity with Great Britain, and golf supplies the medium as nothing else does so well. We believe that international golf has this year done more to cement the friendship of our two countries than international agreements, understandings, or alliances.

The most interesting part of the game of golf is in the green play; and the stymie which is included in this has been the subject of probably more controversy than any other in the game of golf. There have been many experiments with this particular feature of the game with a view of eliminating the element of luck that prevents a player from having an open shot for the hole. Our Special Committee gave this subject the most careful study and discussed it from every angle with the Royal and Ancient committee. We were acting not entirely according to our individual judgments in this matter, but to seek a middle ground. The United States Golf Association has put into practice two distinct changes in the stymie. Our first experiment was not practical; it was too complicated; although in theory we believed it was sound. It laid open to controversy the self-laid stymie within the boundaries of the putting-green, whether or not the play was within twenty yards of the hole. Our Committee then presented the alternative which we have used this year, and which has been used by many sectional associations and has proved very satisfactory. The difference between the old stymie and the one being played now by the United States Golf Association is simply this:

In this country we have entirely eliminated the so-called unfair and unplayable stymie, but with it we have also eliminated the finest shot in golf, the short pitch into the hole. There is no shot in golf so interesting as this shot, nor one that requires so much science and skill. By taking away this shot we have undoubtedly deprived the skillful stymie player of the advantage he possessed, thereby putting him on a par with the less scientific player. On the other hand our stymie rule leaves the pitch shot in the game except when the opponent's ball is so near the hole that it is conceded. It is an open question whether any of the changes from the old mode of play have been an improvement, and the matter should receive the most careful study by golf associations as to the advisability of going back to the old mode of green play, the reason being that golf associations should not allow the standard and science of golf to be lowered.

Another important subject which is receiving the careful attention of the United States Golf Association's Executive Committee is the question of the slotted and grooved clubs. Here is another question that must soon be met as to whether these clubs are lowering the science and skill of play and bringing the poorer player on a level with the good player, due to the fact that the club is so constructed to make it unnecessary for a player to learn the different shots. The Royal and Ancient are convinced that the time has come when the slotted and grooved clubs must be barred in championships. In this country, in fairness to the manufacturer, sufficient time must be given him to adjust his business before any ruling barring these clubs can be made. The championship test should be a test of the highest skill; and if the golf bodies of this country decide that this type of club is taking away from the science of the game, it is their duty to stop its use in championship competition.

The caddie situation.—The United States Golf Association's Executive Com-

mittee deems it of the greatest importance for sectional associations and individual clubs to study out their caddie situations and do all in their power to bring about a closer relationship between the caddie and the player. The United States Golf Association sent a circular to all its member-clubs last spring with recommendations along certain lines, with a view of bringing about this much-desired end. Our circular had, we think, a very good effect. The Kansas City Golf Association has gone us several steps better and has issued a pamphlet which we believe the finest ever issued along these lines. Golfers of this country owe this Association a debt of gratitude for the splendid work it has done in compiling this booklet. We hope all clubs in the country will procure a copy as soon as possible.

The Green Section.—The Green Section of the United States Golf Association, was organized during the early part of last year. Its object is to form a central distributing station in order to gather and send out to the golf clubs in the United States information of value relative to the upkeep and preservation of the finer grasses; also to advise the green committees of the golf clubs in this country on all matters that will be of benefit to them to save a great of the money that has neretofore been wasted through lack of proper information. The results have been far beyond our expectation, and the golfers of America owe a vote of thanks to Messrs. Piper, Oakley, Marshall, Dr. Harban, and others, who have worked so diligently in carrying this through to its present successful state.

To sum up, our Association stands for:

1. Control of the implements of the game by the players.
2. Strict supervision of amateurism.
3. A uniform code of rules throughout the world; local rules where local situations warrant.
4. Unity of action in all sectional associations.
5. Uniform professional and amateur definitions.
6. Maintenance of the highest standard of skill in the game of golf.

The Grass Seed Crop and the Wholesale Market

The Service Bureau has received numerous inquiries of late which indicate quite a general interest in the supply of turf grass seeds and the prices at which they are offered on the wholesale market. Some inquirers have expressed a curiosity to know why certain kinds of seeds are held at such high prices as are now prevailing, particularly in the case of seeds of domestic production. For the benefit of those who may be interested, there are given below the wholesale prices of the important turf grass seeds as of February 1, 1922, and some statements relative to the status of supply of seeds to the extent that reliable information is had on the subject:

Kentucky bluegrass	$.45-.50
Redtop (solid or recleaned seed)	.20-.27
Rhode Island bent	1.25
South German mixed bent	.75-1.00
Chewings fescue	.80
European red fescue	.50-.60
Sheep's fescue	.40
Perennial rye-grass	.10-.12
Italian rye-grass	.08-.10
Canada bluegrass	.35-.40
White clover	.30-.45

The range in the price of the various kinds of seeds represents, in the main, differences in quality. The prices, it will be noted from the table, are high especially in comparison with those of most of the important agricultural products, but there is no evidence that these prices are in any way

held up artificially. As for the turf grass seeds produced in the United States, the crop of 1921 is known to be far from large. The *Market Reporter* of the United States Department of Agriculture for June 18, 1921, says: "From present indications the total supply of Kentucky bluegrass seed available for the coming season will be about 40 per cent less than that of last year. Based on data collected by the United States Bureau of Markets during the first week in June, it is estimated that the total production of Kentucky bluegrass seed this year will be about 350,000 bushels of rough cured seed as compared with 525,000 bushels in 1920."

These estimates it is understood have been verified by more recent investigations and they point directly to the reason for the present high price of Kentucky bluegrass seed.

The redtop seed crop for 1921, according to the *Market Reporter* for July 16, 1921, is approximately as large as the small crop of 1920. It was estimated that while the acreage harvested was smaller than that harvested in 1920, the yield per acre was larger. The world's supply of redtop seed is produced in southern Illinois. The *Market Reporter* places the 1921 crop of that section at 150 to 165 cars (30,000 pounds each) of solid seed. Later estimates have tended to confirm the earlier ones.

The supply of genuine Rhode Island bent seed is never large. There were probably not more than 3,000 pounds harvested in 1921. The cost of harvesting and preparing this seed for market makes it necessary for the handlers of it to ask a high price if they would break even. The supply of genuine South German mixed bent seed is not sufficient to meet the demands for it and naturally it is commanding a high price. Some Colonial bent seed is available and the supply seems to be increasing. No definite information is at hand regarding the stocks of Chewings and European red fescue seed or of seed of the rye-grasses, but it is thought that they are about normal.

The condition of the seed trade in the United States today is such as to discourage attempts to hold up prices artificially even if there should be a desire on the part of the large wholesale dealers to do so, and there is no evidence of such a desire. All things considered, it is thought that the prevailing wholesale prices for the turf grass seeds are the results of actual supply and demand conditions.

The Japanese Beetle

The Government is making strenuous efforts to prevent the further spread of the Japanese beetle. This beetle is allied to the May beetle and causes similar damage to turf; so it is of interest to golf clubs. The infestation at present covers parts of Burlington and Camden counties, New Jersey, and a few places about Philadelphia. This whole area of 275 square miles is under very strict quarantine designed to prevent the spread of the beetle to distant places. By natural means the insect spreads several miles each year.

Annual Reports of Golf Clubs Desired

The Green Committee is very desirous of securing a copy of the Annual Report of each golf club that issues such a report. If you have such will you kindly send a copy at once to the Executive Secretary?

South German Mixed Bent Seed

This seed is harvested mainly in southwest Germany in the region with Frankfort more or less central. It is gathered from wild native grasses from areas that are not too closely pastured. Formerly the seed was sold as creeping bent and sometimes as Rhode Island bent. As a matter of fact the seed is a mixture as naturally harvested, but which varies more or less in the percentages of the different grass seeds which it contains. From analyses of a very large series of samples, the content of this mixed seed varies about as follows:

Rhode Island bent	40 to 60 percent
Velvet bent	5 to 40 "
Redtop	5 to 15 "
Creeping or carpet bent	a trace

If a putting-green be sown to South German mixed bent, certain curious phenomena develop in the course of time. After five years' growth about half of the turf will be composed of velvet bent and carpet bent, the two in about equal proportion. This is because these two grasses form circular patches which increase year by year, while the Rhode Island bent plants do not enlarge perceptibly. The redtop disappears entirely after about two years. As the grasses get still older they come to consist entirely of velvet bent and carpet bent, usually about half and half. In New England, however, at least on certain soils, the velvet bent will in time crowd out the carpet bent, resulting in nearly pure velvet bent greens, the finest putting turf known. Such pure velvet bent greens may be seen at Brookline, Wollaston, Ekwanok, Brae-Burn, and other New England clubs. Indeed, on a few courses whole fairways are pure velvet bent. Very rarely such an old green is pure or nearly pure creeping bent.

From the above it will appear that the Rhode Island bent serves as little more than a filler while the other bents are spreading; and that the really desirable result is either pure velvet bent or pure carpet bent or a patchwork of the two. It is safe to say that pure seed of these two grasses is never likely to be obtainable, but in any event is bound to be expensive. South German mixed bent seed is even now not abundant enough at very high prices; furthermore, the high prices seem to have the effect of increasing the percentage of redtop in the mixture. What is the way out of this dilemma? We would urge our readers again to read the article entitled, "Vegetative Propagation of Putting Green Grasses," Vol. I, page 124. The method there described is very simple and will make any club independent of bent seed supplies.

The Twin City District Green Section Is Organized

At a meeting held during the first week in February, representatives of eighteen golf clubs in the neighborhood of Minneapolis and St. Paul organized the Twin City District Green Section. The object is to promote the mutual interests of the member-clubs. Frequent meetings will be held to discuss all such problems as turf culture, architecture, budget systems, and the like. It is hoped that large economies will result from cooperative buying.

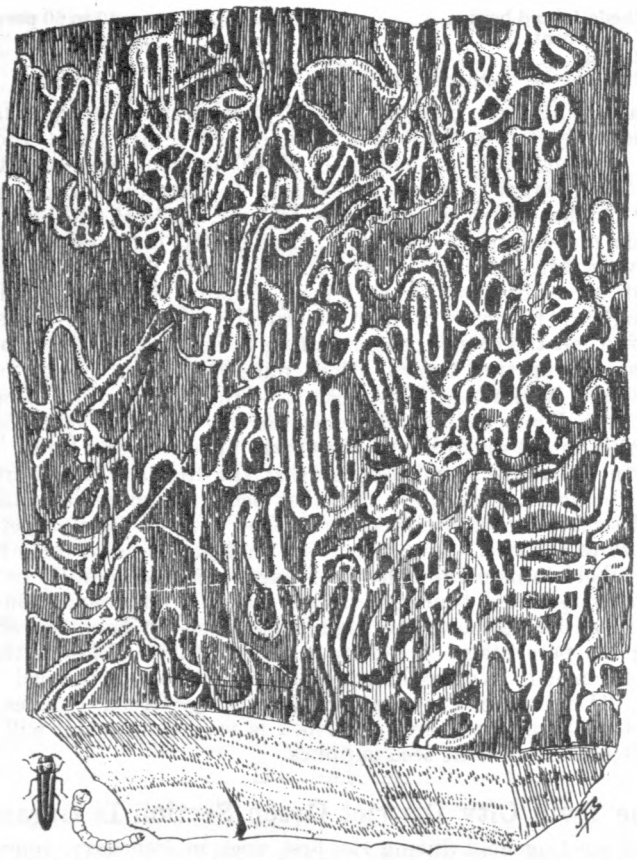
Such a local green section should be formed at every golf center. Everyone interested should read again pages 171 and 172, also 194 and 195 of the BULLETIN.

Hickories and Oaks on Golf Courses Killed by Insects

DR. A. D. HOPKINS

Forest Entomologist

During past years a great many hickory and oak trees in the northeastern and eastern United States have died from attack by insects. Doubtless, many trees have died on certain golf courses. Wherever the trees



Work of the two-lined chestnut-borer, an enemy of oak and chestnut trees. Section of wood from main trunk of a dead chestnut, showing the larval mines of the outer surface.

begin to die they should be examined for evidence of the presence of the destructive insects.

The following, from a folder issued in 1918 for information of property owners on Long Island, New York, will give some of the essential information:

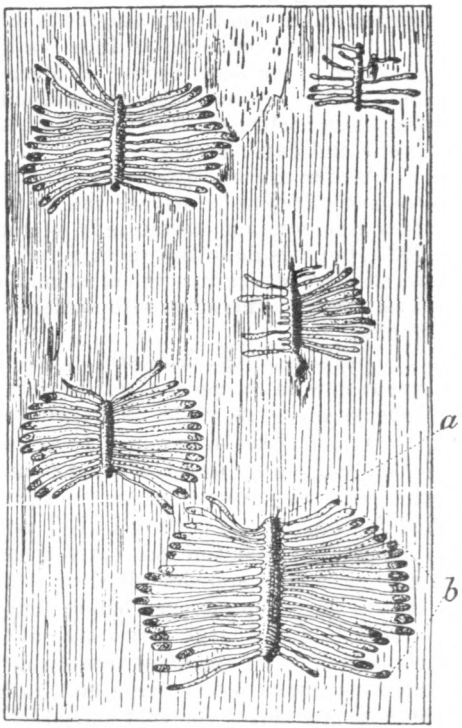
The Dying Hickories

Cause

The hickory barkbeetle is the most destructive insect enemy of the hickory trees in the eastern United States. It has killed tens of thousands of trees. Its destructive work is plainly indicated by the fading and dying foliage in August and September. Its presence is positively identified by the peculiar centipede-like galleries in the inner bark and grooved on the surface of the wood.

Remedy

Look for and mark the hickory trees that die during the summer and fall. Cut the marked trees during the fall and winter and utilize them for fuel or otherwise, or pile and burn them. Do this work between November 1 and June 1, and cooperate with your neighbors in making a good job of it. If this is done it will save the hickories. If this is not done, practically all of the hickory trees may die within a few years.



Work of the hickory bark beetle on surface of wood beneath bark. a, Primary gallery; b, larval mines.

The Dying Oaks

Cause

The two-lined chestnut borer is the most destructive insect enemy of the oak trees of the eastern United States. It has killed tens of thousands of oak trees after they were defoliated by the canker-worm, forest tent-caterpillar, gipsy-moth, etc. Its destructive work is plainly indicated by the failure of defoliated trees to put out new foliage in August and September. Its presence is positively identified by the peculiar small winding mines through the inner bark and grooving the outer wood.

Remedy

Look for and mark the oak trees that die during the summer and fall. Cut the marked trees during the fall and winter and utilize them for fuel or otherwise, or pile and burn them. This work must be completed by the time the new leaves begin to unfold on the white oak, or by the 10th of May. Cooperate with your neighbors in making a good job of it. If this is done it will save the oaks. If this is not done, practicallyq all of the oak trees may die within a few years.

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

Grubs in the Vicinity of Philadelphia

E. B. LEAMING

Moorestown Field Club, Moorestown, N. J.

In THE BULLETIN of December 16, 1921, Mr. Alan D. Wilson describes the troubles encountered by the Pine Valley Golf Club from the southern green June beetle, and asks for remedies. I can only extend to the management of that club a sincere sympathy deeply intensified by a fellow feeling and in return send out a call for help.

During 1921, in what may be called the golfing vicinity of Philadelphia few if any of the numerous golf courses have escaped serious damages from grubs of beetles. In the territory referred to—perhaps elsewhere—it has been a notable year for grubs. The resultant damage has been serious; what the future may be is alike problematical and foreboding.

Curiously enough, at Pine Valley the visitation has been from the southern green June beetle; at Merion and many other courses, the white May beetle, commonly known as the June bug; at Merchantville, N. J., the Japanese beetle; at Riverton, N. J., and Moorestown, N. J., both the May beetle and Japanese beetle.

So far as I am aware the only treatment that yet has been found reasonably effective to destroy the May beetle grubs is a solution of cyanide of sodium applied substantially as stated in THE BULLETIN of November 15, 1921; but it is doubtful whether that solution can be used on putting-greens in effective strength without serious injury to the greens, or can be safely used even on fairways with sufficient strength to kill the Japanese beetle grubs.

But assuming successful extermination of a high percentage of the grubs now infesting our golf courses, how are we to prevent or even discourage surviving grubs, as mature beetles, from depositing eggs next year?

I had occasion recently to remove turf from a portion of the lawn of my home at Moorestown and found the grubs under the turf, almost, if not quite, as numerous as on the fairways of our golf course. Other lawns in the vicinity are equally full of grubs, which in many places have practically destroyed the sod. Are these innumerable grubs to emerge next year as beetles and deposit their eggs in our golf courses and lawns? If beetles only deposit eggs before first emerging from the sod, obviously a destruction of a large percentage of the grubs on our courses would materially reduce the damages reasonably to be anticipated next year. But do not the beetles first emerge and later deposit their eggs where they find it most attractive for that purpose? If so, it would seem that the only possible means of substantial protection is to be found in the seasonal treatment of our greens and fairways by some preparation which will render them unattractive to beetles seeking a suitable spot for their eggs.

Mr. Wilson has concluded that the deposit of manure under the Pine Valley fairways has attracted the beetles. That may be true as to that particular variety of beetles; but it does not appear to be true as to our variety of beetles. I have been unable to find any substantial evidence of discrimination on the part of our beetles between soil rich or poor, high or low, dry or damp, level or on a hillside; they appear to be entirely

satisfied with almost any soil or conditions, and infest our putting-greens, fairways and rough alike.

Apropos of Wilson's geese, I take pleasure in stating that a flock of starlings, of magnitude that no one in these parts has before seen, visited our golf course for some two weeks in October and literally feasted on grubs.

Lest it be thought that the visitation of grubs in this vicinity may not be a serious matter, permit me to state that in lifting sections of sod the roots of which the grubs have detached from the soil, I have counted, on our greens and also on our fairways, twenty-five grubs in a space that could be covered by a hand. On sections of our fairways an acre or more in area, the grubs have not only detached the sod from the soil but have literally devoured all roots in the soil below, leaving the soil much like fine and clean powder. If in the future beetles are to continue to deposit their eggs on our courses to the extent of last year, it seems obvious that the maintenance of anything approaching a desirable course will become practically impossible.*

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*Dr. W. R. Walton, who had occasion to read the manuscript of Judge Leaming's article before its publication, has kindly added the following comments. —Editors.

"In his report on the white grub control work conducted on the Merion Cricket Club's links in Philadelphia, November 2 to 5, 1920, Mr. R. H. Van Zwaluwenburg says:

" 'While the white grubs are within four inches of the surface, an application of sodium cyanide solution, 160 pounds to 12,000 gallons of water, applied to one acre of ground, killed from 75 per cent to 100 per cent of the grubs present,' (the variation in the effectiveness of kill noted being due, in Mr. Van Zwaluwenburg's opinion, to the variable penetration of thesoil). 'At the strength mentioned,' (which is precisely the same used by the Bureau of Entomology in Japanese beetle extermination work), 'there was some burning of the grass, but not enough to injure it seriously. New sod probably will suffer more than old grass.'

"It should be a very simple matter to determine the effect of sodium cyanide solution on putting-greens without any serious risk to the greens, by applying it to a square yard or two of surface and observing the subsequent condition of the grass. This procedure would be the wise course to pursue before attempting large-scale application on greens. Where it seems desirable to try such an experiment, the proper solution may be prepared by adding sodium cyanide to water at the rate of 10½ ounces to 50 gallons of water. This solution should then be applied at the rate of about 1 quart to the square foot of green surface. The important thing to remember is that the solution will not kill the grubs in satisfactory numbers unless the insects are within four inches of the surface; the closer, the better.

"In view of the general infestation reported by Judge Leaming, it may be necessary to treat the links every three years. May beetles consume from two to three years in completing their life-cycles, depending upon the latitude of any given region. In the vicinity of Philadelphia, there probably is a three-year cycle of abundance, coinciding with the periods of greatest injury by the grubs. It may transpire that the treatment mentioned above will not be necessary oftener than every three or six years, if the application is properly timed and thoroughly conducted.

"According to Professor J. J. Davis, 'The grub of the Japanese beetle is of no appreciable economic importance. It shows a preference for decomposing roots and compost of all kinds, and while it may and does feed somewhat on living roots, especially on sod ground, the active feeding period is at a time when little injury results.' "

Seventy-five per cent of putting-green troubles are due to insufficient drainage.

Barnyard Manure Made Artificially

Manure from livestock is one of the oldest as well as one of the best known and most dependable fertilizers. Its beneficial effects have been the subject of much speculation and study because they are seemingly out of proportion to the relatively small amounts of phosphorus, potassium, and nitrogen it contains. However, the lack of knowledge regarding the secret of its effect on plant growth has not deterred farmers and gardeners from using it. The greatest difficulty in connection with its use is its scanty supply. Of the numerous investigations recently conducted, those of the Rothamsted Experiment Station are the most promising of practical results. They may be summarized very briefly. The Rothamsted station has found that straw may be converted into a good quality of manure by treating it with a soluble nitrogen compound, such as sulfate of ammonia or nitrate of soda The former has been used at Rothamsted because of its availability. The method suggested by the investigators involves the composting of fresh straw with sulfate of ammonia at the rate of 100 pounds of the sulfate to one ton of straw. Since straw breaks down most rapidly in combination with a neutral or alkaline solution of nitrogen, and sulfate of ammonia tends to produce an acid reaction, it is recommended that 100 pounds of finely ground limestone be added to the formula to correct the acidity. Straw takes up moisture very slowly and consequently ferments slowly. This difficulty it was found could be overcome by watering the straw lightly. This starts fermentation, which renders the straw more absorbent. A second watering should be given at the end of two days, and when the pile of straw is uniformly moist the ammonium sulfate and lime should be scattered over the surface and water again applied freely. After this treatment fermentation takes place rapidly, especially if the pile be turned over frequently with a fork to admit air. When the straw is broken down thoroughly it is ready for use.

It is not contended that manure made by the foregoing method is equal in fertilizing value to good barnyard manure, but it offers a valuable source of humus and nitrogen and to this extent it is a very useful fertilizer. The object of attention to the Rothamsted experiments in THE BULLETIN at this time is for their bearing on the making of compost. Green-keepers will appreciate the possibilities in the new method of producing manure and doubtless will do a little experimenting of their own the next time they are in need of compost.

Notes

Tee markers.—Good tee markers can be made by using a polo ball or small croquet ball and a 20-penny round spike. Bore a hole in the ball, cut off the head of the spike, and insert in the hole about 1½ inches. This marker will not injure the grass as does the plate.

Eradicating crawfish.—Clubs which are troubled by crawfish holes in low and wet spots may find relief in the method used on some of the aviation fields during the war. The crawfish puddle a little lake at the bottom of each hole. Either drop or squirt a couple of tablespoonfuls of gasoline down each hole and cover the top with the borings or with earth. The crawfish and eggs are destroyed by the fumes and oil.

"Closed down for repairs."—Every green committee should exercise its authority and close its course to play whenever because of heavy rains or spring thaws the course is likely to be damaged. A few "nuts" who would attempt to play if the mud was knee-deep should not be permitted to do damage that cannot be repaired.

Keeping up appearances.—The ordinary citizen still has the idea that a golf club is necessarily a wealthy concern. Silly as it may seem, some golf clubs still spend a lot of money to perpetuate the citizen's illusion. It astonishes most people to learn that nearly every golf club is only about two jumps ahead of the sheriff. Instead of spending money to "keep up a front," isn't it about time for every club to study economy and efficiency in its activities so as to keep within its income. There is a growing belief in golf circles that it is wise to spend more of the club's income on the course and less on maintaining a luxurious house.

Grass roots and deep rooting.—All perennial grasses make a new set of roots each year, or in other words, the roots are annual. These roots extend nearly vertically and fill the soil with their slender branches. The depth to which the roots extend depends in part on the kind of grass, but more on the character of the soil. Looseness, richness, and dryness in a soil tend to induce large root-systems. Even in poor sand, grass has an enormous root-system. On the other hand, compactness, poorness, and dampness in a soil tend to restrict root development. The importance of deep rooting is not as great as is commonly assumed. To a great extent the grass accommodates itself to the soil in which it is growing. The really important thing is to have the soil as near to the ideal as possible. The roots will take care of themselves.

Concrete work.—The green-keeper ought to be a Jack of all trades, and among other things he is frequently required to use concrete. Most of the leading cement manufacturers put out booklets concerning the making and use of concrete on farms, giving valuable tables of quantities, mixes, suggestions, sketches, and the like. One of these booklets is a handy thing to have around.

Selecting a Site for a Golf Course

C. V. PIPER AND R. A. OAKLEY

One cannot study American golf courses long without realizing that too many of them are unfortunately located; their sites have not been well chosen with a view of securing fully satisfactory results. A golf course is a permanent or at least a long-time investment, and it is folly not to exercise the greatest care and discrimination to secure a really desirable site. Several factors are highly important in determining choice, namely:

1. Convenience and accessibility.
2. Topography.
3. Landscape beauty.
4. Sufficient area.
5. Soil resources.
6. Water supply.
7. Price.

Opinions will differ as to the relative importance of these seven factors, and indeed it is out of the question to attempt to decide by a score-card system. Every one of the factors is highly desirable. A single one of them is not rarely that on which decision is based. For example, in parts of the west an ample supply of water for irrigation is fundamental On the other hand, one factor may practically be discarded, provided most of the others are sufficiently attractive. For instance, the National Links can scarcely be scored very high on the basis of convenience and accessibility, but its otherwise superb features have made it a Mecca for golfers. To locate a superlative site for a golf course requires much knowledge and often long search. More and more devotees of the game have acquired the habit of laying off a mental golf course on every piece of interesting topography they see. It would probably be a good investment for a shrewd man to buy a really desirable piece of land for a golf course and hold it to sell to the club that sooner or later would be sure to come along and want the land.

Of the seven factors mentioned, the one of soil resources is too often neglected. It is very difficult or very costly to grow good turf on very poor land. Perhaps one reason why such land has so commonly been purchased by golf clubs is due to a lower price; but in the end such land is very costly to any club. Building up poor land so that it will grow satisfactory turf is not a cheap process and usually costs far more than it would to buy good land in the first place. Now and then it happens that an area with only poor soil has highly desirable topographic features, which may be the deciding factor. In such a case the club should realize in advance that a great deal of money must be spent for soil improvement before it will ever secure good turf.

It will perhaps be conceded that the best of all soils for golfing purposes is a fine sandy loam. The least desirable are stiff clays at the one extreme and coarse sands or fine gravels at the other. The stiff clays puddle and bake; the coarse sands leach water and fertilizers too readily to maintain good turf except at great expense. Where an area of good sandy loam cannot be obtained, particular attention should be paid to the

soil resources that a given tract contains. If sand, clay, and humus materials are all available on the tract, soils of almost any desired type can be built up at moderate expense. If any one of these must be purchased or brought from a distance, the cost becomes high. Therefore if the land is, in general, sandy it is important to locate supplies of clay; if it is clayey, a sand quarry is a great asset. In either case a source of humus is essential. Sometimes this is present as deposits of peat. In any forested area leaf-mold may be obtained if enough land is purchased to maintain some of it in forest. It is unwise to purchase too small an area of land. One hundred and ten acres is about the minimum, and more is better, especially as land values usually increase about a country club and any land not needed can later be sold at advanced prices. Too many clubs have made the great mistake of laying off an 18-hole course on 70 or 80 acres of land. Where the land is poor this is doubly unfortunate, as there are no surplus soil resources to be drawn upon.

Regardless of the type of soil, good drainage should always characterize the tract chosen.

Every farmer knows that good land is worth more than its price as compared with poor land. In other words, it costs more to build up poor land than it does to buy good land. Many golf clubs were ignorant of this basic consideration and have learned it to their cost.

The character of the climate is also to be considered. Under very favorable climatic conditions good turf can be grown even on very poor soils. Witness the sand-dune courses of Great Britain. On the other hand, the more unfavorable the climatic conditions are, the more necessary is it to have good soil features. To an appreciable degree high quality of soil offsets unsatisfactory weather conditions.

The whole matter may be summed up briefly. Accessibility, landscape beauty, and water supply can be adjudged by most intelligent men. The golf architect should be asked to decide on the desirability of the area chosen for a golf course; or still better the choice of two or more prospective sites. In any case the soil resources should be carefully investigated, preferably by securing the advice of a competent expert. The cost of upkeep on poor soil is necessarily so much higher that such land should never be chosen unless the prospective resources of the club will stand the expense. Poor soil is a mighty poor investment for any club but a rich one.

Important

Every member of every green-committee should receive and read THE BULLETIN regularly. The subscription price to individuals in member-clubs of the Green Section is only $2.00 a year. All subscriptions should be sent in by the secretary of the club.

Golfers are beginning to discuss golf architecture. This spells improvements in countless poor holes.

A woodland border to a golf course greatly increases the country atmosphere.

An artificial lake may easily become a mosquito nursery.

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. Comparative viability of South German bent seed and red fescue seed.—Can you give me any information as to the relative viability of South German bent seed as compared with red fescue seed?—(Indiana.)

Red fescue seed after it reaches this country seems to have lost considerable of its viability en route and averages near 75 per cent. immediately on arrival, whereas the South German bent seed is much higher. After the red fescue seed has remained in stock in this country for a year its germination generally goes down to 25 to 40 per cent, whereas South German bent seed will retain its viability very satisfactorily for as long as four or five years.

2. Steamed vs. raw bone-meals.—I recently got quotations on steamed bone-meal at $32.00 per ton and raw bone-meal at $45.00 per ton. The sellers claim that the steamed bone-meal is the more quickly acting. Which would you advise us to purchase?—(Pennsylvania.)

Steamed bone-meal is usually quoted at about three-fourths the price of raw bone-meal. The former differs from the latter in that the fat has been extracted from the steamed bone-meal either by steaming or by the use of a solvent. Where steam is used, considerable of the nitrogenous matter is also removed, the net result being that the steamed bone meal is poorer in nitrogen and relatively richer in phosphorus and the phosphorus is in a more available form. However, for grass purposes it is the nitrogen which is of most value. The difference in price seems to be based on the chemical analyses of the two as regards the content of potash, phosphorus, and nitrogen; but it may be based, in part, on the experience of truck growers and the large users of bone-meal. We can find no data whatever in the way of actual fertilizer trials comparing the relative value of steamed bone-meal and raw bone-meal for grass or for field crops. but we are inclined to think that at about the differential in prices quoted to you the values of the two about balance. On the whole we should be inclined, however, to purchase the steamed bone-meal. It would be interesting if you could test the two on a putting-green, fertilizing one-half of the green with steamed bone-meal and the other half with raw bone-meal, and watching the results. Yet we have serious doubts that any difference in results would be perceptible.

3. Weeds in sand-pits; sodium arsenite.—Can you give us any information relative to a remedy for weeds in sand-pits? Hoeing weeds by hand labor is an expensive proposition with us, and we would like to inquire if there is not some weed-killer or a preparation of some kind that we can use to kill out the weeds. Is it customary with most courses to use a preparation, or do they weed by hand?—(Wisconsin.)

So far as we know, this work is done on most courses by hoeing or raking. It would seem, however, that chemical weed-killers could be used at perhaps less expense than the hand-labor; and furthermore, the contin-

uous use of the weed-killers would finally get the soil in such condition that the weeds would not grow, and without interfering with the use of the sand-pit otherwise. The best chemical week-killer is sodium arsenite in a 2 per cent solution, which would mean 1 pound of sodium arsenite to 6 gallons of water. This should be used rather liberally, say, at the rate of 10 gallons to 1,000 square feet, and used whenever the weeds are troublesome. In one of our experimental areas we used this solution twice a year for two years, and in the five years that have since elapsed the area has been practically free from weeds, which were mostly deep-rooted perennials, namely, quack-grass and horsetail. This was, however, on clayey soil, and you will readily appreciate that in sandy soil the seepage, and consequently the loss of the preparation, is more rapid. For further information on the use of chemical weed-killers your attention is called to the articles in THE BULLETIN of July, 1921, pages 126 to 131.

4. **Rock phosphate as a fertilizer.**—I am sending you herewith a letter from the ——— Phosphate Mining Company, advocating the use of rock phosphate as a golf turf fertilizer and as a substitute for sand at tees. Will you be good enough to advise something of the advantages of this treatment, if any, in your opinion?—(Ohio.)

We do not recommend the use of rock phosphate for golf grasses. You will note from the article on *Commercial Fertilizers* in the October, 1921, number of THE BULLETIN that we do not recommend the heavy use of phosphate of any description, as it promotes the growth of clover and weeds. What phosphate is used should be of a more readily available sort than is rock phosphate so that the benefit will be appreciable soon after the phosphate is applied. The trouble with rock phosphate is that it is ver slow in becoming available as plant food.

We have never heard of ground rock phosphate being used at tees as a substitute for sand. It would probably answer the purpose, but we fear its cost would be several times that of sand.

5. **Farming unused golf land in the North.**—This club has purchased land adjoining our present nine-hole course with a view to adding another nine-hole course, possibly in about three years' time. This land contains considerable quack-grass, some thistles, and numerous weeds of all kinds, the property having been allowed to run down by the owner for some four or five years. During the next three years we would like to prepare this ground so that it will be in proper shape for fairways, and information is desired as to how we shall proceed and what crops should be planted to insure within three years proper soil conditions for fairways.—(Wisconsin.)

If this is farm land, which we presume is the case, it would probably be wisest for your club to farm the land until you are ready to construct the nine holes. In the fall the land could be plowed and sown to rye, and the rye plowed under the following spring and the land planted to corn or soy beans in rows. In either case the crop should be cultivated as thoroughly as possible so as to reduce the amount of weeds. If planted to soy beans, the crop could either be plowed under as green manure, or harvested. If the land is relatively poor this same general system could be followed until you are ready to build the nine holes. If, however, the land is of good quality it might be well simply to grow commercial crops on it for the next three years, having as a summer crop one that can be thoroughly cultivated so as to subdue the weeds. Your choice of summer crop could be corn, soy beans, potatoes, or such others as your local conditions would justify.

6. **Undulating greens; deficient drainage.**—I am anxious to know your views in regard to the maintenance of undulating greens as compared with flat greens. While we have not experienced any bad results up to the present time, I know of similar greens that are playing out in the low places.—(Illinois.)

There is no greater difficulty in the maintaining of undulating greens than of flat greens, provided the undulations are gentle and not violent. It seems that in the vast majority of cases, however, the undulations are made too violent. Of course, care must be taken that there are no undrained basins in an undulating green. The greens you speak of that are playing out in low places are probably suffering from lack of drainage, which is very often the cause of turf deteriorating in putting-greens.

7. **Hydrated lime for getting rid of earthworms.**—Can you inform me whether the use of hydrated lime for the removal of earthworms has been successful, and if so what methods are the best to follow?—(Pennsylvania.)

From our experiments it appears that any substances that will irritate the worms will cause them to come to the surface; this is true of lime-water as well as of weak acids. But after all, the efficiency of an eradicator depends on the number of worms which you bring up per unit of area, and its desirability largely on the cost of application. From the results of all of our work thus far we still favor corrosive sublimate as the best eradicator. Mowrah meal is good, but costs about eight times as much as corrosive sublimate and does not get as many worms.

8. **Seashore sand for golf courses; grasses for northern putting-greens, tees, and fairways.**—The question has been raised as to the desirability of using white seashore sand for "teeing up" on our tees. Some claim that the salt in it hurts the grass and others that it does not. Will you kindly give us the benefit of your experience in this matter? Will you also be kind enough to let me know what you consider the best mixtures of seed for putting-greens and tees?—(New Jersey.)

There is no danger whatsoever in using sea-shore sand for teeing purposes, nor indeed for top-dressing putting-greens. The amount of salt which it contains is really very small, not sufficient to injure fine turf unless used in perfectly enormous quantities. In regard to seeds to use on the golf course, we would say that in our judgment the best seed to use on your putting-greens is South German mixed bent; second choice, Rhode Island bent; third choice, Chewings fescue. For your fairways, if you want to use additional seed, we would recommend the ordinary mixture of 4 pounds of Kentucky bluegrass to 1 pound of redtop. This latter mixture is also as good as anything else for the tees.

9. **Effect on soil of constant use of corrosive ublimate in earthworm extermination.**—On a clay soil, such as ours and a great many inland courses, we require earthworm treatments a half-dozen times a year, and such continued use of corrosive sublimate for this purpose appears to be detrimental to the grass. Is it likely that permanent injury to the turf can result from the continued application of corrosive sublimate?—(Pennsylvania.)

We know of no case of permanent injury to turf from corrosive sublimate, nor of accumulative injury. This chemical is, of course, a very violent plant as well as animal poison. All of those who have experimented with the substance for the purpose of destroying vegetation, such as weeds, have not been able to notice any permanent injury to the soil. The corrosive sublimate would be absorbed in the soil, combined with soil material, plant refuse, etc., particularly material of a protein character,

and thus form insoluble mercuric compounds which should not subsequently be effective in injuring plant growth. This probably explains why vegetation will always again occupy land that has been treated with corrosive sublimate. It may be, of course, that the continued use of this reagent on a limited area of ground would ultimately result in leaving some of the chemical uncombined in the soil, but this seems to us to be hardly likely.

10. **Caterpillar and turf.**—We have noticed a brown, fubzy caterpillar on some of our greens this fall, and we have heard the opinion expressed by other golf clubs that these caterpillars or their moths affected the turf. We can not say that the caterpillars have done any harm on our greens, but we have never noticed them before this year. Do you consider that they have a harmful effect and should be fought earlier in the season before they appear?—(Illinois.)

We have never heard of caterpillars or their moths doing damage to putting-greens. They usually appear in late summer or fall, crawling around in search of a place in which they can spend the winter. We feel sure that they are perfectly harmless as far as grass growing is concerned.

11. **Red fescue; its use on the golf course.**—Under what conditions do you recommend red fescue for golf courses?—(Illinois.)

When "creeping bent" or rather South German mixed bent seed cannot be obtained, red fescue is the next choice for the region across the continent north of the latitude of the Potomac and Ohio rivers and for the higher altitudes south of this line, and also in the Pacific Coast states. There is no warrant for using red fescue in the south even for purely winter greens. This grass is admirably adapted to poor coarse soils such as fine gravels, sands, and sandy loams, on which soils it will maintain itself against most other plants. On clays and clay loams other grasses tend to crowd out the fescue. For these reasons red fescue will hold its own on the coarser soils even in mixtures, but on the finer soils it gradually gives way especially to the bents. Northward of the line from New York to Chicago, red fescue is very satisfactory for fairways, especially on the coarser soils. On the finer soils it does well, but we think the bents preferable. Southward of the New York-Chicago line red fescue, if used at all, should be sown alone, not in mixtures. We can maintain pure red fescue turf at Washington even on clay soils; but if sown in mixtures, the bents and other grasses will soon exterminate the fescue.

In brief, red fescue is adapted to the conditions in the northern tier of states especially, and is increasingly less satisfactory toward the south. The grass thrives best in the coarser soils. Incidentally it is a most excellent grass for shady places.

12. **Forking greens vs. top-dressing with sand.**—Is it advisable to fork a green in order to get sand into the soil, or remove the surface and get the subsoil in perfect condition and then re-surface again?—(Illinois.)

The data we have thus far on forking are not at all consistent. In our own experiments we got very bad results from any type of forking when done in midsummer when the grasses are weakest. It by no means follows that this would be the case with similar treatments in spring and fall. Some of the green-keepers report excellent results from forking, but in most cases they have not left any check-plots with which to make

comparisons. We know that very excellent results have been gotten, where the greens have been made on a clay soil which is too stiff, simply by continued top-dressings with sand or sandy loam. We are not prepared to say whether additional benefit will be obtained by forking or spiking in any form. We should be very much interested if, in connection with some of your greens, you would try one treatment on half of the green or three-quarters of it for a test. At any rate, leave part of the area untreated so that you can judge of the effects that you do get from the forking.

13. **Reseeding greens; inadvisability of mixing bent seed with fescue seed.**—We are offered some German creeping bent seed, but inasmuch as we seeded rather heavily in the fall with redtop and fescue, and as both fescue and bent seeds grow rather in patches and are of a different color, would it be better to continue using fescue, or would you advise incorporating bent seed?—(Indiana.)

We do not recommend mixing bent with red fescue. The two differ not only in color, but in texture also. If from your previous experience you believe red fescue will persist it would probably be best not to put in bent, but if there is likelihood that the red fescue will die out in a year or two, the sooner the bent is started, the better. Of course, there will be a transition stage when the greens will not be as satisfactory as when consisting of either one of the two grasses in pure culture.

14. **Northern putting-greens and fairways, spring seeding; redtop, bent, bluegrass, English (perennial) rye-grass.**—If we sow our greens with extra fancy recleaned redtop, would you use a little bent grass seed or would you defer all bent grass seeding until very early in the fall. I take it that in re-seeding with the bents I would not have to tear up these greens seeded to redtop, but could sow on top, use a Velvet hand-disk, and top-dress with mushroom soil and screened soil. Many greens experts suggest the first week in April for seeding, but it would be to my advantage to sow earlier, if safe. On our new fairways, would fancy recleaned redtop exclusively be all right, or would you suggest that something be added. I want the quickest-growing grass possible, so we can use the fairways. say, about July 1, by playing winter-rules. Would we get quicker results by using English rye-grass with the redtop, or have you anything else to suggest. It is necessary that we be as economical as possible, but I realize that we cannot skimp at the risk of botching the job.—(Pennsylvania.)

We would suggest that you seed your greens to a mixture of recleaned redtop and South German mixed bent, using as large a proportion of the latter as you think you can stand. Supplies of this seed are now available from a number of seedsmen, including the following * * *. The use of redtop will lower the expense of seeding the greens considerably; and the redtop practically all disappears from a green within two years, so that where a mixture of redtop and bents are seeded the final result is a bent green. If you should seed a mixture of half and half it would not be necessary to use any additional seed of the bents in the fall. If there is a fairly good stand of grass by next fall, good treatment will be all that is necessary, as additional seed has little chance of becoming established in knitted sod. As to the fairways, redtop will last some time longer on fairways than on putting-greens. but we certainly would advise you to seed a mixture of redtop and bluegrass. preferably in the proportion of 4 pounds of bluegrass to 1 of redtop, the redtop being the smaller seed. The bluegrass will become the permanent grass on your fairways, but the redtop will come quickly and is very helpful. There is no particular objection to using English rye-

grass on the fairway, as it grows quickly. Seed just as soon as the frost is out of the ground. In your latitude this ought to be about the middle of March, possibly not until the first of April. It is expecting a good deal to have good turf by the first of July, but we would expect it to be plenty good enough so that no serious harm would result if you use winter rules. Until the sod has become well knitted, divots are very destructive.

15. **Spring-seeding of putting-greens; use of redtop and bent in putting-greens.**—We built our first nine holes last spring, starting in March, and we had them in playable condition so that we opened the course August 6 and used it incessantly thereafter. We purchased a standard putting-green seed mixture from the * * * Seed Company, but much of the grass was burned out during the drought of midsummer, as we had no water supply for the greens. We now have our second nine holes shaped and ready for seeding. We have rich ground, but it is high and inclined to bake in hot weather. I am inclined to think we would obtain good results with sowing these greens exclusively with recleaned redtop instead of using the much higher-priced bents and fescues. What is your opinion?—(Pennsylvania.)

Fall seeding is much to be preferred to spring seeding. If you must seed this spring, be sure and seed as early as possible, say, just as soon as the frost is out of the ground. Redtop makes greens of mediocre quality, but you have this advantage in using redtop, that whenever you want to change to bent you can do so, as redtop is a short-lived grass under putting-green conditions and the bents will soon replace it entirely. The bents make much better greens than the redtop. If the additional cost of the bent seed is not a serious matter with you, we would suggest that you use it, or do this as an alternate; plant redtop this spring, as this is not the best time to plant bent and the seed of redtop is cheap, and then reseed the greens about the middle of September with the bent, top-dressing after scattering the seed.

16. **Creeping-bent nursery: spring planting from center of previous nursery and from new runners.**—Last September when removing runners from our garden to plant our new putting-greens, I left what I call the core of each row intact, so that they now look like rows of sod in the places where the original runners were planted. I have had the intervening spaces between the rows manured and cultivated in the hope that next spring new runners will be sent out across the intervening spaces. Would you mind apprising me whether this is likely to occur, since my purpose is to make additional greens from the new runners?—(New Jersey.)

In regard to leaving the center part of a row of creeping bent after you remove the runners, we have tried this method, and, in comparison, the planting of new runners. Thus far our results have consistently been in favor of planting the new runners each year, as we get a much broader growth from them than we do from the core left in their rows. Inasmuch as it is very easy to plant rows when you have runners 3 feet long, we would think the best thing to do is to plant new rows. In some cases very good results have been obtained by planting runners in the spring; the rows do not become as wide, but do become 3 or 4 feet wide in the course of the season. Fall planting is to be preferred, but spring planting is by no means unsatisfactory.

17. **Brown-patch on winter greens in the south. Italian rye-grass, redtop, and bluegrass for southern greens.**—We are making some changes on our golf course here. In these changes we are building some new greens, and as we have

not been getting complete satisfaction with Italian rye-grass in the winter, I am wondering if you know of any grasses that would be better adapted for our purpose.—(Florida.)

Heretofore the grasses used for seeding winter greens in Florida have been Italian rye-grass and redtop, and the redtop, from the standpoint of turf alone, and cost, is preferable. Recently a new development has taken place in connection with the matter of winter greens in the south all the way from New Orleans throughout Florida, namely, a disease apparently identical with the northern brown-patch, which does much damage to the seedlings, injuring redtop rather more than it does Italian rye, but very severe on both. At two places in Florida we are now testing out about twenty kinds of grass, hoping that we may find some one or more grasses which are immune to this fungous disease. Until the results of these experiments are known it is out of the question to give definite advice. However, in the north bluegrass is practically immune to brown-patch, and it is believed that bluegrass is going to solve the problem in Florida. In the meantime, perhaps the best thing to do would be to use a mixture, say, of Italian rye-grass, redtop, and bluegrass, and trust to one of them giving satisfaction.

18. **Quack-grass for fairways.**—Our green-keeper comes from the White Mountains and has charge of a golf course there during the summer season. He has been telling us about a grass which he says is very common in that portion of New England and which he calls witch-grass, and he claims it will grow in any part of the country and in any kind of soil, even the most barren, and he claims that it is a great grass for fairways. Would it not be possible for you to obtain a pound of seed of this grass so that we may try it out here?—(Florida.)

Witch-grass is more commonly called quack-grass or couch-grass. It is a perennial with long, creeping rootstocks, and a very bad weed in the North. However, it has something to its credit, inasmuch as this grass is abundant in meadows and makes up about half of the hay crop of New England. It was introduced into the United States over a hundred years ago and has spread westward across the continent and southward as far as Washington, D. C., but does not occurr in the South at all and apparently meets an invisible barrier in about the latitude of Washington. The chances are that it will not succeed at all under Florida conditions. Seed of this grass is not on the market, but if you wish to try it out we can obtain roots in the spring and ship them to you. The invisible barrier which keeps it from getting southward is either length of day or heat; there is doubt as to which; but it seems just as effective as the barrier which keeps Bermuda grass from getting any farther northward than about the latitude of Washington. Your green-keeper is perfectly correct in what he says so far as it refers to New England, but we feel sure that it will not apply in any degree to Florida. Where quack-grass is kept rather closely clipped, as on a fairway, it makes pretty good turf. There is really some very satisfactory quack-grass turf on the fairways of some northern courses on very sandy soil.

19. **Use of a filler with ammonium sulphate to prevent burning.**—In the October, 1921, Bulletin, the following formula is recommended for putting-greens: ammonium sulfate, 250 pounds; bone-meal, 500 pounds; muriate of potash, 100 pounds; the mixture applied at not to exceed 20 pounds per 1,000

square feet. In the March, 1921, Bulletin, a mixture of 5 pounds of ammonium sulfate with 50 pounds of sand is advised, and applied at 5 pounds per 1,000 square feet. Will it be necessary to use sand with the former mixture?—(Indiana.)

No; but it would do no harm, in case you wish to apply sand to your greens, to add it to the fertilizer mixture, thus applying the two at the same operation. The bone-meal in the former formula is sufficient as a filler, so that an addition of sand is not necessary. The purpose of a filler is to prevent burning from the ammonium sulfate. The danger of burning with ammonium sulfate is not serious if the chemical is in fine condition and evenly distributed, but where there are large lumps, say the size of a hickory nut, there will be a burned spot where the lump may lodge.

20. **Moles.**—A prominent green-keeper insists that he can catch more moles in a day by hand, or rather by foot, than is possible with any number of traps. He says the moles work at intervals of three hours, say at nine, twelve, and three o'clock, and that if the time of any working is noted they are sure to be found busy again in three hours. His plan is to watch very quietly near the mole-run and to stamp a heel into Mr. Mole as soon as his location is evident from his movements. The claim is that by noting the time of working a man can give attention to the moles and do other work between times. Do you know whether there is any merit to this claim?—(Ohio.)

The method described is a well-known one and would perhaps be better suited for use by the caretakers of golf courses than under usual field conditions. However, the method has the disadvantage of requiring more time for satisfactory results than does the use of traps. Careful use of the best traps, in accordance with good methods, is far more practical and economical for general use where moles are at all abundant than the method you describe.

Straight rows of trees, except along avenues, should be avoided. Irregularly scattered groups of trees are wonderfully effective in beautifying the landscape.

A putting-green is greatly beautified by a half-circling frame, such as trees or bunkers.

Meditations of a Peripatetic Golfer

There are three kinds of golf shots—good, mediocre, and poor. Now and then one sees a green to accommodate all three—the putting surface for the good shot, longer turf for the mediocre, and bunkers or rough for the poor shot. It's a good idea to bear in mind in modifying a green that is too large.

All fertilizers are good, but some are immeasurably better than others either in the results secured or in the money saved.

The fetich of 6,300 yards has ruined many a good hole. The ideal for a golf course is 18 holes, each good of its particular type, much more than it is any particular yardage. A good two-shot hole is infinitely to be preferred to a poor three-shotter.

Jim was top-dressing his greens with sand the other day. It looked to me as if someone had sold him fine gravel when he wasn't looking.

All golf courses are good if we judge by the interest the players show. So please don't call any golf course "rotten." In many cases a course can be greatly improved at small expense. If you are able to do it, tell the green-committee how to bring it about.

A green on top of a saddle-back ridge where it was very difficult to hold the ball, reminded me of another green with a rounded mound near the middle. One day, as a joke, the boys put the cup on top of this "chocolate drop" and then listened gleefully to the exasperated players "cuss out" the green-keeper.

Wanted.—Some effective remedy to cure players of the habit of climbing over the backs of bunkers instead of going out the way they went in. They never read and do not believe in signs, and cursing them does no good.

Bill is a mighty good green-keeper and always on the job. He gave me this tip the other day: keep a file of catalogs, repair lists, price quotations, etc., so they will be available at all times; it will save lots of time and some expense.

Consistent and intelligent buying is as important on a golf course as in a business.

Mighty little gray matter seems to be used in choosing sites for golf courses. Not long since we saw one 18-hole course on 80 acres of land, and another on 77. It must require some skill to dodge the flying golf balls. Apparently, too, the idea is abroad that a golf course should be built on the poorest land that can be found. At least that characteristic is the only evident one to account for the sites selected for some clubs.

Old Mr. Dubb the other day insisted that the thing which inspires a country club and keeps it alive is the golf course; also that it is the house which keeps it in the financial shoals most of the time. Dubb is really too brainy a man ever to become a crack player.

The little points count. My friend Jim insists that the tee-boxes and tee-benches be moved now and then. He doesn't like the bare places that develop in the turf if they are not moved occasionally.

"A golf club for golf" is the slogan a new organization has adopted. Fine business! That's what most of the clubs of the future are going to be. It costs too much money to run a marble mansion for social affairs competing with dozens of other purely social institutions in every city.

Some chairmen of green committees are showing signs of really human intelligence. In a recent annual report we read, "The experiments thus far conducted convince us that less is gained from reseedin established turf than most people believe, and that the best results may be expected from fertilizing and caring for existing turf with occasional light seedings on dead or damaged spots."

One club we know prohibits the wearing of metal-spiked shoes on the course, because of the injury to the turf. Hooray! There are plenty of reliable rubber-soled golf shoes now available.