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

Vol. III Washington, D. C., November 22, 1923 No. 11

A MONTHLY PERIODICAL TO PROMOTE THE BETTERMENT OF GOLF COURSES

CONTENTS.

Published by the Green Committee of the United States Golf Association, 456 Louisiana Avenue, Washington, D. C. Editorial Offices: P. O. Box 313, Washington, D. C.

Subscription price: To golf clubs that are members of the Green Section of the U. S. Golf Association, $4.00 per year (included in membership fee).

Entered as second-class matter December 16, 1921, at the post office at Washington, D. C., under the Act of March 3, 1879.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, OF THE BULLETIN OF THE GREEN SECTION OF THE U. S. GOLF ASSOCIATION, PUBLISHED MONTHLY, AT WASHINGTON, D. C., FOR OCTOBER 1, 1923.

District of Columbia, ss:

Before me, a notary public in and for the District of Columbia, personally appeared W. B. Lydenberg, who having been duly sworn according to law, deposes and says that he is the business manager of the Bulletin of the Green Section of the U. S. Golf Association, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, Green Committee of the U. S. Golf Association, 456 Louisiana Avenue, Washington, D. C.

Editors, C. V. Piper and R. A. Oakley, P. O. Box 313, Pennsylvania Avenue Station, Washington, D. C.

Managing editor: none.

Business manager, W. B. Lydenberg, 456 Louisiana Avenue, Washington, D. C.

2. That the owners are the United States Golf Association, a mutual organization of golf clubs. President, J. Frederic Byers, Pittsburgh, Pa.; vice-presidents, Robert A. Gardner, Chicago, Ill., and Wynant D. Vanderpool, Newark N. J.; secretary, Cornelius S. Lee, Tuxedo Park, N. Y.; treasurer, Edward S. Moore, 14 Wall Street, New York, N. Y.

3. That the Association has issued no bonds, stocks, mortgages, or other securities.

(Signed) W. B. Lydenberg, Business Manager.

Sworn to and subscribed before me this 1st day of October, 1923.

(Signed) BERNARD CONNOR.

My commission expires August 6, 1927.

Inexpensive Manure Pits

By MAYNARD M. METCALF

THE BULLETIN has contained several articles describing concrete manure pits for collecting manure water. The Oberlin (Ohio) Golf Club has built three manure pits at a total expense of about one day's labor for each pit. We chose places where the soil was heavy clay, shoveled off the top soil to a depth of about one foot, graded the floor of the rectangular pit so that the sides sloped down to the mid-longitudinal line, and sloped this middle furrow a little to one end. At this low end of the pit we sank an oak barrel (and we made one of the storekeepers give us the three barrels). All the water which seeps through the manure collects in the barrel.

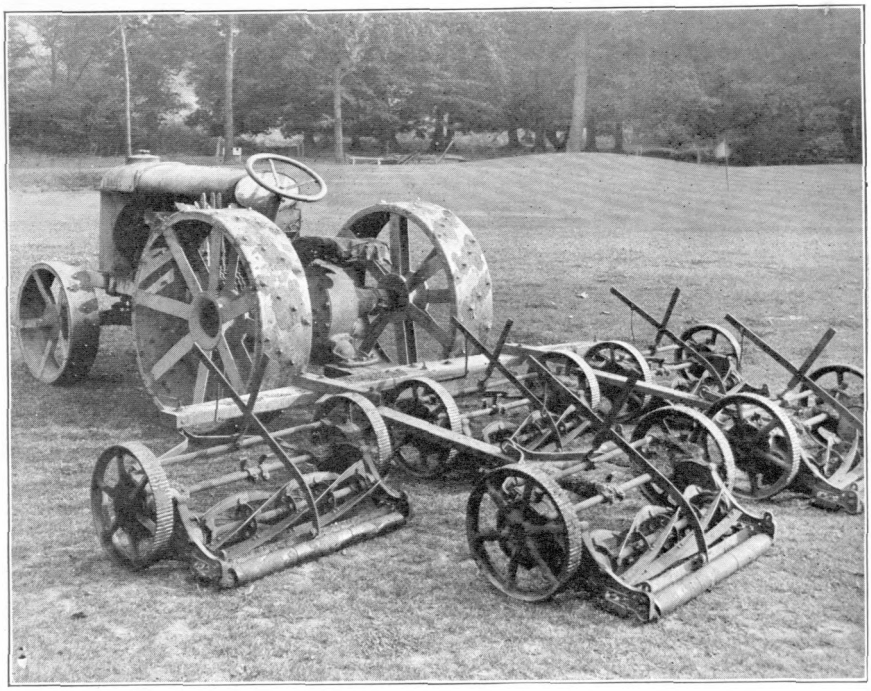
The pit is half again as long as is needed to hold the manure, thus allowing the manure to be turned over occasionally. Turning the fresh manure four times at intervals of about a week, and wetting it down well every time it is turned, is enough to rot it thoroughly; but we keep the manure in the pile about nine months so that all weed seeds are killed. When freezing weather comes in the fall the greens are covered with this thoroughly rotted, almost pulverized manure, and lie thus over winter. In the spring anything left from the manure is raked off and put into the pit with fresh manure. Some manure is also used, of course, on the fairways.

We make no soil-manure compost heap. For top-dressing the greens during the playing season, we use a fine sandy loam. This is kept for several months in large piles before using, with a view to the destruction of the viability of any weed seeds it may contain. We would use some sand also, but in this clay country sand costs $3.50 a yard.

Manure water from the pits is dipped from the barrels, diluted about fivefold, and thrown over the putting greens, especially during the spring and fall growing seasons.

We have not used these methods long enough to say from experience how successful they will be, but we are confident that our pits, costing $4 each, are as good as concrete ones. Of course such pits can be constructed only in heavy clay soil. It's a pleasure to find at least one advantage in clay soil on a golf course.

Tractor with Self-Supported Mower Hitch



We are indebted to Mr. I. N. Porter, greenkeeper of the Ashtabula Country Club, Ashtabula, Ohio, for the accompanying illustration showing the tractor-mower combination in use on their course. Mr. Porter calls attention to the arrangement of the hitch, by which all of the weight of the frame is borne by the drawbar of the tractor and none of the weight by the mowers. The frame is made of 2-inch planks and is considered to be easily adaptable to any of the standard cutting units. Mr. Porter writes that the device is a "whaling success," working on any level and permitting high speed. With this combination it takes 12 hours to cut the 25 acres on the Ashtabula course, which moreover is subdivided rather more than usual.

New Member Clubs of the Green Section.—Meadow Woods Country Club, Centralia, Ill.; Scarboro Golf and Country Club, Scarboro, Ontario; Unicorn Country Club, Stoneham, Mass.; Omaha Field Club, Omaha Nebr.; John D. Rockefeller, Pocantico Hills, N. Y.; Pleasant Valley Country Club, Scottdale, Pa.; Swan Lake Country Club, Portage, Wisc.; The Olympic Club, San Francisco, Calif.

New Member Clubs of the United States Golf Association.—Allied: Community Country Club, Dayton, Ohio; Lakewood Country Club, Dallas, Texas; Meadow Woods Country Club, Centralia Ill.; Oak Grove Golf Club, Dallas, Texas.

Volume I of The Bulletin (1921) has been reprinted and may be obtained in one cover for $2.25.

Mixing and Screening Soil with an Old Threshing Machine

We believe this idea originated with Mr. William J. Rockefeller, of the Inverness Club, Toledo, Ohio. At any rate, Mr. Rockefeller gave us a description and illustration of the old threshing machine he is using for making and sifting compost, which were published in the September, 1922, number of THE BULLETIN. It is interesting to note here, however, that the idea has been successfully adopted by the Kenosha Country Club, Kenosha, Wisconsin. We have received a letter from Mr. F. T. Neff, of the Kenosha Club, accompanied by two illustrations of the equipment he is using. Mr. Neff writes as follows:

"For screening our soil we purchased an old threshing machine of the vintage of about 1912; paid $50 for it, and fitted it over, and to my mind it has all the patented machines beat a mile. It puts the stuff through just as fast as you can give it to the machine, and with a proper mesh sieve gives the results, and a plenty. I find, to use the slang phrase, 'It is the berries.' As Mr. Rockefeller says, it will take all that you can throw into it, and the soil is well mixed and falls under the machine as you see it in Figure 2. One man is shoveling in sod and black dirt, another manure, and the other sand. The proportions can be varied as one desires. We usually mix with one shovel of each, and add ammonium sulfate as we think we need it. The machine is stripped of everything except the cylinder and the beater just back of it, which kicks the material back and forth on the cylinder until it is thoroughly broken up. It then falls upon the sieve, which as we have it is quarter-inch mesh, and as the agitator and sieve are going back and forth the fine, well-mixed compost falls through to the ground, while the stones, grass, or any other coarse material is shaken off the back end. There is no loss, as the fine, sifted dirt is immediately ready for top-dressing, and the coarse material can be used over again in the compost pile or spread upon the rough where needed. We generally use our coarse material on the tees or bad spots on the fairways. There is only one thing that is quite necessary; the materials should be dry or

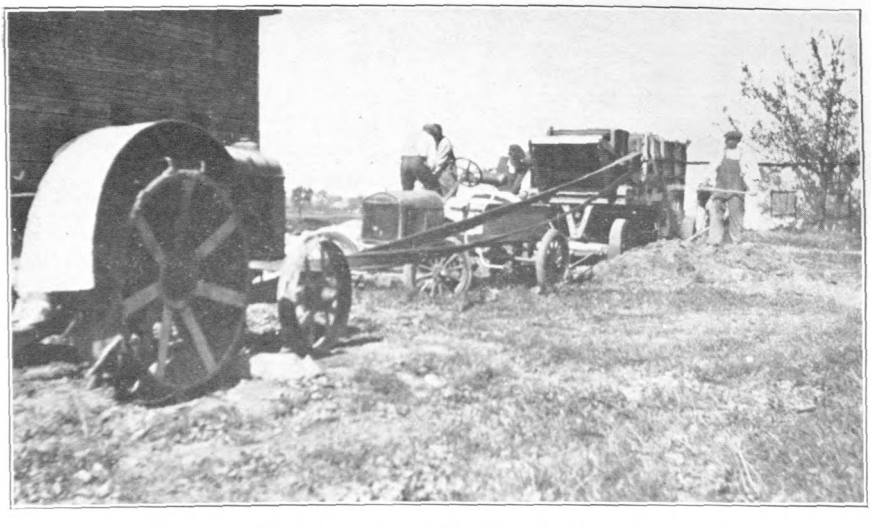


Figure 1. Threshing machine belted to tractor

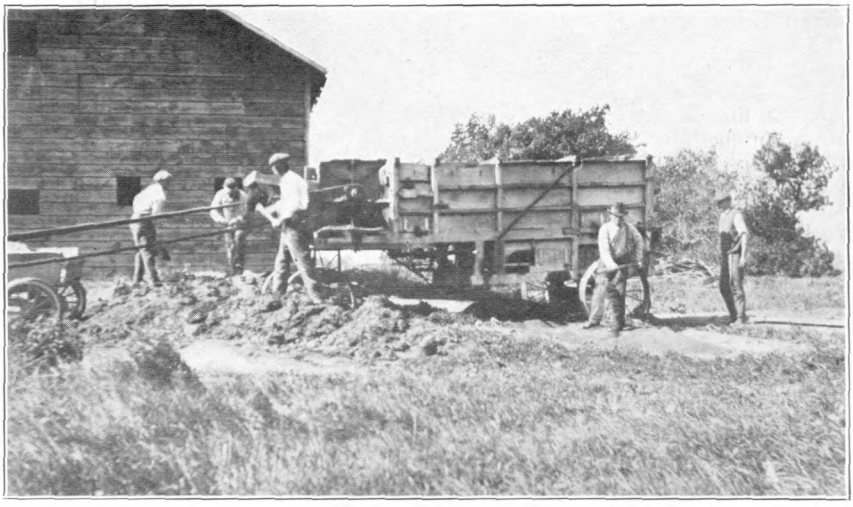


Figure 2. Mixing compost with an old threshing machine

as nearly so as possible, for if the soil is damp or wet the machine will necessarily clog, more or less.

"Another thing we use it for is in making our compost pile. We run the manure through as we get it in the rough, which breaks it up or shreds it, and with the black dirt, sod, and sand we get a mixture almost ready for use, or at least the material is put into a condition to decay more quickly.

"We run our machine with a * * * tractor, as you will see, which gives ample power. We can take the machine anywhere we need it and go after the results. There are any number of old machines standing around in the country that have been laid aside out of use, and certainly clubs can buy them at very low prices, and thus perhaps make a market for disused and out-of-date threshing machines. At any rate we have saved many times the price of ours and can have all the soil we want in a hurry. Thanks to Mr. Rockefeller for the idea."

[A word of caution might be added. These threshing machines were not constructed for such heavy work as beating up sods, etc. At one golf club the cylinder in one of these old machines broke while going at full speed. Fortunately no one was hit by the flying pieces.—EDITORS.]

Some U. S. Golf Association Decisions on the Rules of Golf

Question.—August 26 my club had a qualifying round of 36 holes for the championship of the club, and on Saturday, September 1, the first round of the match play was started. Kindly advise me whether or not the player that played 9 holes of the course before starting his match is disqualified on account of playing in advance of his competitor on the day of the competition and if so what his standing would be, having played through tournament and winning the championship.

Answer.—There is no penalty for a competitor playing over the course before the match play rounds. The penalty is imposed in medal play only.

Question.—A and B are playing at match play, caddy carrying double. He takes the flag at the hole with both bags on shoulders. A plays ball from trap. Ball strikes caddy or bag, stopping on green near hole. Is this rub of green or penalty shot? If penalty, what does it consist of? Wire answer.

Answer.—This is rub of the green. No penalty. Rules cover only properly constituted match where each player has own caddy.

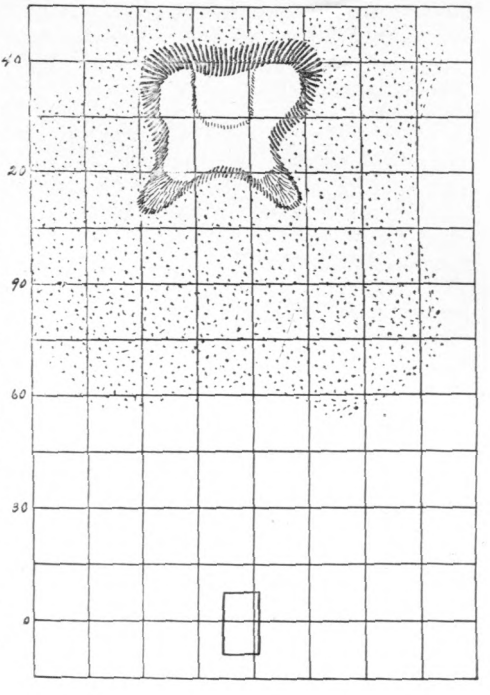
Question.—Could a bottle be removed from a hazard if the ball lies against it? Under play in hazards, any obstruction mentioned in Rule 11 may be removed. This rule mentions several things and then says any similar obstruction may be removed. It mentions "a box," probably meaning at that time a lunch box. Does not the rule mean anything brought there, not accumulating from the course, such as the obstructions mentioned, sticks, leaves, stones, etc., being things naturally lying about from the course not movable?

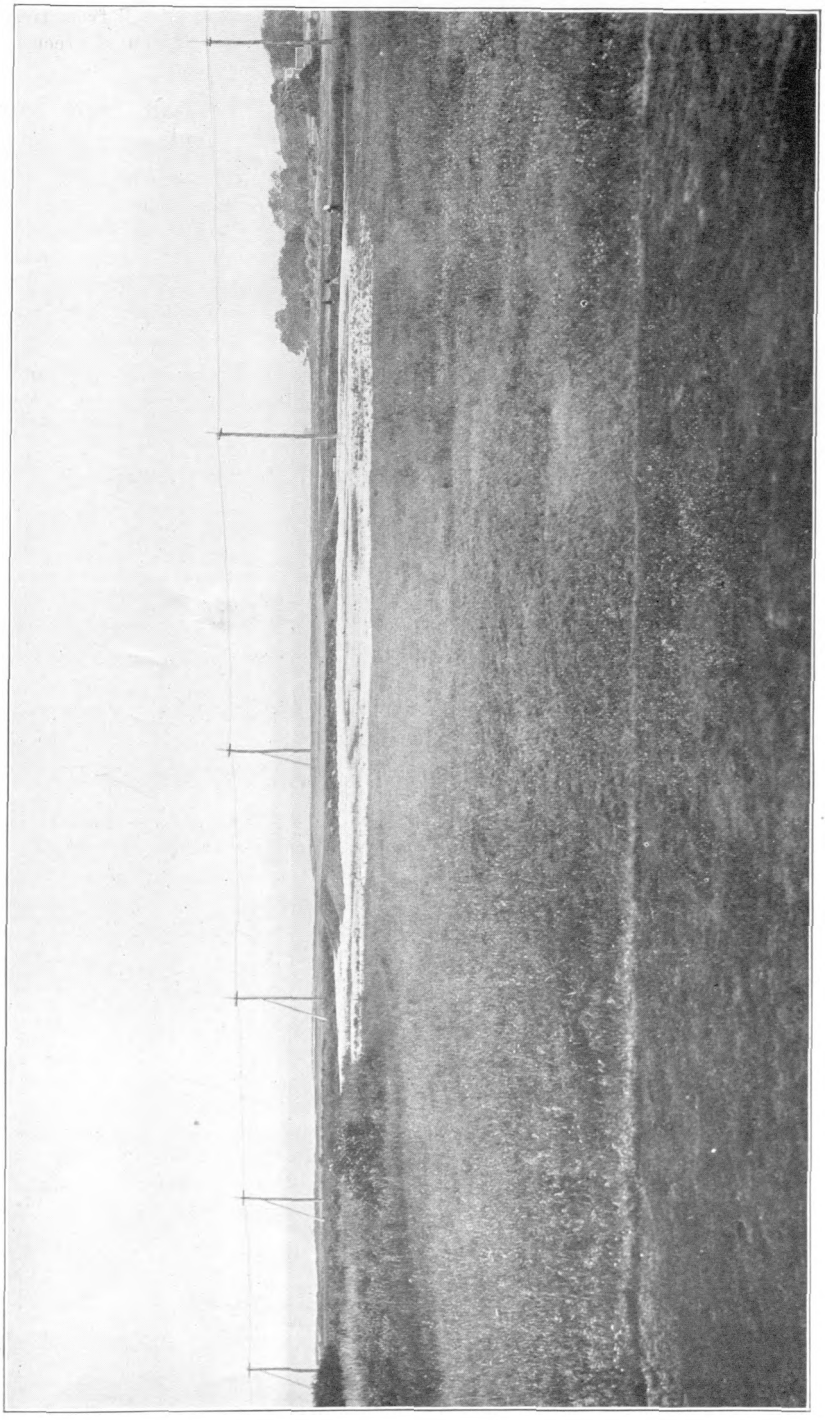
Answer.—The decision of the Rules Committee of the United States Golf Association is as follows: "In our opinion the bottle you refer to can not be classed as 'similar obstructions' unless it contained oil or was in some way connected with the upkeep of the course. Therefore the bottle in the hazard such as you describe could not be removed without penalty."

Instructive Golf Holes V

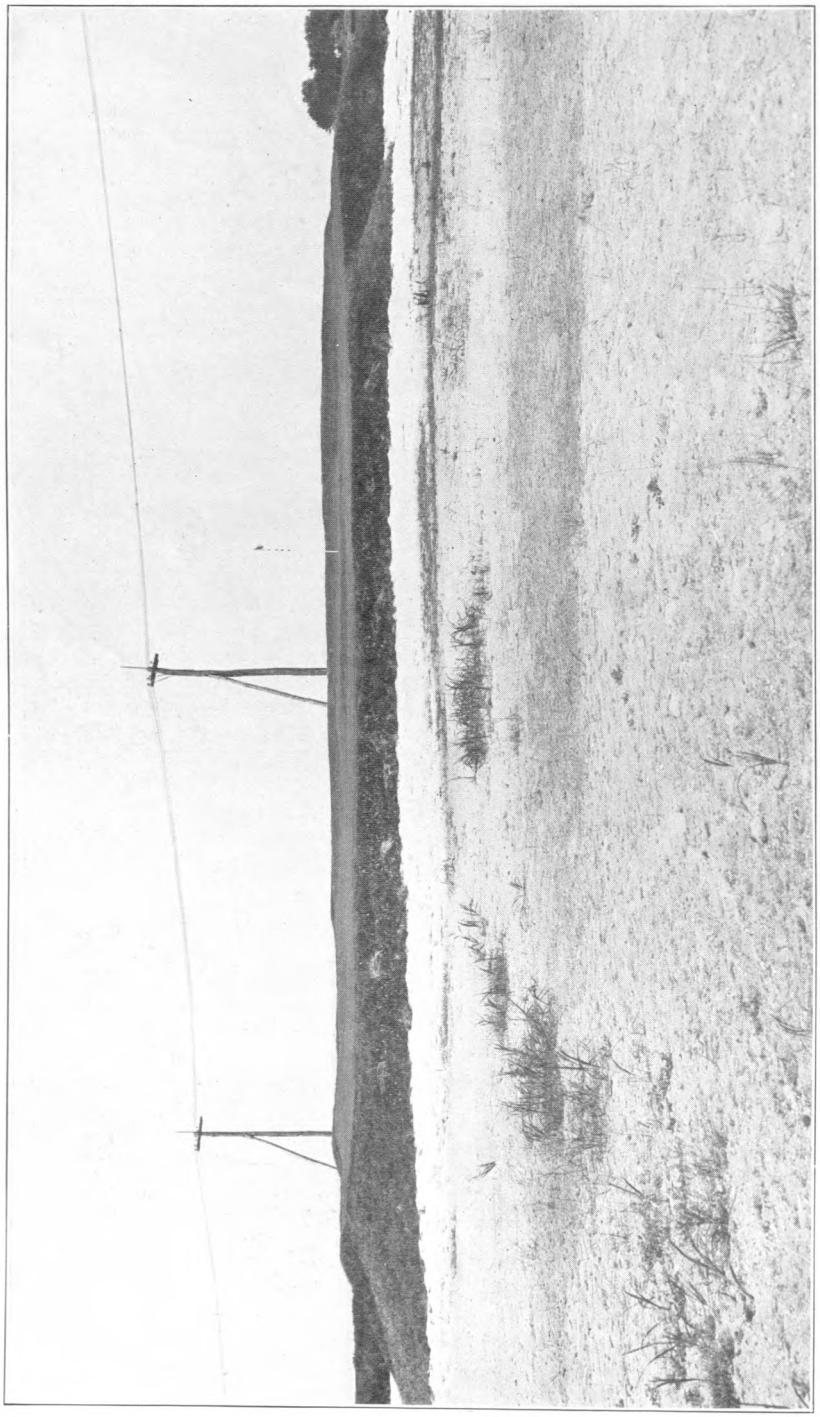
No. 17, Rhode Island Country Club, West Barrington, R. I. 130 to 140 Yards

A decidedly impressive hole of very simple character, built on a level meadow near the seashore. Essentially the hole consists merely of a tee and of a raised island green, the latter surrounded by a wide expanse of sand. To realize the effectiveness of a large "sand waste" one has only to see this hole. The direction is southwest with the sea in the background. The putting sward measures about 4,500 square feet. It is an elevated plateau, rising 3½ feet above the sand in front and 5½ feet in the rear, so that it slopes gently to the approach. The central part of the back half on the sward, indicated by the faint line, is a plateau about 1 foot higher than the remainder. The unsightly telegraph line in the background is to be removed.





Hole No. 17, Rhode Island Country Club. View from tee

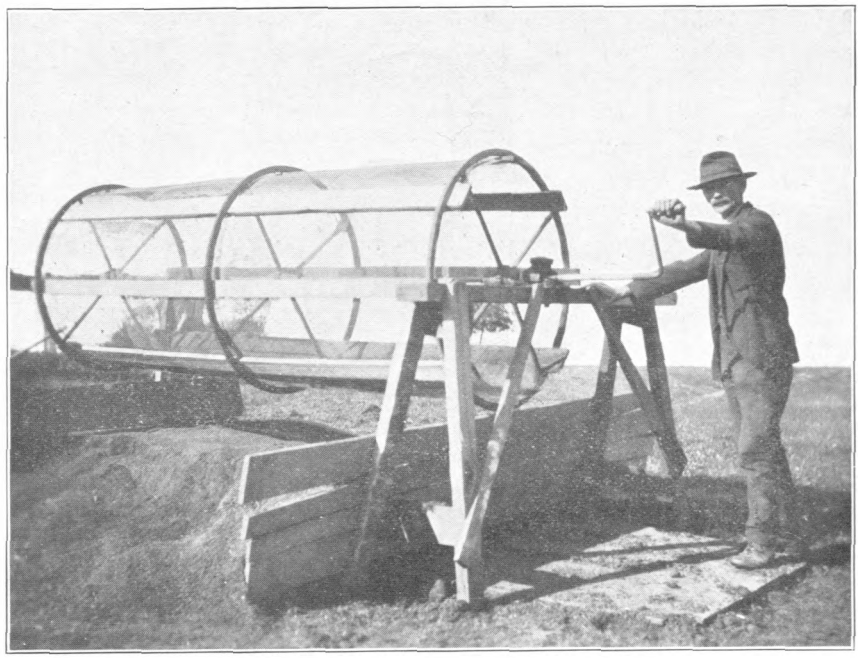


Hole No. 17, Rhode Island Country Club. Close-up view of putting green

Make Your Own Revolving Screen

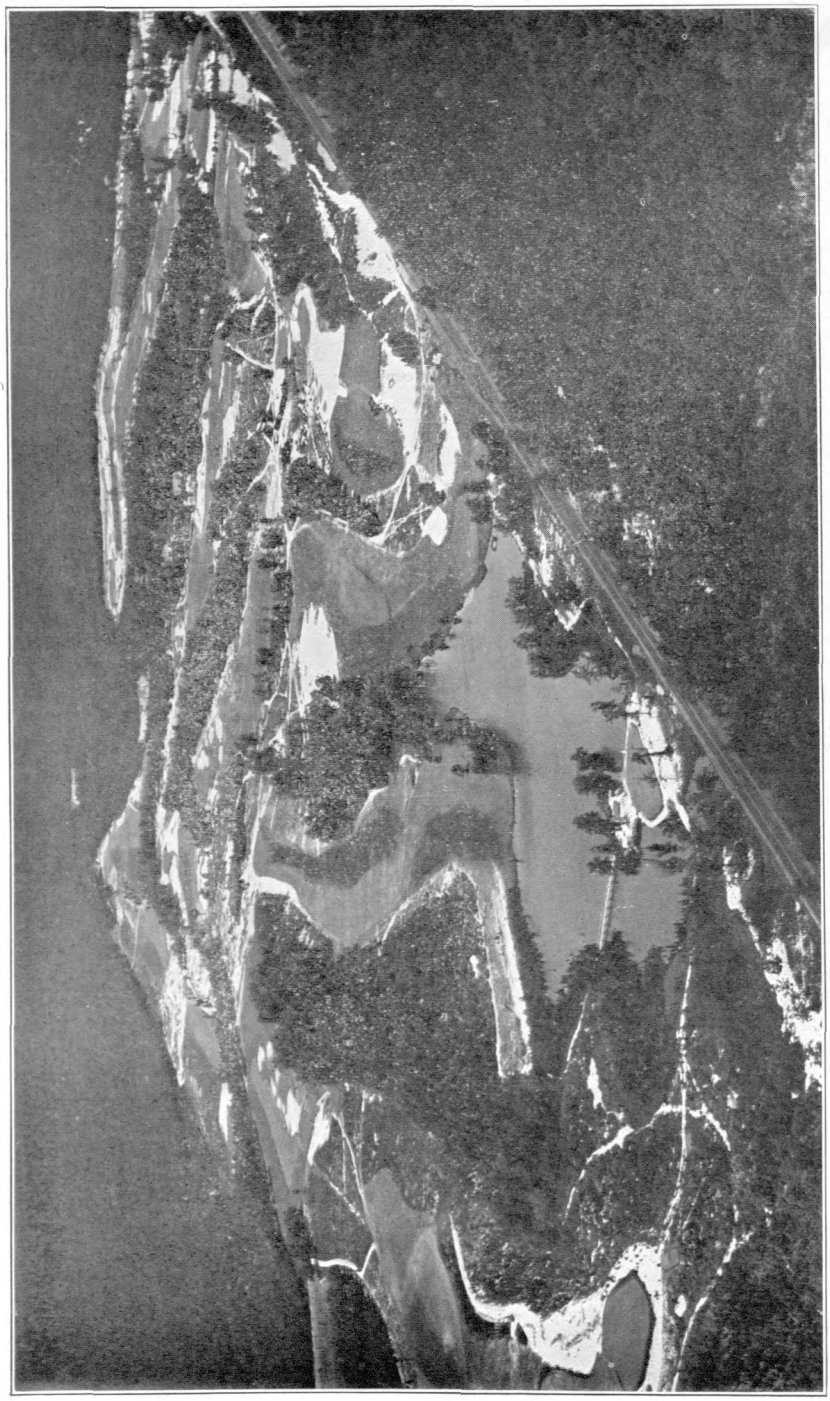
This is what Mr. Cyril Hughes, professional of the Lancaster (Pennsylvania) Country Club, did. Mr. Eshelman, chairman of the green committee of the club, is kind enough to furnish the readers of THE BULLETIN with a photograph and description of the apparatus. He writes as follows:

"I am sending you a photograph of our home-made compost and soil sieve.

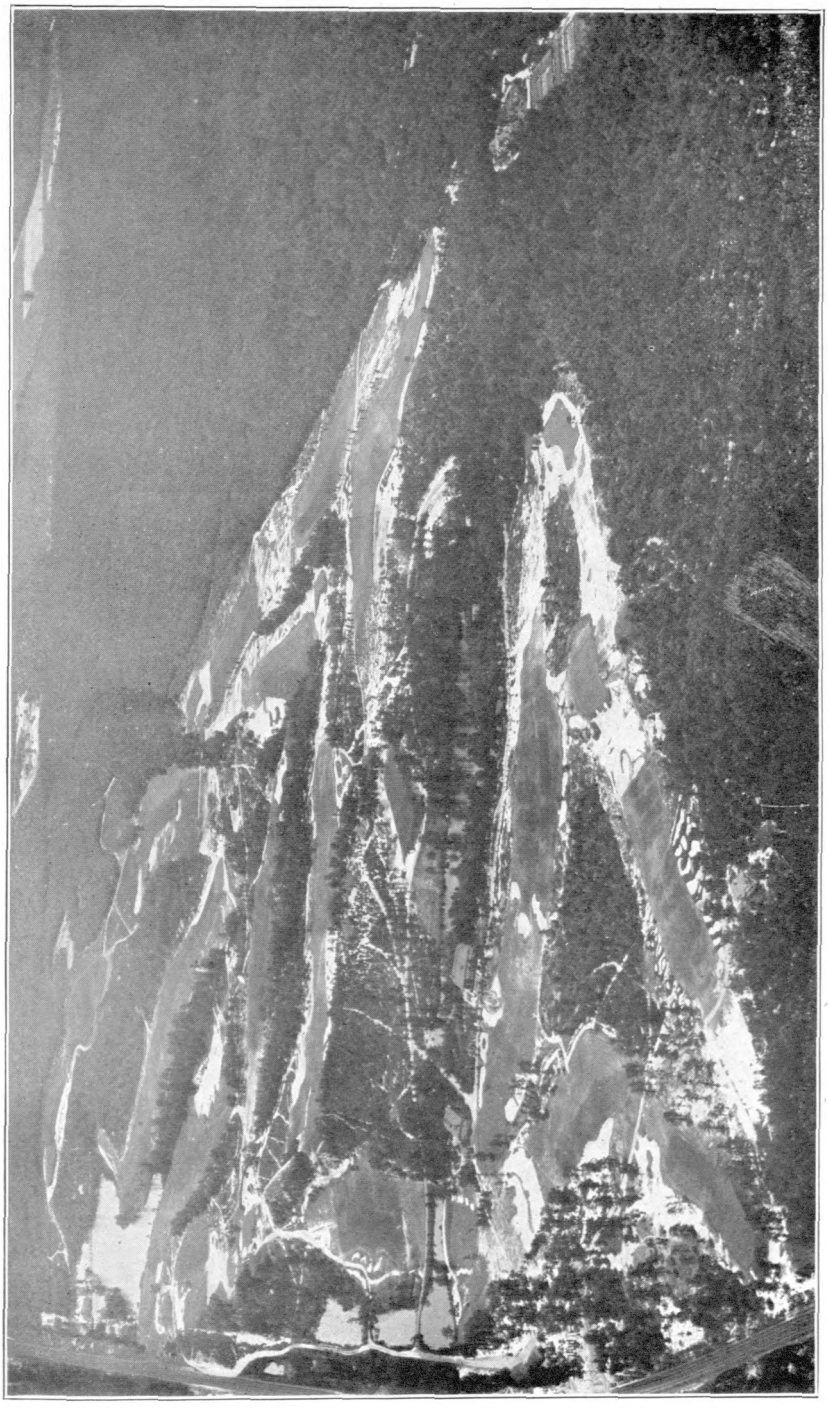


Revolving screen made from buggy wheels and wire mesh.

The wheels used in this construction are old buggy wheels. An ordinary water pipe one inch in diameter is driven through the hub of the wheels. In one end we use an ordinary staple for the bearing and in the end next to the handle we are using a bearing taken from an old corn sheller; however, a staple here would answer the purpose just as well. These bearings are fastened, as will be noted by the illustration, on each end, by a trestle. The boards or ribs are either nailed or screwed to the inside of the wagon wheels, and the screen is fastened to the inside of the rib. The length is 10 feet and the circumference approximately 10 feet. This gives a sieving space of 100 square feet. Mesh of any size can be used in the screen. One man can easily turn this machine; in fact, after getting the machine started, the dirt going up on one side and falling down on the other acts as a sort of flywheel. The machine will take soil or compost as fast as one man can feed it. We generally have two men feeding by shovel and one man turning. The capacity of the machine is amazing. The dirt or compost is continually falling, and this breaks up the coarse particles. It is not necessary to employ a skilled carpenter at $1 per hour to make this machine. Any ordinary laborer can put one together in a very short time."



Airplane view of Pine Valley Golf Course, Pine Valley, N. J. This picture shows all of the holes of the course. The green in the left foreground is No. 13. Of the two greens in the middle distance, the one on the left is No. 6 and the one on the right is No. 3. The club house is indicated by the flagstaff just beyond the center of the picture.



Another airplane view of Pine Valley Golf Course. The green in the left foreground is No. 1. The green at the extreme right is No. 6. The small green on the island in the lake in the distance is No. 8.

Sprinkling the Fairway

By W. F. Brooks, *Minikahda Club, Minneapolis*

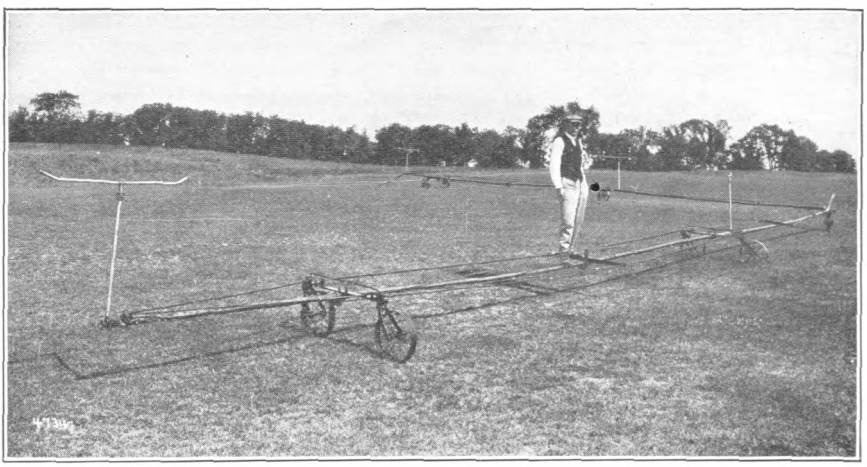
During the last four years Minneapolis and vicinity have suffered from excessive drought, the rainfall for these years being far below normal. Summer after summer the fairways of the Minikahda Club have been in good condition at the beginning of the season, but when the spring rains were over they have turned brown and hard under the heat of midsummer, thus detracting greatly from the pleasure of playing and the beauty of the course. The high ridges have burned to a crisp and the grass faded away; the lower areas have naturally kept in better condition. A few scattering showers gave only temporary and partial relief. During all this time it was very apparent that the weeds were thriving and spreading and the good grasses being gradually driven out. The question naturally was, "What can be done to alleviate this condition?" Some of our club members most interested, claimed that the soil, which is well suited to grow good grasses, was being impoverished by constant cutting over a period of twenty-five years, and that the remedy was top-dressing and intensive fertilizing.

To test this theory, in the fall of 1922 we spent a large amount of

Diagram of fairway test plot.

money in top-dressing and seeding, and spread hundreds of loads of good rotted manure over the worst areas. The results were partially successful. Considerable improvement was seen in the late fall and early spring, but when the drought came in the early summer of this year (1923), we apparently lost all that we had gained, the new, young, delicate stand of grass fading away before the heat of the summer sun.

In April of this year I decided to determine by actual experiment what water and seed would do, my theory being that if we could maintain beautiful putting greens with seed and judicious watering, there was no reason why we could not maintain beautiful fairways by the same method. I selected for the experiment the worst piece of fairway I could find on the entire course. A circular area 50 feet in diameter was marked out with a tennis marker, a stake driven into the center, and the area divided into quarters, each quarter then being subdivided into halves, as indicated



"Sea Serpent" fairway sprinkler.

by the accompanying diagram. In the first quarter we sowed red fescue; in the second quarter we sowed redtop; in the third quarter we sowed bluegrass, and in the fourth quarter we sowed a mixture of 40 per cent bluegrass and 60 per cent redtop. In the subdivision of each quarter we sowed one-half at the rate of 100 pounds to the acre and the other half at the rate of 200 pounds to the acre.

On the first day of May we started watering this area. A rotary sprinkler was placed on the center peg at seven o'clock in the morning each day and was kept running for one hour. This was continued during the months of May, June, and July. The results were marvelous. In thirty days the area stood out from the rest of the fairways as though it had been painted a beautiful emerald green. The seedlings began to appear thick, strong, and healthy. We cut the experimental area with a power-mower, in the same manner as the surrounding fairway was cut. By the middle of July the new grass and the old grass inside the circle had grown to such a degree that they had practically driven out the weeds and dandelions, the fairy rings were all filled with a mat of good grass, and the entire area formed an almost perfect lie for a golf ball. As to which is the best of the four kinds of seed mixture for our conditions, we can not really tell

until next spring, after we have gone through the winter, but at the present time we can not see any difference; they are all strong, thick, and healthy; neither can we see any difference in the regular seeding and the double-quantity seeding.

With this demonstration available, the matter of installing an apparatus to water the entire fairways was placed before the Board of Governors of the Club, an estimate of the cost was submitted, and they authorized the undertaking. Various methods were investigated, and after a two-weeks period of experimenting the "Sea Serpent," as the boys called the apparatus, was developed, as shown in the accompanying illustration.

Each machine is made in two sections, in equal lengths of 53 feet; each section is made of 1½-inch pipe and is carried on two trucks with wheels to caster, and the two sections are connected by heavy hose with a single caster-wheel for support. The hose connection allows the two sections to be placed at any angle to fit narrow places on the fairway or when passing around bunkers, and is flexible enough to fit any uneven fairway. Each machine is equipped with 4 rotary sprinkler-heads and will cover an area 160 feet across the fairway by 60 feet lengthwise of the fairway. Side mains of 1½-inch pipe are laid lengthwise of the fairway in the rough, with 1½-inch hose outlets every 250 feet. Each machine is equipped with 150 feet of 1½-inch hose. The machines are well trussed, and on account of the caster-wheels can be pulled from either end through gates and around trees when passing from one fairway to another or across roads or bridges.

By September 1 we had four machines in operation, and they ran every day in September. The results have far exceeded our expectations. Our fairways have been restored to their former excellence. The seed planted last fall and this spring, much of which had apparently laid dormant, is all coming up, thick and healthy in appearance. The seedlings are driving out the knot-weed, dandelions, and other weeds, and the fairy rings are all filling.

Now, the first question asked is, "What did it cost?" Four machines with hose and side piping necessary have been installed for $2,500. Of course an adequate water supply with good sized mains is essential. We have a 4-inch main running through the center of the course with branch lines reducing to 3 inches and then to 2½ inches, reaching every putting green, and by tapping this original system at the most advantageous points we found that comparatively a small amount of new 1½-inch pipe was necessary.

We have 35 pounds pressure at the extreme end of each run, and this is sufficient to operate the apparatus satisfactorily. It takes the same quantity of water to supply the fairway, watering during the daytime, as it takes to supply the putting green watering at night. We sprinkle the fairways in the daytime and the putting greens at night, and approximately the same number of rotary sprinklers are in operation during each period. The cost of operation is comparatively small. We pump by electricity, and the current costs about $3 a day; one man at $4 a day will tend 4 machines; and as we pump our water from a lake adjacent to our own premises, we have no expense for water.

I have prepared this article for the benefit of those of my fellow golfers who have, no doubt, suffered as we have in attempting to overcome the difficulties incident to climatic conditions over which we have no control. From now on at Minikahda Club we shall make our own rain and make it with certainty when we need it.

Should Putting Greens Be Kept Closely Cut at All Times?

Some Expressions of Opinion from Men of Wide Experience

Some problems are better solved on the basis of long experience than on that of shorter but more intensive experiments. Perhaps the matter of mowing the putting greens longer or shorter may be one of these problems. But even after long experience, different men do not reach the same conclusion. Of course local factors such as soil and climate may affect the results at different places—and sometimes a preconceived notion determines the conclusion. Be that as it may, opinions from men of long experience are always interesting, and the testimonies of several are here presented:

"In reply to your question as to whether it is beneficial to allow the grass to grow longer on putting greens at certain stages, I would say that whenever the greens at Merion are injured by brown-patch or in any other way, no matter what season of the year it is, we find that the turf comes back much more quickly when the grass is allowed to grow for a few days and the mowers are set up. This year we kept our greens longer than usual, and with the exception of the small brown-patch we had much better greens during the summer months. The length of the grass was not the cause of the small brown-patch, as it may easily be seen by looking at the grass on the edge of the greens, where we cut more closely than we do our fairways. This was practically not touched at all. Our experience has shown at Merion that if the grass is kept three or four inches long in the rough it is much stronger and healthier than the grass on the fairways, and that the fairways are much stronger than the greens although we spend all the attention possible on the greens. We believe that during the summer the mowers should be raised and the grass left longer than in the spring and fall. Of course it should be left fairly long before winter sets in so that the greens can be used in the winter time. In this climate, and under our conditions, we are reasonably sure of our results, as we have now tried it out for eleven years."—*Hugh I. Wilson, Merion Cricket Club, Philadelphia, Pa.*

"The close cutting of putting greens has its advantages and its disadvantages. Personally, from the player's standpoint, I like close-cut greens. However, a great deal of discretion must be used in the matter. You will find a wide difference of opinion on this subject. Close cutting is entirely advisable, and satisfactory, under certain turf and climatic conditions, while under reverse conditions it is impracticable and unwise. As a general practice, for a normal season, I believe it is safe and sane to set the cutting blades up an eighth inch during the hot months of July and August; there is less liability of burning and less evidence of wear and tear. Many students of turf advocate a trifle longer cutting during the hot weather as a precautionary measure, to furnish shade and protection for the roots of fine grasses. Under very close observation, the following points would, in a large measure, prove the determining factors in arriving at a decision: (*a*) the texture and nature of turf and general condition of same; (*b*) the climatic conditions—hot or cold, wet or dry seasons; (*c*) the personal element, involving the degree of the dependability of greenkeeper and his mechanical and human working units; (*d*) the questions of risk and possible extra expense attached to maintaining a close-cut, fast, and delicate green as compared with a slower but perhaps more fool-proof condition of turf."—*A. J. Hood, Detroit Golf Club, Detroit, Mich.*

"The practice of cutting putting greens too closely and too often is very general. We are cutting 3/8 inch. To skip mowing for a day or two occasionally is beneficial; but I believe in cutting one length always. I do not consider there is any benefit to be derived from allowing the grass to grow abnormally long at the

beginning of the season, as it afterwards takes some time to recover from a short cutting."—*W. J. Rockefeller, Inverness Club, Toledo, Ohio.*

"Our experience at Oakmont has been strongly in favor of close cutting. We find that by this method the fine grasses are encouraged in their growth and the coarse grasses are kept fine, rather than encouraged to become coarse. We have tried letting the greens grow rather long in the spring, but have always been disappointed in the results; the roots tend to come out of the ground, and the grass becomes coarse, so that it takes about a month of close cutting to get the greens back to normal condition. We are for close cutting at all times."—*Wm. C. Fownes, Jr., Oakmont Country Club, Pittsburgh, Pa.*

"Referring to your question on the cutting of putting greens closely as a general practice under all conditions, it has been my experience that in the spring when the grass is growing rapidly, it should be cut very often, but it should not be cut too closely to start with. The mower blades should be lowered until the proper height is reached, and the greens cut as often as possible during this growing period. As soon as the growing period in the spring is over, cutting should be very materially reduced, and if it becomes very dry it is safest to discontinue altogether. Toward fall, when the grass begins to grow, close cutting should be again resorted to. I think that a mistake is often made in cutting too closely. There is a happy medium which makes for good putting, and it also keeps sufficient height to enable the grass to maintain itself in a healthy and sturdy condition. I believe that every greenkeeper must work out for himself the exact height which will satisfy the members of his club and at the same time insure a good, healthy turf."—*J. K. Bole, Mayfield Country Club, South Euclid, Ohio.*

"Our greens have been better than ever before, notwithstanding the drought which prevailed here. I have cut them every day as closely as possible, watering at night. Therefore my conclusion is, if water can be used, close cutting is beneficial. I would not allow the blades of grass to grow coarse by sparing the knife." —*James L. Taylor, Ekwanok Country Club, Manchester, Vt.*

"In regard to the practice of cutting greens closely, I might state that such has been our practice here at Utica, and, as far as the writer can see, with no detrimental effect to the turf on our greens. In the spring we start cutting our greens on the basis of the height at which we stopped in the fall. Within four or five cuttings, we have cut the grass down to our permanent or summer height. This height we maintain until after the first of October, when, with the colder weather in this region, we gradually raise the knives a quarter of an inch, as we have found that the turf winters better if, during the slow-growing period of October and November, it is allowed to grow a quarter of an inch higher than the summer height. Personally, I can not see the advantage of allowing the grass to grow up and then cutting it back short again. For one thing, it would seem to me, a treatment of this kind would tend to affect the putting surface and also the appearance of the green. The fine bents, I am convinced, do much better if they are cut closely at all times."—*Sherrill Sherman, Yahnundasis Golf Club, Utica, N. Y.*

"I am very glad to give you my personal thoughts on the matter, but I have a desire that my name shall not be used in connection with any of my opinions. In the spring, grass should be allowed to grow before it is cut too short; that is, the knives should be set high so that the grass will get well started. It is not desirable to cut grass when wet. Thus it is a bad practice to cut greens early in the morning when there is a heavy dew, for the reason that the wheels that revolve the cutting knives slip and mar the grass. Personally, I do not like a slippery green, where the ball will roll unduly. In the fall, the grass should always be left long enough to carry over the winter. It is important to have at least a seven-blade mower, so that the grass will be cut evenly. I do not believe in rolling, if rolling can possibly be avoided. I have always had better luck by proper top-

dressing and a proper method of filling up the valleys, than I have had by rolling and pressing down the hills, which simply come back. Greens should be watered and not sprinkled, as the roots seek water, and we want good thick turf. All these matters come under the question of how often grass should be watered and how closely it should be cut. When there is a long drought, grass should be kept longer than when there is the usual rainfall."—(*This is by a very competent but modest gentleman.*—EDITORS.)

"I think putting greens should be cut as closely as possible, without scalping. Cutting should begin early in the spring, and throughout the growing season the knives should not be changed unless to cut more closely. It is good practice to cut every day. I do not agree with those who hold to the opinion that the grass should be permitted to grow longer through the hot summer months, as from my observation this practice injures the turf. It has been my experience that the bents, which are the finest of our dwarf grasses, do best when kept closely cut, as in this manner taller-growing grasses are not given a chance to crowd out the bent plants. In mixed greens of bent, bluegrass, redtop, and rye-grass, close cutting in warm weather has a tendency to discourage the last three grasses, giving the bent a chance to make greater growth. Such greens should be lightly watered every day. Remember that 90 per cent of the roots of the fine bent grasses lie within one and one-half inches of the surface; therefore weekly watering, or even watering three times a week, does not furnish sufficient moisture where it is mostly needed. In my opinion the close cutting of fine turf grasses is comparable to the trimming of hedge plants, such as privet and hemlock; in both cases a dense growth of new plant-parts results. The same thing is also true with hay crops, such as timothy, clover, and alfalfa, as it is well known that when the crop is harvested for hay a finer, closer growth of the stubble develops. Moreover, a close, dense turf is more resistant to hard usage, heat, the washing of soil as a result of heavy storms, and the numerous insects which feed on grass roots. I would therefore suggest that putting greens be kept cut short even during the hot season, and that they be watered daily, and at times even twice daily."—*Walter S. Harban, Columbia Country Club, Washington, D. C.*

Tip Cuttings for Vegetative Planting

By K. F. KELLERMAN

The Bannockburn Golf Club, Glen Echo, Maryland, has recently carried through a complete reconstruction of its No. 1 green with a result so satisfactory both in general improvement of the course and in cheapness of construction that it seems worthy of recording. The green is approximately 7500 square feet in extent, protected by two shallow sand traps at the left, the foremost one partly encircling the entrance to the green, and also by a shallow sand trap at the right and a grassy hollow behind the green ending in a ridge approximately 3 feet in height at the back.

By taking advantage of the natural contours of the ground, the cutting and filling was reduced to a minimum, and all fills and contours constructed from earth removed from the traps. The green was planted with creeping bent by the vegetative method the 18th of September. In accordance with suggestion from the Green Section, instead of securing mature vegetative stolons, as is ordinarily done for planting greens, the material used consisted entirely of clippings from another new green planted the previous season and not yet in play. The turf on this latter green had been uncut for a considerable period, so the tip stolons were cut with a sickle and then

chopped into small pieces with a hatchet. These tip clippings were then taken to the new green and planted immediately, and the remarkably rapid growth of the new green appears to be due, at least in part, to the use of these fresh tip cuttings. The new green has been cut and rolled three times since the date of planting, namely, on October 9, 16 and 20. The stand of bent at the present time is almost perfect and could be used as a playing surface. It will undoubtedly be in excellent condition for early spring play.

An important feature of planting this green was the use of hand screens of one-quarter inch mesh, holding a little less than one-half bushel of soil, for applying top soil at the time of planting the vegetative stolons. This method of applying top soil greatly facilitated the work and enabled the workmen to cover the stolons without disarranging and with greater speed than it could be done with shovels and rakes.

The work was carried on under the supervision of Mr. F. S. Moise, chairman of the green committee, and Mr. L. G. Walker, club professional, who has been also acting as greenkeeper. The total costs were as follows:

Aug.	16—7 men removing sod and sodding temporary green*	$6.50
"	17—Cutting sod, 10½ hours	4.08
"	20—2 men plowing and scooping, $7.00; 1 horse, $2.00	9.00
"	21—2 men plowing and scooping, $7.00; 1 horse, $2.00	9.00
"	22—1 man plowing and scooping, 7 hours, $2.03; 1 horse, $2.00	4.03
"	23—2 men plowing and scooping, $7.00; 1 horse, $2.00	9.00
"	24—2 men plowing and scooping, $7.00; 1 horse, $2.00	9.00
"	25—2 men plowing and scooping, $7.00; 1 horse, $2.00	9.00
"	27—2 men plowing and scooping, $7.00; 1 horse, $2.00	9.00
"	28—2 men general construction	7.00
"	29—1 man general construction	3.50
"	30—9 men, 2 hours; 2 men, 9 hours, general construction	14.52
"	31—5 men, 4 hours; 2 men, 9 hours, general construction	15.30
Sept.	1—4 men, 9 hours; 2 horses, general construction	15.00
"	3—6 men, 9 hours; screening soil and hauling to green; 1 horse	21.00
"	4—6 men, 9 hours; screening soil and hauling to green; 1 horse	21.00
"	5—6 men, 5 hours; screening soil and hauling to green; 1 horse	11.70
"	6—Wet.	
"	7—Wet.	
"	8—Wet.	
"	14—7 men, 4½ hours; planting	10.50
"	15—6 men, 9 hours; planting	21.00
"	16—2 men, 2 hours; planting	1.56
"	17—7 men, 9 hours (5 hours planting); 1 horse	24.50
"	18—7 men, 9 hours (6½ hours planting); 1 horse	24.50
"	19—8 men, 5 hours; 5 men, 3 hours; 1 horse, completing traps	20.30
		$279.99

An experiment with two additional greens, composed largely of bluegrass and redtop and in rather poor condition, has been tried, which, also as a result of the hand-screen method of applying top soil, seems likely to give a very satisfactory putting turf by the middle of the coming spring.

*This day's work cost $24.50, but approximately three-fourths of the time was devoted to the preparation of the temporary green to be used while No. 1 green was under construction; only one-fourth of the cost, therefore, was charged to No. 1 green.

These greens had a badly moth-eaten appearance and were rather seriously invaded by crab grass. After the crab grass was weeded out, the greens were thoroughly raked preparatory to top-dressing with loam and sand. Just prior to this top-dressing, creeping bent stolons were scattered thinly over the entire green, and more plentifully applied in the partially bare areas. Top soil was then applied by the hand-screen method and the greens watered and lightly rolled. The stolons are apparently rooting and growing as well or better than the old grass, so that a good putting turf composed largely of creeping bent, seems assured for the coming season.

Moles

By WILLIAM C. GEER, *Portage Country Club, Akron, Ohio*

Every greenkeeper and member of a greens committee recognizes how pestiferous are moles. It happens that in my own yard I have been fortunate or unfortunate enough to have had, perhaps, more of them than have appeared on the greens of the Portage Country Club. Having been trained as a chemist, I have naturally tried a number of substances during the past two or three years to eliminate the moles.

A year ago I obtained a quantity of paradichlorbenzine, a chemical which the Department of Agriculture found exceedingly efficient as an insecticide for the peach tree borer. It is commercially obtainable in the form of a powder which, when placed in the ground, gives off a heavy poisonous gas which penetrates the soil. The thought occurred to try some of this to see what effect it would have on moles. My natural feeling was that since it affects the mucous membrane of anyone who smells of it sufficiently to drive him from its immediate vicinity, it might work out in a way to drive away moles; which is about all we care to achieve. In the fall of last year, therefore, experiments were made in my yard.

The runways were opened at intervals of six to ten feet and about a teaspoonful of the paradichlorbenzine dropped in and the soil put back. There was no further activity of moles in the area thus treated. Again this summer, when the activities of the moles began again, I tried it as a preventive measure. Instead of waiting for them to start into the territory where the working has been most active, little holes were dug in the sod at intervals of about ten feet in a checkerboard fashion over some forty feet along the edge of the lawn, from which the mole activity had evidently come. About four rows of these holes were made about ten feet apart out into the yard. This was done in July, and up to the present, the middle of October, there has been no evidence of mole activity. What has happened to the moles I do not know, but they did not dig up the yard.

Thinking, then, that it might be worth trying further, a small quantity of the paradichlorbenzine was given to the greenskeeper at the Portage Country Club, with instructions simply to open mole runways and inject a small quantity. The report has now come that wherever this substance was applied, no more mole activity has been observed.

This substance is now being tried out on a larger scale, but it seemed unnecessary to wait for the completion of our experiments before letting others know of the results. It is still in the experimental stage and final conclusions can not be available until after a very thorough study over a period of a year. This little story, therefore, is simply a contribution in the hope that others may find this substance of some value.

QUESTIONS AND ANSWERS

All questions sent to the Green Committee will be answered in a letter to the writer as promptly as possible. The more interesting of these questions, with concise answers, will appear in this column each month. If your experience leads you to disagree with any answer given in this column, it is your privilege and duty to write to the Green Committee.

While most of the answers are of general application, please bear in mind that each recommendation is intended specifically for the locality designated at the end of the question.

1. Grasses for southern California fairways; treatment of adobe soils; drill seeding vs. broadcast seeding.—Our fairways are planted to Bermuda. They are a little over a year old, and at present we have almost a solid mat. The disadvantage to Bermuda, however, is that during the winter months it is dormant and turns brown. It is our desire to have a green fairway the year around. We have been advised to cut the Bermuda very closely and then sow to bluegrass, meadow fescue and white clover in September or October, using a drill seeder. The soil is a sandy loam, a few spots being adobe. We would appreciate your advice in the matter. (California.)

For seeding new fairways in southern California we would recommend a mixture consisting of 16 pounds bluegrass, 4 pounds red top, and 1 pound white clover, sowing the seed on properly prepared ground at the rate of 100 pounds to the acre. We would not advise the use of meadow fescue in any mixture on your fairways; this is rather coarse and bunchy, and so far as we know is not well adapted to southern California conditions. Redtop is comparatively short-lived, but it has the advantage that the seed is good, cheap, germinates promptly, and grows rapidly. The bluegrass, redtop, and white clover will remain green all winter and live through the summer.

You could, however, retain your Bermuda turf, and in order to have green fairways all winter you could sow redtop and Italian rye-grass on top of the Burmuda grass at about the time of the commencement of your fall rains. Both of these are rapidly-growing grasses, the Italian rye-grass being even more rapid in growth than the redtop, but the redtop is much more desirable. Furthermore, the small seeds of redtop rattle down through the turf to the ground so that better germination usually results. The redtop should be seeded at the rate of about 30 pounds per acre. Neither the redtop nor any other grass will, however, survive the long summer, we believe, in your patches of Bermuda grass. Bermuda turf is very vigorous in the summer and few grasses will survive in patches of Bermuda through the summer; white clover would have more of a chance of doing it than any other plant.

With regard to the adobe spots in your soil, we would suggest that you top-dress these with a half-inch or so of sand or sandy loam soil, which will alleviate the adobe very much. You suggest using a seeder of the type that cuts the turf and sows the seed in drills. Our observations and experience lead us to believe that the seed should be sown broadcast. A very satisfactory broadcasting can be secured by the use of a wheelbarrow seeder, or even by hand, if the operator has had experience in sowing seed broadcast. The sowing of seed in drills, as a rule, leaves an uneven covering of grass. This is especially true with grass in the seedling stage, and

since you would use the grass only for the winter and therefore only in the seedling state we are afraid you would not find drill seeding very satisfactory.

2. Winter covering of putting greens; playing on greens after first frost.—Will you kindly give us your advice relative to winter covering of greens? Should greens composed of bluegrass, redtop, and clover have a winter covering? If so, when and with what material should they be covered? A large portion of this grass is in the seedling stage. Our course has a large amount of morning golf. Should the greens be closed with the first few frosts, or not until the frost is in the ground permanently? (Missouri.)

It has been our experience that almost all of the so-called winterkilling has been due to poor drainage. Ordinarily we have no winterkilling of our common turf grasses unless there is a low spot in which the water does not drain off from the surface or, as frequently happens, the green is near a hill and gets the seepage from underneath the hill, which causes the same water-logged condition. Covering the greens does not help this trouble at all. There have been some trials made in this respect around Minneapolis and St. Paul, but the consensus of opinion seems to be that very little, if any, benefit was obtained from covering. Grass should not be played on during the first heavy frost. Frozen grass, especially early in the season, is very easily injured. After two or three heavy frosts there does not seem to be any danger, but with the first frost it is well to keep the players off the course until the grass blades have thawed.

3. **Poa annua as a turf grass for southern greens.**—We are considering planting our greens to *Poa annua* and would appreciate your advice in the matter. With our experience with it last year and this year where it grew in patches on our greens, we believe that winter greens of this grass will be the solution of our troubles. Our greens have not been seeded to *Poa annua,* but the grass has appeared in greens which we seeded to redtop and meadow fescue on top of the Bermuda grass, but from which the redtop and meadow fescue disappeared after they had once obtained a start. (Georgia.)

Poa annua makes up most of the putting green turf on northern golf courses from late fall until early spring, when it disappears and gives way to the perennial grasses, such as the bents and fescues. It makes a good putting surface but is a little slow, and for this reason some clubs attempt to keep it out of their greens. One club does this successfully but at a very great expense. It gets into putting greens as a result of the transfer of seed from various parts of the course where it is found growing. The seed does not occur in redtop or fescue seed, but there is usually an abundance of plants that mature seed on the courses in the eastern part of the United States, so that the spread of the seed is a matter of every-day occurrence. Seed of it is on the market but it is not very available and is somewhat expensive. If you can get a combination of *Poa annua* and Bermuda grass it is possible that your putting green turf problems would be solved.

4. **Winter care of creeping bent greens newly planted from stolons.**—We have just finished rebuilding one of our greens, having built up the back part some 6 feet. We planted creeping bent stolons, and some of them are already up. Undoubtedly before we have a heavy freeze the stolons will have made a growth of an inch or so. We have never used any covering on our greens, but because of the unsettled condition of the new soil on this one and because of the fact that the grass will not get an opportunity to become very well rooted before winter, we are in doubt as to what the proper procedure would be in this case. Should we cover this new grass for the winter? (Illinois.)

It has been our experience that creeping bent is perfectly hardy in any stage of growth. In fact, we have planted such greens here at Washington after heavy freezing weather, and while we did not get any growth in fall and winter the grass lived through and made good turf the following spring. We do not think you need fear any damage from winterkilling on the green concerning which you write.

5. **Grasses for winter greens in Florida.**—What is your advice regarding the seeding of putting greens in Florida with redtop, bluegrass, rye-grass, or a mixture? (Florida.)

In regard to grasses for winter greens in Florida, Italian rye-grass has been used; also redtop; also a mixture of Italian rye-grass and redtop. Brown-patch is frequently very severe on winter greens in Florida. Bluegrass is immune to brown-patch. White clover is also immune, and this may be mixed with the bluegrass if desired. In fact, bluegrass and white clover together are very satisfactory.

6. **Possible benefit from covering greens over winter.**—Kindly advise us whether there are any benefits to be derived from covering greens with dead leaves, maple and oak, during the winter period? If so, please mention them, and advise how deep the material should be laid on. (Connecticut.)

In the light of the evidence we have, covering of any kind for putting greens during the winter is not to be advised. This has been tried out by several clubs in Minneapolis, one year with apparently good results, and the next year with bad results; that is, the unprotected greens came through the second year better than the protected greens. If any grass goes out on your greens during winter it will be only on spots which are improperly drained.

7. **Putting green grasses for California.**—What grass do you particularly recommend for putting greens in California? (California.)

Red fescue alone, red fescue and redtop mixed, and Kentucky bluegrass and white clover mixed have heretofore been used for putting greens in California. It has however recently been found that the bents planted there vegetatively or by seed make beautiful greens in the entire fog-belt of California and also near Los Angeles outside of the fog-belt. We believe that bent greens can be grown with perfect satisfaction anywhere in California so far as climatic considerations are involved.

8. **Winter care of bent nurseries.**—We planted a nursery of creeping bent in midsummer and should like to know what care, if any, we should give it over winter. Should it be covered or protected in any way with straw? Is there any danger of runners dying back during the winter? We should think they would be liable to do so except where they had rooted at some of the nodes. (Massachusetts.)

Your nursery rows of bent will need no protection during the winter. Let them alone. Plenty of the bents are perfectly hardy enough to go through the winter in Massachusetts, and that is what you want. If it should happen that the strain you have is tender you would want to replace it with a more hardy strain anyway. We would not recommend protection of any kind, either by leaves, straw, or other material.

9. **October seeding in the North.**—We have just recently acquired the necessary land to add nine holes to our present nine-hole course. The ground is very weedy, and we are cutting and plowing it. By the time we can possibly have the soil ready for seeding it will be the first week in October, and we plan, if practicable, to seed it at that time so that we will have an older turf by the

spring of 1925. Do you recommend seeding as late as the first week in October? (Indiana.)

The first week in October is a little late to seed grasses, the best time being, in your locality, from August 20 to September 15. However, if the fall remains favorable you ought to get a good stand from the October seeding. We would certainly recommend that you seed the fairways to the redtop-bluegrass mixture, and do not delay the seeding of the bluegrass until spring. We believe that your chances are about even that you will get a good stand by seeding the first week in October.

10. Clover as a turf grass.—Why do you advise seeding clover only in mixture; why not exclusively clover? We have been advised that there is nothing but clover at the —— club, which is said to be very satisfactory. (Illinois.)

The reason we do not advise it is that we have never been able to get a pure white clover turf. Our attempts have resulted in a patchy turf very undesirable from a putting standpoint. With a little grass mixed with it, however, white clover makes a fairly good putting surface, although it is regarded as a liability rather than an asset on most golf courses. On courses in the northeastern part of the United States where little can be spent for upkeep it has been found that Kentucky bluegrass and white clover give about as good results for greens as can be obtained from other grasses. For reasonably well supported clubs white clover on the putting greens is a nuisance.

11. Injury to turf from the sod webworm.—I am sending you some specimens of a worm which has done extensive damage to our approaches, which are of bluegrass and redtop. On our greens, which are of bent, the worm has fortunately injured the turf only in small spots. I should be glad to know what remedy may be applied to correct the injury. (Ohio.)

The insect you send is the sod webworm. We regret to state that no remedy has been found for ridding turf of this insect other than early fall plowing, which of course is out of the question in the care of golf turf. None of the attempts to poison the worms or to poison or trap the moths have proved successful. The only suggestion we can make is that the damaged areas be fertilized and top-dressed with a view to hastening their recovery. If no recovery is noted by the middle of September we would suggest that the injured areas be deeply plowed and spaded and then reseeded.

12. Rate of seeding sheep's fescue in the rough.—What rate would you recommend in seeding the rough with sheep's fescue? (Ohio.)

There is not a very large body of experience on this point but our obervations lead us to believe that under reasonably good conditions of soil preparation and with seed that will germinate at least 80 per cent, 75 to 100 pounds per acre is sufficient. We are of the opinion that it should be sown with at least 20 or 25 pounds of redtop, inasmuch as the sheep's fescue starts very slowly and in fact does not make sufficient growth to keep down coarse-growing weeds in the early stages of its existence.

Meditations of a Peripatetic Golfer

About half the bunkers on American golf courses are blind. Yet there is really no relation between golf and blindman's-buff.

A putting green with a small part of its surface usable for placing the hole. The fellow who built it must have thought that putting greens are primarily for ornament.

Shakespeare never repeats, so they say, but the Peripatetic Golfer believes repeating is necessary so that the messages may eventually soak in.

A "chocolate drop" is about as pretty as a wart on a man's nose.

A golf course may be excellent from the point of view of a player—and yet hideous as a piece of landscape art.

In cutting fairways cut them one time in one direction, the next time in the opposite direction. The results will be better.

It is a mistake to speak of a grassy hollow as a grassy bunker. By official definition "a bunker is that part of a depression in the ground where the natural soil is exposed, and sometimes top-dressed with softer soil or sand."

Historians think the "Mound Builders" are extinct. We should like to show them some recent golf courses.

Thousands for construction but not one cent for manure. Shades of Charles Pinckney! No wonder the turf is inferior.

Greens undergoing major surgical operations to remove the layer of commercial humus put in at great expense when they are built. With the humus removed the grass will at least have a chance to live.

Some men who play golf diligently think they have warrant for violating all the rules of health.

Manure water is an excellent fertilizer for putting greens, as several clubs have discovered.

The layout of the course is the most important desideratum of a new golf club. No one can do it in a day—and to do it well may require many days. Remember that it is easy to change a single hole—but very costly to change an entire layout.