THE BULLETIN

of the

UNITED STATES GOLF ASSOCIATION GREEN SECTION

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The Relationship of the United States Golf Association Green Section to the District Green Sections

The success of the local green sections established within the last few years has been such as to induce the United States Golf Association to take active steps in organizing others. The district sections have been of great assistance to clubs in matters relating to their local problems. In this field they have rendered real service. It is hoped that it will be possible to establish district green sections in all of the important golf sections of the country in the near future. Mr. J. K. Bole has been engaged by the United States Golf Association to do this work, and those who are interested in it should correspond with him, in care of Mr. J. E. MacCloskey, Farmers' Bank Building, Pittsburgh, Pa.

The relation of the United States Golf Association Green Section to the district green sections is solely a cooperative one. The former organization exercises no administrative control over the latter in the way of dictating policies or programs or in supervising their activities. It neither selects nor controls their personnel. Experience has shown that the local organizations can render certain kinds of service which it would be unwise, if not impossible, for the United States Golf Association Green Section to render. The United States Golf Association Green Section, however, will keep closely in touch with the district green sections and will cooperate with them in every way not in conflict with its established policy. Clubs should understand clearly that there is no overlapping of ground by these two organizations, that one does not replace the other, and that the district green sections, while assisting in applying locally information sent out by the United States Golf Association Green Section, are not to be regarded as performing the functions of the latter organization.

W. D. VANDERPOOL, *Chairman, Executive Committee,* United States Golf Association Green Section.

R. A. OAKLEY, *Chairman,* United States Golf Association Green Section.

A farewell dinner to the Walker Cup team will be given on Tuesday evening, May 4, 1926, at the Waldorf Astoria Hotel, New York City, at 6.30. Reservations at $7 per cover can be made direct to United States Golf Association, 110 East Forty-second Street, New York City. Informal dress.

Simple and Inexpensive Outfits for Testing Soil Acidity

By H. L. Westover

The success in controlling weeds in golf turf by the use of fertilizers which increase the acidity of the soil has been described in the articles on pages 50 and 269 of the 1925 volume of THE BULLETIN. There has accordingly arisen a need for simple means of testing the degree of acidity of soil. Until recently the litmus-paper test for determining the reaction of the soil has been about the only available method that was sufficiently simple for the amateur. While this test has been useful and will continue to serve where it is necessary only to determine whether the soil is acid or alkaline in reaction, it is not sufficiently delicate to show to any appreciable extent the intensity or degree of acidity. The need for a simple test that will show this has been felt for some time, particularly in the preparation of lawn and golf turf, where the soil reaction has a rather marked influence on the character of growth. There has, however, been developed a so-called "dye indicator" method, by which changes in the color of dyes of known acidity and alkalinity range indicate the degree of acidity or alkalinity of the material being tested.

In these tests the intensity of soil acidity is, therefore, shown by color changes, and is expressed by the symbol pH as a value for the hydrogen-ion concentration. The meaning of pH is quite technical, but for practical purposes it is necessary only to regard pH as marks on a scale with the value pH 7 as the neutral point; that is, the point where the sample being tested shows neither an acid nor an alkaline reaction. Figures below 7 indicate varying degrees of acidity, the smaller the figure the greater the acidity; and figures above 7 similarly indicate varying degrees of alkalinity. As most lawn and golf grasses do better on soils with acid reaction, an effort should be made to lower the pH value in cases where it is as high as 7. This is often a slow process, but may be gradually attained by the use of certain fertilizers which have a tendency to produce an acid reaction in the soil, such as ammonium sulfate and ammonium phosphate, and which in this way lower the pH value of the soil. In tests at the Arlington Experiment Farm, in Virginia, pH 4.5 has proved quite satisfactory for turf grasses, although the turf is even better where the pH value is less than 4.5.

A number of dye indicator test outfits are now available by which amateurs can determine with approximate accuracy the acidity or alkalinity of the soil quickly and at little expense. One of these outfits sells for as low as 75 cents. A single outfit is said to be sufficient for making from 75 to 100 tests. In making the tests with this outfit, all that is necessary is to treat a very small sample of soil with a few drops of the dye and observe the change produced in the color of the dye. If the dye turns blue the soil is alkaline, and if it turns yellow the soil is acid. Complete instructions for conducting the test, with a color chart for indicating the approximate degree of acidity, accompany the outfit.

A more elaborate set of indicators, consisting of six vials of various dyes and two empty vials for making the tests, sells for approximately $5.25. With this outfit, a small amount of soil is shaken up in water and the mixture allowed to settle, when the solution is poured off and tested with a drop of one of the dyes. The

acidity or alkalinity is indicated by the change produced in the color of the dye. Complete instructions for its use and a chart for reading the degree of acidity or alkalinity accompany each outfit.

In taking a sample of soil for testing, considerable care must be exercised to insure its being representative of the plot of ground. For this purpose an ordinary auger one-half inch in diameter, with some sort of a handle attached, serves admirably. Each sample should be taken to a depth of 2 to 3 inches, and at least five such borings should be made, about 5 feet apart, and thoroughly mixed, before taking out the small quantity that is needed for the test. Lumps of manure, humus, or vegetable matter should be discarded in taking the sample for testing, and in most cases it will be found advantageous to sift the sample through a sieve of about 20 mesh.

The names and addresses of the companies having the above soil-testing outfits for sale will be given upon application.

Care of Bermuda Greens

By T. L. La Malta, Colonial Country Club, Memphis

When this article appears Bermuda growth will have commenced, and a definite plan for the care of the greens should be formulated.

Please understand that I am not posing as an expert, but rather as a layman who believes in the possibilities of Bermuda grass for putting greens and is trying to learn just what treatment is best.

The experiences related are based on six years of combined observation and supervision of a course located in the extreme western portion of Tennessee.

For the first four years after our course was completed the greens were cared for under what is sometimes called the starvation system. To avoid misunderstanding, I will give in detail the system used during this four-year period.

About December 10 play would be transferred to temporary greens. At this time the permanent Bermuda greens would be thoroughly forked over the entire surface, using a five-prong fork, to a depth of 8 or 10 inches, the supposed purpose being to loosen and aerate the soil. Immediately about 3 inches of well-rotted manure was applied and allowed to remain until about March 10, when it was raked off and a heavy dressing of lime applied. About the time the greens were put into play, usually May 1 to 10, a top-dressing of woods soil and sand was applied. This was repeated about July 1 and October 1. During the playing season the greens were cut once every day very close. At no time was water applied, although water was available at every green.

The first and second years our greens were fairly good, but during the third year the turf commenced to thin out, and by the end of the fourth year the turf consisted only of very coarse runners on top of the ground, making putting simply a matter of luck.

Realizing that something different would have to be done if we hoped to save our greens, we experimented through 1924, and, results pointing to the correctness of our ideas, we formulated the following treatment, which was followed during 1925 and which will not be changed during this year.

When the permanent Bermuda greens are taken out of play for the winter we apply a heavy topdressing about one-half inch thick, equivalent to 2 yards per green of 10,000 square feet. The same material that is used for summer topdressing is used at this time. It is spread evenly with a machine and well worked in with a steel doormat. Note that we do not fork the greens. This dressing does not have to be removed, as the winter rains wash it into the soil. Having been finely pulverized and evenly spread, it does not roughen the putting surface as does rough manure. Having washed into the turf by spring, it does not encourage the growth of early grasses with shallow roots, but does stimulate the Bermuda feeders. No lime is used. About April 1 to 10 we usually have sufficient Bermuda growth to commence cutting about twice a week with the mower blades set to cut about five-eighths inch high. At this time we apply ammonium sulfate, about 3 pounds per 1,000 square feet, and follow with a thorough sprinkling, and the next day a light topdressing of about one-fourth inch. From this time on, as long as growth continues, we topdress once every month, thoroughly water every 10 days (unless rains make it unnecessary), and apply ammonium sulfate again July 1 and October 1. During the summer our greens are cut every day (sometimes twice a day) with blades set three-eighths inch high.

With this treatment we get a luxuriant growth of very rich color, a true surface and one that the ball will bite into.

In watering we use a sprinkler that covers an entire green. This is turned on about 6.30 p. m. and runs until about 6.30 in the morning, which gives the equivalent of one-half inch of rainfall. No attendant is required after the sprinklers are set and started. We use six sprinklers, so that 18 greens are watered in three nights. A word of caution is necessary about watering. Do not water unless you do it thoroughly, as water on the surface only is harmful. If you have watered as suggested, about August 1 you will probably find spots on some greens where the turf looks sick. Immediately investigate, and you will surely find these spots watersoaked to a depth of possibly 2½ to 3 feet. Mark these greens, and during the following winter put in drain tiles well laid and well sloped, open on each end so that if they become clogged they can be opened with a rod or by flushing.

Topdressing should consist of clay loam and material from your compost pile, about three parts clay loam and one part compost. It is impossible thoroughly to mix clay and sand by hand; therefore, explore your surrounding territory and you will probably find a sand pit where you can get clay loam mixed by nature.

Topdressing should be shredded and screened until it is about as fine as cornmeal. To do this will require equipment costing close to $1,000; but our experience is that we save about $600 per year in labor, and probably half as much in material. More to be considered is the fact that the bugbear of preparing topdressing is forever removed, as well as the objection on the part of the players to its application.

In conclusion let me suggest that you study your local weather bureau reports for, say, 10 years past. These reports, with your experience, will enable you to arrive at how much water you should use.

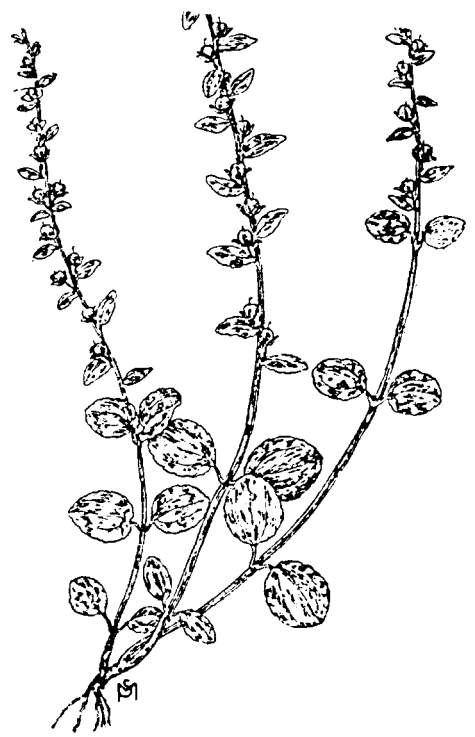
The soil I have been working with is pure clay. If yours is sandy, use clay in your topdressing instead of clay loam.

If your soil is clay, don't roll; if it is very sandy, roll as much as you like, without fear of harm.

[We are glad to get this contribution from Mr. La Malta giving the results of his experience with Bermuda turf at Memphis, Tenn. It is recalled that a contribution on the same subject from Mr. Frederick W. Birchett, Jr., of the New Orleans Country Club, appeared on page 64 of the March BULLETIN. It is evident that opinions differ on some features of the treatment of Bermuda greens. Perhaps these differences are necessitated by local conditions. It is the hope of the Green Section at an early date to summarize the various experiences with Bermuda turf and attempt to suggest some definite recommendations. In this connection, information on the experiences of other clubs in the South would be of material assistance, and it is hoped that additional contributions on the subject may be received.—*Editors.*]

Controlling Thyme-Leafed Speedwell

Thyme - leafed speedwell (*Veronica serpyllifolia*) is a thickly matted, low-growing weed, at times exceedingly troublesome in putting greens especially in Canada and the northern United States, though occurring to some extent also southward. Our illustration shows the habit of the plant in its natural state, but under the close cutting of putting greens it becomes much denser. It spreads rapidly both by rooting along the stems and by abundant seed production. Close cutting only aids in the spread of the plant. Pulling the stalks will simply break the stems from the roots, which will sprout anew. The clumps should be cut out bodily with a hole cutter, spud, or similar instrument, and destroyed by burning. The plant blooms from May until July. The small flowers are whitish or pale blue. If left unchecked, the plant will smother turf grasses, and also likely prove to be an element of danger to players on account of the slippery surface which it presents to the foot.



Thyme-leafed speedwell; stems with flowers and fruit. About natural size.

Golf Courses in South America and the Canal Zone

The following letter written from the Canal Zone by Dr. Maynard M. Metcalf, of Johns Hopkins University, Baltimore, to our late chairman, Prof. C. V. Piper, detailing the difficulties encountered and the successes achieved in the construction of a number of the important golf courses in South America and the Canal Zone, it is thought will be of general interest to golfers. Dr. Metcalf's trip to these countries was made during the late months of 1925.—*Editors.*

Ancon, Canal Zone, January 15, 1926.

DEAR PROFESSOR PIPER:

Your letters of introduction have surely been an "open sesame" for all the golf courses visited. Your letters to Mr. Alexander G. Nicholson, of the Golf Club Argentino, Buenos Aires, and Mr. John Anderson, of the Valparaiso Golf Club, Valparaiso, brought me such attention from them as to be almost embarrassing. They, by the way, are the two best men I have met for golf development problems.

Mr. Nicholson has a beautiful home in Palermo, near the Golf Club Argentino, of which he is captain and of which he has frequently been champion, his wife usually being woman champion of the club as well as of the Argentine. He is giving close study to the problems of his club. His course is much the best I have seen—sound in fundamentals of golf and having evidence of careful attention to refinements as well. Traps and ridges are so shaped as to add to the picturesqueness, and care is taken not to obscure, for a player whose ball lies where it should, the view of his next landing-place or the most picturesque outlook. Sand slashes against green banks are used in front of and behind greens to aid judgment of distance, and they are so treated as never to be ugly but rather add to the view. Flags are orange-colored with blue centers and vice versa, avoiding red, which is always bad for judging distance. Trees and shrubs are well used, but always well out of the line of play, except for two holes where they are hazards, one 135-yard hole requiring a carry over a grove. The Bermuda grass fairways are excellent. Nicholson is starting creeping bent. On this perfectly flat, swampy piece of ground has been built a course that is sound, demanding placement for distance and direction and calling for a full variety of shots—a beautifully picturesque course.

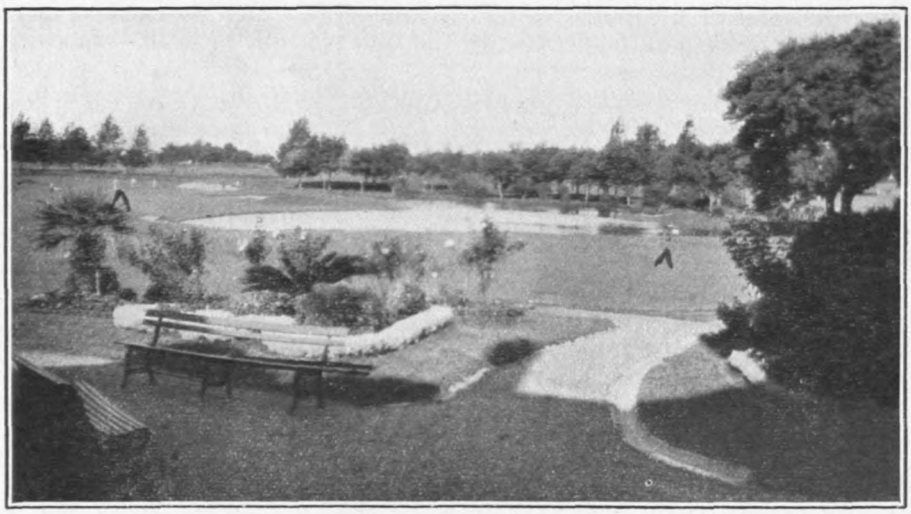
This has all been very expensive, $300,000 for earth-fills alone. But the point is, that the result is fundamentally good and full of refined touches that are a positive pleasure to see. Nicholson is invaluable to East Coast golf. He is upholding and is exemplifying in his course the very highest golf standards, not surpassed in our best courses in the States. Phelps, the professional at the Argentine Golf Club, is also strong in the construction end of the game. He makes a good running mate for Nicholson.

I've dwelt a bit on this course and these men, for in them, so far as I have seen, is the chief assurance of sound development of golf standards on the East Coast.

I did not see the course at Mar del Plata, which Nicholson and Phelps and everyone else says is much the best of the East Coast courses, its uneven ground adding much interest.

There are 22 courses in the Argentine, two of them private

courses. I saw thoroughly four of them. All were, of course, on flat ground, but they were mostly well planned, though none of the others had the refinements seen at the Argentine Golf Club. Number 10 at San Andraes, a mid-iron or mashie water hole in front of the club-house, is, I think, the most picturesque hole I have ever seen on a flat course.



No. 10 Hole at the San Andraes, near Buenos Aires, as seen from the porch of the Clubhouse. The tee is indicated by the inverted V at the right of the water, and the green by the inverted V at the left of the picture.

One hole at Ituzaingo (near Buenos Aires) is unique in my experience—a mid-iron or long mashie hole so constructed as to demand a pitch-and-run shot. The front half of the green is a beautifully even saucer; the back half is elevated about four feet so that the bound of a ball pitched to this part of the green would be unpredictable. With the flag on the back half of the green, only a pitch-and-run shot will serve, for there is a trap short of the green to prevent a run-up shot. This seems to me excellent construction, compelling mastery of this pitch-and-run. I believe every course should be so constructed as to compel a good variety of shots.

San Andraes (Buenos Aires) has one creeping bent green and a nursery for this grass. The main defect of the Argentine courses is in the character of their putting-green turf. I prophesy that within a few years all will be of creeping bent, stolon-planted.

In Uruguay there are four courses, all at or near Montevideo. Of these I played two. That of the Uruguayan Golf Club, at Punta Carretas (9 holes), is on rolling ground, and is thoroughly well-constructed on excellent plans made by Phelps, the professional at the Argentine Golf Club, of Buenos Aires. It has very good fairway turf, and needs only good quality of grass on its putting greens to compare favorably with the best courses anywhere. The course is along the ocean shore and commands picturesque views of shore and water and city.

Golf club-houses on the East Coast are adequate and good but not extravagant. The chief investment is in golf, not in private

hotels. Initiation fees and dues are moderate, being on a level with those in Britain rather than in the United States. An average for annual dues would be, say, $35. Green fees are about 75 cents a day, but on Saturdays, Sundays and holidays higher ($2 at the Argentine Club).

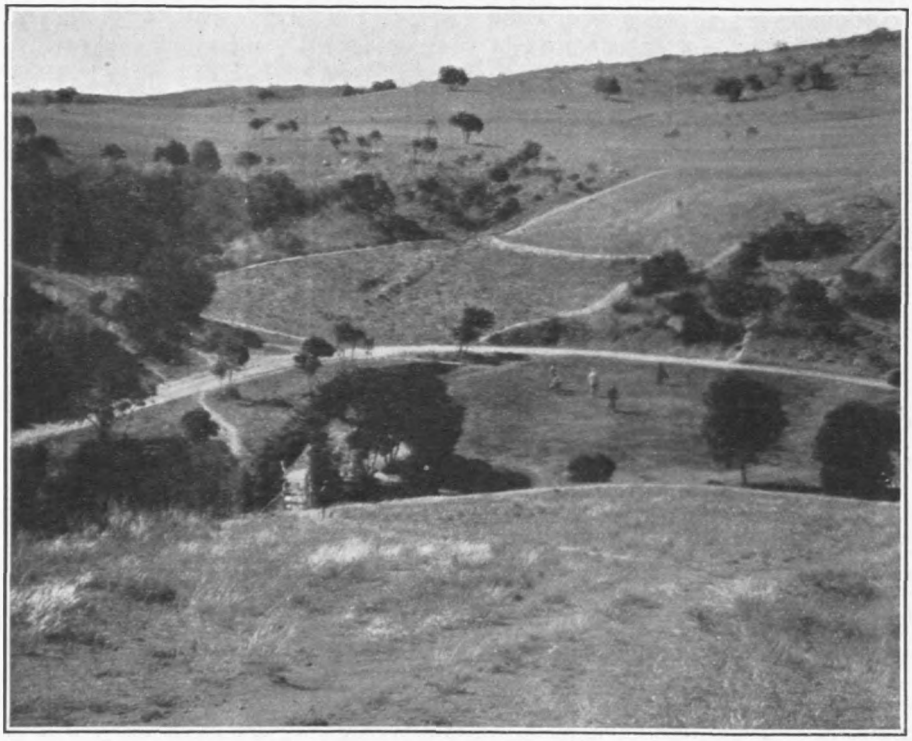
On the West Coast I saw courses at Santiago, Valparaiso, Antofagasta, Iquique and Lima. I wasn't able to see any of the other eight. One who has not seen the desert conditions on the West Coast can not imagine the difficulties to be overcome on some of these courses. In Santiago and Lima, flat ground and abundant water for irrigation allow the development of good turf. Both courses seem well planned. Both are introducing creeping bent greens. Lack of interest from the flat ground is compensated by wonderful views of the snow-capped Andes, and at Lima is added the sea, less than a mile away, with mountainous islands off shore.

Clubhouse of the Golf Club Argentino, at Palermo, Buenos Aires.

High hills, deep gullies, with absolute desert (in summer) on the land of the Valparaiso Golf Club impress one with the boldness and courage of John Anderson, who saw, in mind, and built the golf course. He has found a way to get abundant water for putting greens and for fairways just short of the greens. He has half a dozen fine nurseries of creeping bent and has enough creeping bent turf for sodding one green. From southern Chile he got seed which has given him the most beautiful Colonial bent turf I ever saw. Yet in spite of the perfection of this sod he plans to use creeping bent on his greens, counting on its superior ability in self-repair.

But the remarkable thing in Anderson's work is his finding strains of Bermuda and of Chewings' fescue which stand the seven months or more of summer drought. Each of these gives a thick, springy turf which in summer turns brown but retains a very good playing quality. Anderson is a dogged and determined student, an experimenter, courageous enough to tackle seeming impossibilities and keen enough to win out. He would be a very valuable man on our California courses; no one better could be found.

An amazing and interesting thing occurred at Valparaiso. Your office sent Anderson some Bermuda stolons, and he got the box from the post office and found they grew well in spite of the long drying en route from Washington. Two months later Anderson found the post office had overlooked nine other boxes of these stolons. He took them, soaked them in water for 48 hours, and planted them. I saw the patch—with most of the stolons sprouting well; and this after three months' drying in the air. Bent stolons reach South America from the United States uninjured by drying if the sods are rolled with the roots inward and are tied in burlap.



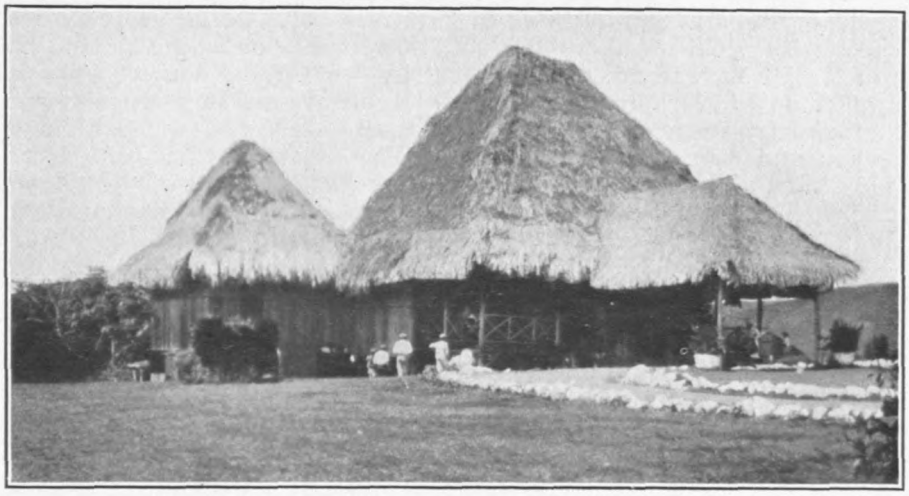
145-yard Hole on the Valparaiso Golf Club's course, viewed from the tee.

At Antofagasta, Chile, is perhaps the most interesting course I have seen—not a sprig of green on the course, good sand greens, fairways of dusty soil raked clear of stones and giving about as much run as a medium-soft turf, rough of similar soil unraked, the scattered small stones making a rough to be dreaded, though playable. Numerous gullies well placed, and artificial ridges well planned, give fundamentally sound golf. It is a real course, but surely a strange one.

At Iquique is a course laid out over loose sand, so deep as to make walking difficult, a course which is one huge sand-trap. One member said the course was 6,700 yards in length. If so, its par must be about 90. Instead of laughing at this course one feels rather how unconquerable is the spirit of golf that will not acknowledge the impossibility of such conditions.

Except at Lima, the club-houses on the West Coast are not so large as to involve great expense, and dues are, if anything, lower than on the East Coast. At Lima they are building a large club-house with both outdoor and indoor swimming pools, accessible to the golf course, the polo field, and tennis courts. It will have numerous guest-rooms, and they hope golfers from North America will come down in the wintertime to live at the club-house and enjoy the sport fields, the beautiful mountain and ocean views, and the balmy air on the broad porches. They are discussing a plan to get a group of the best professionals to tour the South American courses and give added impetus to the already strong golf movement in these countries.

Each coast has its own special golf pest which is proving hard to combat. In the Argentine the mole-cricket devours both putting green and fairway turf. They are fighting it, at large expense, chiefly with carbon disulfid, but have not worked out a completely satisfactory technique. At Valparaiso a small burrowing rat does great damage to the fairways, making bad holes and earth piles. Fortunately they seldom work on the greens, apparently because they are more frequented by the players than any other parts of the course. At present these are killed by shooting, but experiments with poisoning are being tried—rat biscuit, poisoned wheat, and especially calcium cyanid.



Clubhouse of the Panama Golf Club, built after the style of the native rural homes. The lofty peak of the roof (50 feet high) takes up the heat, making the restaurant below always cool.

I wish the Green Section could help Nicholson solve the mole-cricket problem. It is really a wretched thing. He is having carbon disulfid punched into the soil every 15 inches, and the punch holes immediately plugged with mud. This is followed by abundant watering to preserve the grass from injury. The method works, but is laborious, and so is expensive.

Any information you wish about South American golf you can doubtless best obtain from Nicholson and Anderson, two as good men

for construction and upkeep problems as you will find anywhere. Nicholson is an artist.

You know Panama courses, so I don't need to report on these at any length. The Panama Golf Club has a beautiful piece of rolling land with fine natural hazards (one improperly placed, as the course is now planned); there are beautiful trees and great views of sea and mountains; but to bring out the best golf some construction is needed, especially at the greens. The Gatun Golf Club has side-hill ground in large part. The course needs thought and construction work. The Fort Amador course is on flat ground, with very few hazards, and these peculiar. One hole, for example, No. 2, has its fairway along the bottom of a moat with high twilled sides, so that a ball could hardly be driven off the fairway. At Pedro Miguel are the beginnings of a 9-hole course.

On all the Isthmus courses the fairway turf is good. That at the Panama course is the undisturbed native grass of the plains. All the courses have Bermuda greens, pretty good for Bermuda. I prophesy that within ten years they will be using creeping bent. Leaf-cutting ants are something of a nuisance, but are not serious.

Again, most cordial thanks for your fine letters, which have opened all courses to me and have brought me every courtesy.

Faithfully yours,

MAYNARD M. METCALF.

The "Bulletin" appreciated in France.—"In sending you enclosed cheque for 1926 membership dues, may I tell you how valuable, in practice, I have found your BULLETIN—so far, of course, as it is applicable to European conditions? I always tell my friends who admire our greens, which are better than ordinary, how much I owe to you and your BULLETIN, and that the Americans have forgotten more about greenkeeping than we are likely to know."—*Dennett Barry, directeur, Le Touquet Golf Club, Le Touquet, Pas-de-Calais, France.*

New member clubs of the Green Section.—Audubon Country Club, Louisville, Ky.; Mohawk Golf Club, Tiffin, Ohio; Wequetonsing Golf Club, Harbor Springs, Mich.; Southmoor Country Club, Palos Park, Ill.; Evergreen Golf Club, Chicago, Ill.; North Haven Golf Club, North Haven, Me.; Boothbay Golf Club, Boothbay, Me.; Summerville Club, Summerville, S. C.; Indianwood Golf and Country Club, Orion, Mich.; Ocean City Harbors, Ocean City, N. J.; Oakwood Golf Club, Kansas City, Mo.; Yale Golf Course, New Haven, Conn.; Fountain Spring Country Club, Ashland, Pa.

Manure and crab grass seeds.—Crab grass is common in certain kinds of hay, and in this manner the seeds reach the manure pile rather abundantly. However, crab grass seeds will probably not stand composting for more than six months, and certainly not for more than a year. There is, therefore, likelihood of viable crab grass seeds being introduced to greens in the use of manure not much over six months old.

A Condensed Report on the Twin City Green Section Since It Was Organized, and How It Has Functioned To Date

By J. S. Clapper

The Twin City Green Section was organized in Minneapolis in February, 1922, by Senator W. F. Brooks, of Minneapolis, a director of the United States Golf Association Green Section. Senator Brooks sent letters to the clubs in Minneapolis and St. Paul explaining the purpose of the meeting and the valuable work the United States Golf Association Green Section at Washington was doing for the golf clubs throughout the country. There were 12 clubs represented at this first meeting, and it was unanimously agreed that such an organization in this section, to carry on the work as outlined by the United States Golf Association Green Section, would be helpful in improving golfing conditions as well as directing the work of greenkeepers along more practical and economical lines. The questions of annual dues and purchasing of supplies for clubs were thoroughly discussed, and a general program was outlined for the work during the summer months. It was proposed that the annual dues be set at $5 per club for the first year. This proposition met with approval. No further assessments were ever made, as the Section has not yet been in need of additional funds. A committee was appointed to send out inquiries to the different clubs in order to ascertain their requirements in seeds and other supplies, also to secure prices and supervise the purchase.

The program outlined for the season was to secure the attendance of as many of the greenkeepers and chairmen of green committees as possible, and to hold meetings about twice each month at the various clubs, spending the afternoon in going over the course for the purpose of discussing the problems of green maintenance and general upkeep of the golf course.

The actual results and savings to the clubs the first year on collective buying failed to justify further consideration or efforts along that line and it was decided that a great saving to all clubs could be effected by devoting the same efforts to other and more important matters.

The real fun and interest started at our first meeting, which was held on one of the best courses in the district, where the greens were really wonderful. They had been planted about 20 years before and had been under the constant care of a very efficient greenkeeper and were almost perfect. One chairman of one of the green committees had read the Department of Agriculture bulletin on the identification of grasses by their vegetative characters, and he started to tell what he knew about it, and there was a real cause for argument and dispute. The first question asked was, what grass was in the greens? The answer promptly came that the greens were entirely of bluegrass. The old greenkeeper explained his method of seeding them to bluegrass every spring, and made the statement that since the greens had been in his care not one pound of seed of any other kind of grass had been sown. The facts, however, were that the greens, when first seeded, had been seeded with a mixture containing German bent, and consequently were almost entirely bent grass; also that in some unknown manner *Poa trivialis* had gotten into the greens, and where the bent had not fully filled in there were

patches of this very beautiful grass. The man with the small knowledge of grasses started in to dispute the greenkeeper, and attempted to identify the grass. Of course, he lost whatever popularity he may have possessed, for practically every representative at the meeting planned to sow their greens heavily with bluegrass.

It was not until the middle of the summer, when Professor Carrier visited us, that we really began to learn something about the grasses with which we had been working. In his graphic way he explained to us the differences and showed us the characteristics under the microscope; and the old greenkeeper retired in disgust. He also showed us, by cutting into the green, how the cross-section showed the various topdressing treatments that had been made from time to time. It was a revelation to all; and there and then the real interest and education work started with the Twin City Section. We felt, for the first time, that we had achieved something worth while, and we had a realization of how little we really knew about conditions, and of how we had been going ahead in a blind sort of a way spending the clubs' money foolishly. This particular club, as well as others, had been spending around $500 each spring for bluegrass seed for these wonderful greens. It is doubtful if, out of the hundreds of pounds of seed sown, there were one hundred plants that had survived; in fact, a thorough search failed to reveal any bluegrass plants.

The meetings continued through the season, although we found it difficult to get the old greenkeepers sufficiently interested to attend regularly. All old-time notions and practices were being upset by recommendations from the United States Golf Association Green Section and articles appearing in the monthly BULLETIN. It was found later that by changing the name of our meetings from "Chairmen of Green Committees Meeting" to "Greenkeepers' Meeting," with some particular subject for them to discuss at each meeting, they became more interested and looked forward to these meetings with a greater interest.

Late in the fall one of our members visited the Arlington Experiment Farm near Washington and had the first opportunity of seeing the plots of different strains of creeping bent being propagated by the United States Golf Association Green Section. Samples were sent to Minneapolis, which were planted late in November. Mr. J. A. Hunter, secretary of the Section, sent to Washington for samples, which he planted in flats and placed in his greenhouse. These were exhibited at some of our winter meetings, and every club present wanted to get started with this wonderful grass. It was first thought advisable to start a community nursery and produce the grass in quantities for each club; but the idea was abandoned, and several clubs secured stolons and started their own nurseries in a small way. The progress has been very satisfactory, and at this writing nearly every club has one or more bent greens, while many have all their greens of pure bent.

Many of the smaller clubs in Minnesota and western Wisconsin became interested in the grass and the wonderful work the Section was doing. They were furnished stolons for nurseries, with instructions how to plant and produce the grass, and in some cases an experienced man went to the smaller clubs, without charge, to instruct them in the vegetative method of planting their greens.

During the summer Senator Brooks carried on a series of experiments at the Minikahda Club. Some of the fairways had become infested with "knot-grass" and other weeds, until the fairway grass was practically crowded out. This experimental work showed wonderful results, and a report was made at the Green Section meeting held at the Country Club in St. Louis late that season.

The work accomplished during this season was most encouraging, and was discussed at the winter meetings. The clubs were all very enthusiastic over results, and could see increased benefits from past experiences, by continuing the work, and everyone looked forward to the opening of spring and the first meeting at one of the clubs.

During the following July, Dr. Piper spent a few days with us, and we had our first demonstration of the vegetative method of planting bent, on one of the greens at the Minneapolis Club. This planting and its growth were watched with a great deal of interest and soon removed any doubt that might have existed in the minds of the greenkeepers or members. By the end of the second season the old greenkeepers, who had put little faith in the organization or work to start with, were the strongest believers and were doing their full part.

Senator Brooks continued experimental work through the season of 1923, in improving conditions on the fairways at the Minikahda Club, with wonderful success. He made a full report at the annual meeting of the United States Golf Association Green Section, held in New York, which was later published in THE BULLETIN. His report resulted in many clubs throughout the United States taking advantage of his experiments, with greatly improved conditions on their courses.

Mr. Hunter had planted a fair-sized nursery of bent at the Minneapolis Club, and used the stolons for planting some of the old greens to bent, under the "Hackbarth method." This work was purely experimental. At first it did not look very encouraging, but by correcting the first mistakes some of the most ideal and beautiful bent greens we have were produced by this method. Besides, the greens were held out of play only a very short time.

A regular meeting was planned for and held in February, 1924. It was a great success. Over 250 clubs throughout the Northwest were sent special invitations. We had a large attendance. The meeting opened at 1 o'clock p. m., adjourned at 6 o'clock for the banquet, and convened again for the evening session at 7 o'clock, which continued until 11.30. Every minute was crowded with interesting talks. Dr. R. A. Oakley came from Washington to deliver an address at both the afternoon and evening sessions. The valuable information obtained was a revelation to everyone; and since that time we have hardly had a meeting but what some man had come several hundred miles to get new knowledge which he was sure he might obtain. The work that summer was active as to meetings at the golf clubs, and we were again favored by the United States Golf Association Green Section, and Dr. Oakley was again able to be with us.

During the season of 1925 we took up with Dr. Piper the advantages of establishing an experiment station at the University Farm, St. Paul, and our suggestion was promptly accepted. Mr. Cary, of

the University Farm, was induced to take up the work along with his other duties. Samples of many strains of bent grass were secured, and the work was started. The Twin City Section held one of their fall meetings at the University Farm, to observe the work and inspect the grasses. The results were so pronounced and the future so promising that the Twin City Section pledged its support, and Senator Brooks was instructed to advise Dr. Piper that we would contribute $500 to carry on the work under the direction of the United States Golf Association Green Section, and this was announced by Senator Brooks at the United States Golf Association Green Section's annual meeting in Chicago in January, 1926.

We believe that, from a purely educational standpoint, the Twin City Section has contributed as much, if not more, exact information to the clubs tributary to the Section, and with less cost, than has any local section in the country. The great interest in the work and the organization has never lagged from the start, and increases as time goes by and more practical knowledge is gained.

While we are not unmindful of what Dr. Piper, Dr. Oakley and Prof. Carrier contributed to the success of this work, there are a few individuals that deserve a great deal of credit for organizing the Section and pushing the work to a successful conclusion, and to these men we all feel deeply grateful. They are Senator W. F. Brooks and Messrs. J. A. Hunter, Charles Van Ness, E. M. Barrows and Charles Erickson. The efforts of these gentlemen, together with the helpful suggestions from Washington and the monthly BULLETIN, were the foundation on which we have built up a strong and practical organization for the upbuilding of golf courses along more economical and satisfactory lines.

Peat and Humus

Notwithstanding the frequent references which have appeared in THE BULLETIN to the harmful effects that have followed the use of peat in the preparation of the soil bed for turf and as an ingredient of compost, numerous inquiries are still received with regard to the use of humus on the golf course. These inquiries appear to be prompted by the fact that the fertilizing value of peat is highly exploited and that its supply is relatively abundant and it is easily marketed. While it is true that in some sections of the country excellent crops of vegetables can be produced on peaty lands, and that peat is a form of humus, and that humus in some form is necessary for the growth of nearly all kinds of vegetation, including grass, it does not follow that peat will benefit the turf grasses. Indeed, experiments have shown that, on the contrary, peat is decidedly deleterious to the growth of turf grasses. To clarify the matter it is perhaps necessary that the difference between humus as it occurs naturally and commercialized humus be clearly understood. Humus, strictly speaking, is organic matter undergoing a process of decay. Peat is really pickled organic matter, in which the decay is practically nil. It is undecayed humus which has been started upon a transition into coal. It has the color and much of the texture of a rich black loam; but it will not decay, nor will it furnish any food available for plant growth.

We advise golf clubs without hesitancy to make full use of humus of suitable kind in the preparation of soils lacking humus and in the making of their compost piles. The best form of humus is, without question, well-rotted barnyard manure, while mushroom soil, woods earth, and similar materials are also forms of humus of high value. All the forms of commercial humus we have seen possess none of the characteristics of these latter desirable materials.

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

A player drives from the tee into a marsh. The ball is visible in the mud, and the player elects to "play it out." He carries into the marsh a board, root, or stone (from outside the hazard), places it, and makes the shot with one foot on it. He claims he has such a right.

Decision.—Rule 15 covers this point. The player must be deemed to have committed an act contrary to the spirit of this rule in taking his stance. A player is not entitled to change the playing condition of the course, and in this case he has done so and must be penalized under the Rules.

A player claims that under Rule 11 he is entitled to lift a ball from a wheel track (not freshly made) in the fairway, basing his contention on the "hole made by the greenkeeper" clause in this rule. There is no vehicular traffic on the course other than that of the greens force, and no special rule has been made for such a case.

Decision.—In the absence of a local rule, a player is not entitled to lift under Rule 11. It is the plain duty of the committee in charge to designate this situation either as "ground under repair" or, if warranted, a "permanent hazard."

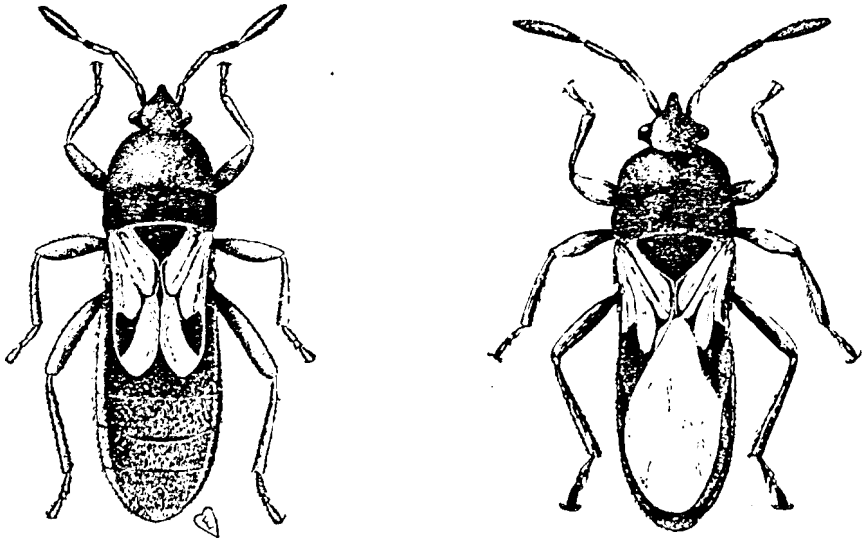
A player tees his ball on the teeing ground. In taking a limbering-up or practice swing he knocks the ball 30 to 40 feet. He states it was an accident and insists that there shall be no penalty. From a careful study of Definition 13 and Rule 2, and the consideration that golf is a game of integrity, it is felt that in a case such as this the player's word must be accepted.

Decision.—Rule 2 must be considered to cover this point. The Rules Committee of the United States Golf Association are under the impression that the player in this case must have gone beyond the interpretation of "addressing the ball" in knocking it 30 or 40 feet, and therefore must consider that he put the ball in play and that it should be counted as a stroke.

Superiority of stolons of new growth for vegetative planting.—It has been demonstrated that old stolons of creeping bent do not produce nearly as large a proportion of buds or new plants as do stolons of new growth. Moreover, nursery rows a year old make little growth the second year. It is much more satisfactory to start a new nursery each fall than to carry over old rows. If, however, old stolons are available, they should be planted much more thickly than is advised for new stolons.

Injury to Turf from the Chinch Bug and Other Insects Which Attack Grass Leaves

While the chinch bug does not appear seriously to injure any of the northern golf grasses, nevertheless reports of its attacks on bent and bluegrass turf were received in the summer of 1925 from Massachusetts and Missouri. In Florida the insect has been found to attack St. Augustine grass. It is not thought, however, that the chinch bug will injure the northern turf grasses to any marked degree. The treatment for the insect is a simple one. It can be effectively controlled by sprinkling or spraying the turf which is attacked, with a solution of 1 teaspoonful of 40-percent nicotine in a gallon of water to which ordinary soap suds are added. The soap suds are needed as a "sticker" for holding the nicotine solution on the insects and the grass until the poison can become effective. Where it is desired to mix a large quantity of this insecticide, 1 fluid ounce of 40-percent nicotine should be added and thoroughly stirred into 8 gallons of soapy water. This solution will keep for months in an air-tight container. The insect is active from the latter part of April throughout the summer.



Short-winged form Long-winged form

Adult chinch bug. Greatly enlarged

The chinch bug is a small, winged insect, 1/5-inch or less in length. It occurs in two forms, a long-winged form and a short-winged form. The long-winged form occurs over most of the country between the Rocky Mountains and the Allegheny Mountains. The short-winged form has been found to exist principally along the seacoast, and in the East extends inland along the lower Great Lakes to northern Illinois. Both forms are white immediately after the skin is shed, but soon become black. The upper wings are whitish

at the base, white at the tips, and bear a black spot about the center. The under wings are whitish, folded membranes.

Besides the chinch bug, other insects at times attack the leaves of grass, doing considerable injury. Chief of these is the leaf-hopper. For any such insects it is recommended that the nicotine solution above specified be used.

Routine Work

Cooperation of Green Committee and Greenkeeper Essential

By George Cunningham

In the efficient and economical management of a golf course nothing is of greater importance than the plan of organizing routine work, nor is there any detail of course management which is less considered by the average green committee. Yet this proper coordination of men and machines is the greenkeeper's greatest problem, and to the excellence of his plan is his success or failure more to be attributed than to any other circumstance.

Reflection will convince a committeeman of this fact and indicate to him the advisability of comprehending the details of the greenkeeper's method. No single thing will lead to greater harmony between green committee and greenkeeper than complete understanding in and approval of this planned sequence of various maintenance duties. In many cases this understanding will lead to constructive criticism and greater efficiency.

From time to time, because of weather conditions, additions to or breakage of machines, sudden changes in personnel, changes of policy by the club, or other causes, it will be necessary to alter the details of the plan; but under each and every condition there is a system of management under which the maximum result can be secured by a minimum of effort.

To approach this ideal condition, a trained and reliable personnel is essential, supplemented by such modern machinery, maintained in first-class condition at all times, as is adequate to finish such work as hole cutting, watering, mowing greens, tees and fairways, weeding, and topdressing greens before play becomes heavy. Later in the day, work about clubhouse grounds, preparation of materials for future use, repair and readjustment of equipment, and work in traps, hazards, and rough may be carried on without annoyance to players.

This ideal can only be closely approached by large or wealthy clubs, or those which adopt a policy of securing good men and making it worth their while to stay on the pay roll. Yet considerable variation from it, with consequent annoyance to players, may often be caused by lack of a single putting green mower, two fairway units, or a few sprinklers and lengths of hose. When conditions exist making a fairly close approximation of the ideal impossible, the greenkeeper's plan becomes increasingly difficult, and it is then that understanding of his difficulties is most necessary to harmonious cooperation.

When the duties of the greenkeeper are turned over to the professional, as is so frequently done, it becomes proportionately difficult for him to give complete satisfaction to his club. To be successful

under this condition he must have under his direction a reliable and high-class foreman who will carry out his orders to the letter, who understands the necessity of following his prearranged program, and who will in large measure relieve him of the necessity for close contact with the other men, care of equipment, time-keeping, and details of like nature. When clubs adopt this policy it is only fair to the professional to allow him greater latitude than is usual as to when he will give lessons and perform duties of a similar nature, or to pay him a salary large enough to employ an assistant well qualified to teach and manage the shop efficiently in his absence. In the latter case the professional may virtually become course architect, manager, and greenkeeper combined. Failure to appreciate the difficulty of his position will work an injustice on the professional, forcing him to neglect either or both sides of his job, and the course will not be so well maintained nor the club members so contented as otherwise would be the case.

The plans made by the man responsible for course maintenance must be governed by the budget for the year. He should, therefore, not only be consulted while the budget is in preparation to prevent the omission of indispensable items but should be promptly informed of final action, so he may cut his garment according to his cloth.

The item for labor is invariably the largest maintenance charge; and under the existing program the greenkeeper requires a certain number of men to do the work properly. It may be advisable to adopt a policy of greater economy than usual. Consultation with the greenkeeper may convince the committee that an actual saving in a year's expenditure can be effected by the purchase of additional equipment and a decrease in the number of men employed. During the life of that equipment the saving will become proportionately greater after the first year. Such a change might also be advocated by the greenkeeper for the purpose of doing certain work more quickly—a consideration of great importance in his maintenance plan. It will be difficult to refuse him when he can prove that a better-kept course can be provided at an annual decrease in expense.

This general idea can be further elaborated. But it is indisputable that unless the green committee and greenkeeper enjoy each other's confidence, appreciate each other's difficulties, and understand each other's plans, their club can not receive the service from either to which it is entitled.

Greens at the foot of a hill, subject to runoff or seepage from the higher ground, should be protected by surface ditches to catch the surface runoff and by tile placed deep enough in the ditches to intercept the lowest plane of seepage from the higher ground. If the surface ditch is deep enough, the tile may in some cases be dispensed with; but this is not always practicable. A foot or so of crushed rock directly beneath the bottom of the ditch will also help to improve the drainage.

Thin and poor turf is due to many causes, but the chief causes are improper drainage and lack of regular fertilizing. As a general rule, such turf can be improved by correcting the drainage and fertilizing regularly. Sowing additional seed on established turf is generally time and money lost.

QUESTIONS AND ANSWERS

All questions sent to the Green Section 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 Section.

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. Swamp muck; its value and use.—We have two or three acres of low land on our property bordering on a sort of swamp. The soil here is black and rich and from 6 to 12 inches deep. We are sending you a sample for examination. It is our intention to scrape together a large quantity of this soil, leave it in a pile to cure, and then use it in the construction of our second 9 holes about ten months hence. It appears to be the same thing as the "humus" which we bought in constructing our first nine holes, and for which we paid a large sum of money. The area is so situated that at a very small expense we could scrape a large heap of it together with our tractor, near the road, where it would be accessible for future use. We have a large compost pile already made, consisting of good top soil and horse manure, which we expect to use on our greens next year. The pile is large enough to last us at least two years in case we should use it on the greens alone. Do you think we would gain anything by using this muck in our compost? (Connecticut.)

ANSWER.—While your sample appears to be of a quality as good as that of much of the muck that is used, we have had such poor results from the use of material of this kind that we hesitate to advise its use even when mixed with manure and composted. We would suggest that you have your greenkeeper fill a small box with the muck and sow seed of redtop or some other grass in it, keeping it sufficiently moist for good germination and growth. Do not sow the seed thickly. If the seedlings grow well—that is, do not become yellow and sickly after a few days' growth—we believe you would get fairly satisfactory results from the use of the muck if you mix it with at least twice its volume of manure and the usual amount of loam or clay loam and leave it in the compost pile for six months or more. On the other hand, if the grass seedlings become yellow or have an unhealthy appearance after they have grown in the muck for a few weeks, we would advise you to have nothing to do with the material, even for making compost. Since you already have a good compost pile we are still more inclined to doubt the advisability of starting new piles with material such as you have sent us. To the layman such material looks excellent, but for some reason it has in many cases been positively injurious to turf when used even in compost as a topdressing. It may be that it is because these muck or humus materials are inert (that is, not susceptible to decomposition and thus not producing available plant food) that they prove in general unsatisfactory for turf growing. To illustrate, several years ago we topdressed one of our experimental plots with humus material such as you send us. Later we topdressed the same plot fre-

quently with compost. As a result, the thin layer of muck is now buried about an inch beneath the surface of the soil, and the material still remains there as we applied it, not in the least decayed or converted into soil. Moreover, the turf where this material was used is not as good as that on neighboring plots which were not thus treated. We have seen these mucks used on golf courses to a considerable extent, both on putting greens and fairways, and in all cases the grass presented a starved, stunted appearance.

2. Restoring greens heavily infested with chickweed.—We are confronted this spring with the job of killing the mouse-ear chickweed on 7 of our 9 greens. The weed is so general that the whole turf will have to be sprayed, and not simply the infested spots. To kill the chickweed we are planning to spray the turf with sodium arsenite, which will of course kill much of the grass also, and will make it necessary to replant the greens with seed or stolons. Our turf consists of bluegrass, redtop, and some bent. The soil of the greens is about 5 inches deep, and is about 65 percent muck and the balance clay top soil and sand. On this soil we have been able to produce wonderful turf of bluegrass, redtop, and some bent, but we fear it is so rich that if we attempt to replant with creeping bent it will produce a turf too coarse in texture. Besides, we feel that this muck soil will cause us much trouble from brown-patch if creeping bent is planted, as even the bluegrass, which suffers less than most other grasses from this disease, has been injured considerably from brown-patch. To attempt to change the soil this spring is entirely out of the question. Furthermore, due to the lateness of our springs, it would be after the middle of April before we could expect bent stolons to start growth in case we should decide to replant the greens with stolons. For that reason we are considering sowing the greens with bent seed, which can be planted earlier than stolons and which would not necessitate so extensive a tearing up of the soil. Seeding would enable us to save much of the present turf, and would require much less subsequent topdressing than would stolons. On the other hand, we recognize the superiority of a turf produced from stolons, and the use of stolons from our own nursery would obviate the expense of a large seed bill. We should like to have your advice in the matter. (Minnesota.)

ANSWER.—We would advise you to spray your greens as soon as possible with iron sulfate in solution at the rate of 1½ pounds to a gallon of water. Rake off the dead chickweed, scratching the soil thoroughly with rakes, treat the soil heavily with ammonium sulfate well watered in, and then sow redtop seed alone at the rate of five pounds to 1,000 square feet. This will give you a turf for spring and summer play. There will be plenty of weed seeds left in the soil, so that it will be advisable to keep your greens thoroughly weeded during the season. Topdress through the season with compost reinforced with ammonium sulfate. In late August or early September plow up the old greens, seeing to it that a good quality of soil is thoroughly mixed with the layer of muck lying under the surface. Then plant your greens with bent stolons in the way advised in the article in THE BULLETIN, August, 1925, pages 181 to 183. If however you can not see your way clear to rebuilding all of your infested greens in this manner, it might be well for you to sow stolons directly

on the established turf as advised in the article in THE BULLETIN, October, 1925, page 223. We would suggest however that you rebuild at least one green from the bottom up to give you an idea of how it will respond in comparison with the greens in which the large percentage of muck is allowed to remain in a layer under the surface.

3. Bluegrass, redtop, and white clover as putting green grasses. —We have a club whose members are of moderate means, and they wish to play golf and keep their expenses as low as possible. They have seeded the greens with redtop, but due to hot, dry weather, and no facilities for water, this redtop died. Now they want to seed this with bluegrass and white clover mixed. Our information in regard to white clover is that it will not stand trampling. Would you advise our using white clover? If not, what would you advise substituting that would be a moderate-priced seed? (Illinois.)

ANSWER.—We note that you have used redtop and have not found it satisfactory. This is universally the case where redtop is used as a permanent turf. In the seedling stage—that is, for the first year after seeding—redtop makes a very good putting turf, but afterward it is too coarse and uneven to be satisfactory. Bluegrass, while not a highly desirable putting green grass, has some advantages, especially where water can not be had for irrigation. It has also the advantage of not being attacked by brown-patch, a serious disease of turf, which is very destructive in the summer time. If you decide to use bluegrass we would suggest that you mix redtop with it and omit the white clover. Bluegrass is rather slow in getting started, but after the first year makes very good turf. Redtop, on the other hand, starts quickly and makes very good turf the first year but poor turf afterward. Therefore the combination of the two is quite satisfactory and is generally regarded as the best combination for fairways in this country. White clover is not regarded as a desirable plant on putting greens, but it is present on most putting greens and is difficult to eradicate. We would not advise you to sow seed of it with your bluegrass-redtop mixture, but we feel quite sure that it will come in naturally and be present in your greens in more or less abundance.

4. Mixing ammonium sulfate in compost before required for use. —How long before using compost for topdressing may one mix ammonium sulfate with the compost providing the compost is kept under cover? We like to have our compost at least a year old before using it. We keep it under cover, utilizing wet days, or portions of days when nothing is pressing outside, for preparing the compost for use, screening it, and adding ammonium sulfate to it. (Pennsylvania.)

ANSWER.—Ammonium sulfate may be mixed into compost considerably in advance of the date on which it is intended for use provided the compost is kept under cover so that it is not exposed to rains. Ammonium sulfate does not lose its strength in dry storage, but it is readily dissolved in water and in this way may be quickly washed out of a compost pile that is not protected from rains.

Meditations of a Peripatetic Golfer

"The sweetest story ever told," said the greenkeeper, "was the one the lime addict told me today. 'A shot of lime and your troubles are over.'" Some story!

The man who said tillage is manure did not mean that putting greens can be fertilized with a garden rake or a scarifier. Use ammonium sulfate and compost.

There are better ways of improving your score than by cursing the turf. Likewise better ways of improving the turf.

My friend, the chairman, says he favors the use of Gettem's Liquid Worm Eradicator since corrosive sublimate is too poisonous for his men to handle safely. What does he think is the active ingredient of Gettem's product?

You might about as well scatter seeds of kindness on old putting green turf in the spring as to sow the best grass seed available on it. Fertilizer, and not seed, is recommended.

"Nature abhors a vacuum," we were taught in school. When we took up golf, we observed that she abhors straight lines in golf architecture.

There are horse doctors and man doctors and tree doctors. If you can't be a horse doctor, be a tree doctor. Tree surgery is a relatively simple art. Be kind to your trees while you have them, and they will return you thanks.

Forking turf is like tearing your trousers to remove the shine. Don't ruin your greens with theories. Feed them and water them and drain them and topdress them.

A green in a ravine is pretty. Sometimes it may be a necessity. But look out for seepage from the surrounding higher ground. For economy's sake we would advise you to avoid such a location if you want satisfactory turf on the green. Even perfect drainage will often fail to permit of satisfactory turf being produced on a green bordered by higher ground.

Belief of itself never established a fact, nor can it refute one. Investigation alone brings out the proof. It is the facts in greenkeeping that count, not the opinions.