

CARE *of the* GREEN

PETER W. LEES

Henry L. Hamlin

EX LIBRIS



JOSEPH S. F. MURDOCH  
638 WAGNER ROAD,  
LAFAYETTE HILL, PENNSYLVANIA  
19444

1918

Harry L. Hambleton

# CARE OF THE GREEN

By PETER W. LEES

GOLF COURSE ARCHITECT

## *Golf Courses in America*

Lido Golf Club.	Suburban Club of Baltimore.
National Links of America.	Cold Spring Harbor, L. I.
Garden City.	Quaker Ridge.
Essex County.	Richmond, Va., Etc.
Somerset Hills.	

## *Golf Courses in Europe*

Mortonhall Golf Club, Edinburgh.  
Braid Hills Corporation Course, Edinburgh.  
Edinburgh Burgess Golfing Society, Barnton, Edinburgh.  
*and many others in Scotland.*  
Mid Surrey, Richmond Surrey, England.  
Westward Ho, Devon, England.  
Sudbrook Park, Richmond Surrey.  
Royal Wimbledon Golf Club, London.  
Tenley Golf Club, Wales.  
Radys Golf Club, Wales.  
Littlestone on Sea Golf Club, Kent.  
Home Park Golf Club, Hampton Court, Middlesex.  
Cannes Golf Club, France.  
St. Raphael, France, Etc.

C. B. WILCOX & CO.

303 Fifth Avenue  
New York

Publishers of the "PRO" Magazine

Copyright, 1918

By C. B. WILCOX & CO.

NEW YORK, N. Y.

## CONTENTS



	Chapter
Course Construction .....	1
Building the Green.....	2
Hillside Greens .....	3
Rolling the Green.....	4
Worms on the Green.....	5
Care of the Green.....	6
Spring Work on the Golf Course.....	7
Early Work on the Golf Course.....	8
Early Summer Work on the Golf Course.....	9
Summer Work on the Golf Course.....	10
Mid-Summer Work on the Golf Course.....	11
General Review of the Greenkeeper's Work....	12

## Course Construction

In the following series of articles which I am to have the privilege of writing for THE "PRO," it shall be my endeavor to put as plainly as possible the several methods which I have found from a long experience to be the most successful means of securing the best results in laying out, building, etc., a modern golf course. I wish it to be understood, however, that I do not mean my remarks to be taken as hard and fast rules to be followed out to the letter, but simply my own ideas, gained by practical experience. I also trust that the articles may be of some help to my fellow greenkeepers and aid them in their none too easy task of giving to their members a course over which it is a pleasure to play, with the result that complaints against this long suffering individual will be reduced to a minimum. Golf today, compared with what it was, say ten years ago, is entirely changed and no comparison can be drawn between the links of today and what they were then. A few years ago the golfer was quite content with anything so long as he could get around the course in comparative comfort. If the putting greens were anything decent at all he did not mind and little grumbling was heard.

The person in charge of the course then was in most cases the professional, who, though perhaps a very fine exponent of the game, knew very little about the culti-

## CARE OF THE GREEN

vation of grasses. His time was for the most part taken up with playing round and giving lessons to the members of the Club. This was generally the condition of things, but as golfers got better educated in the game, the desire for the more up-to-date conditions all round asserted itself.

Courses have to be laid out in a more scientific manner. A golf architect has to be called in to inspect the site of the proposed links and is entrusted with the lay-out. He has to supervise the construction of the course, which must be laid out according to the very latest principles. In the old days it was the common custom to lay out the course, taking full advantage of the natural conformation of the ground. The popularity of the game now has changed this however, and the modern golf architect is expected to improve on what nature has placed at his disposal in the way of a fine natural lay-out. He is expected in some, to copy other famous holes, with, in perhaps a few cases, very good results, but in very many with disastrous failures. There is no rule that I know of where it says that a certain hole has to be constructed in a certain way, therefore I maintain that in laying out a course, the very fullest advantage should be taken of the natural features of the ground on which it is proposed to lay out the links.

By following out this plan, a sameness, which soon becomes apparent to the golfer when he plays over those courses where copying has been resorted to, will disappear. It is the custom with some Clubs to first fix the



## CARE OF THE GREEN

site of the Clubhouse and when this has been fixed to tell the architect he must lay out the holes so that the first and tenth tees, as also the ninth and eighteenth greens, are situated near the Clubhouse. In some cases this idea will fit in all right, owing to the shape of the ground on which it is proposed to lay out the course, but in others it gives the architect some very serious trouble to work this out and at the same time take full advantage of the conformation of the ground. I admit it is a very great advantage where it is possible, to put this scheme in operation, as it gives two starting points, which on a busy day will get the players off much more quickly. I think it is a mistake, however, to carry out this plan to the detriment of the lay-out. I could name many famous courses where the ninth hole is a long way out from the Clubhouse and where large numbers of players are on the course daily. Let me not be misunderstood in what I have said in regard to the lay-out, and it must not be taken for granted that the greens may not have to be built up in some cases. It is extremely likely that a few of them may. If so, my idea is that they should be constructed to fit in with the surrounding ground and be made to look as natural as possible. To some it may seem an easy task to be given a tract of land and told to get busy and lay out a golf course. It looks easy, especially after it has been worked out by an expert, but it takes an expert to do it.

In my early days at the game I have seen a golf

## CARE OF THE GREEN

course laid out in a few hours, greens, tees, etc., all staked off, and this work carried out by a person who had not previously had an opportunity to inspect the ground. And a first-class lay-out at that. To be a successful golf course architect a great essential is to have what is called the golfer's eye, in other words, be shown over a tract of ground and picture in your mind just how it should be laid out. I personally think a great deal of success or failure depends on this.

Another great asset to the golf architect, and one that will be of very valuable assistance to him in his work, is to be able to play the game itself well. This will help him a great deal in laying out the course. He knows just what is required and he sets about to make the very best of the ground at his disposal. When a golf club acquires a portion of land, it is sometimes, in fact, very often the custom, to have a survey made of it. A map is drawn out strictly to scale. This is a great help to the architect. The plan or map may give him the contours of the ground, but I hold that to take advantage of every natural feature the course has, it must be laid out on the ground itself. This is the only way to gain the very best results. The lay-out of a course is just like the foundations of a house, and as important, as no matter how much labor and money is spent on its construction, if the foundation is not right all the other work is simply wasted on its construction. So much for the lay-out, which I have tried to put as plain as possible.

## CARE OF THE GREEN

There are, as all golfers know, two kinds of golf courses, namely, the inland course and the seaside. The two are quite different in every way. In the old country the championship was always played on a seaside links although there were many first-class inland courses that could compare favorably with them, and perhaps in one or two cases provide a better test of golf. In this country things are very different. Inland links are predominant and the championship is always played on one of them. There are only one or two seaside courses in this country up to date. I shall treat with the inland course first and endeavor to explain my various methods in constructing it. As a large number of the new courses at present being built all over the country have to be seeded down, I shall take them first. It is not so many years ago when, if one should have mentioned the fact that he was about to build a golf course on a site which was then a thickly wooded forest he would have been pronounced crazy. Yet now at the present time some of the finest links in this country are situated on what was once forest land.

In writing the series of articles, I shall deal with all the different kinds of courses and to begin with I shall make it my endeavor to give some idea of what is required in the way of building a course laid out on forest land. The other types I shall deal with later.

We will presume that the architect has finished his rather laborious task of laying out the course. He has

## CARE OF THE GREEN

the fairways, greens and tees all staked out. In some cases the work of removing the trees and the rough grading is given out to some contractor, who carries out the work under the supervision of some one appointed by the Club or the architect, who I may say cannot always be on the job, as he may have several more courses under construction at the same time. In other cases the Club itself has the work carried out under the supervision of their own greenkeeper. The initial work to be carried out is the removal of the trees. If the trees are of any use at all the club should be able to sell them at a price that should help a long way towards paying for the actual cost of building the course. The cost of building a golf course is regulated very much by what the Club is prepared to spend and the class of course aimed at. I do not know if it can be put down to the war. Everything is laid down to it at present, but the cost of building a modern golf course is very much more now than it was three or four years ago. Labor is very much more expensive than it was, and good men are scarce, the price of materials has gone up, grass seeds, fertilizers, etc., are all more expensive than they were before the war broke out, but nevertheless the construction of new courses goes on apace. As I have stated, the trees first of all have to be got rid of, the stumps being removed by blasting with dynamite, which is the cheapest and quickest method if the trees are of any size. If, however, there is any mound work

## CARE OF THE GREEN

to be carried out to break up the flat surface of the ground, the roots will come in handy for the foundation of this work. As I have already stated, it may be possible that several of the greens may have to be built up in some way and the golf architect who knows his business will see to it that the party in charge will be supplied with a model of the desired contours of the green so that it may fit in with the fairway and surrounding ground.

To make a successful job I think this is very important. It might be possible to carry out the construction of the green by the eye, but I think the easier and safer plan is to build from a model. Fewer mistakes can occur and more progress made with the work, with less expense as well. In working from a model, all that the person in charge has to do is to stake off the green, first to the size given him. Then with stakes driven in all over, giving him the elevations of the different contours, the work afterwards is easy. I myself find it a good plan to first of all run a line of stakes all around the outside of the site of the proposed green, and with the aid of a cord, show the proposed elevations on the outside. The inner portion can then be graded to stakes driven in to the required elevations. In starting to build the green the first and very important point to be considered is drainage. If the work is being done on low lying ground, a system of drainage has to be installed. To those in charge of the work this has to be seen to.

## CARE OF THE GREEN

If the green is being built on the side of the hill the wash from the higher level has to be diverted in some way, if possible, by the back of the green. There are many ways of draining a green, but I think a very good way and amongst the best is the method of herring-bone draining. Run a main drain down the center and put off shoots on either side running into it. The depth of the drain should be regulated by ground to be drained. The system of draining I prefer is to first lay the agricultural pipes in the bottom of the trench and cover over to a depth of at least six inches with rough ashes or small stones. So much for the drainage of the green.

## Building the Green

It is within very recent years that the building up of putting greens has become popular. The old plan was to build the green on the site selected, no matter if it should be situated on low-lying ground or on a hill-top, the same procedure in building was rarely changed. It was immaterial whether the ground sloped the one way or the other, so long as the surface was in any way flat on which it was proposed to build the green. The courses were for the most part laid out on meadow or park land. The tees and putting greens were staked off with four pegs, the putting greens being as square as it was possible to have them. The old idea seemed to be to get everything done on as straight lines as possible. With the advent of the modern architect this has been all changed, in my opinion, for the betterment of golf and the benefit of the followers of the game. In my former article I described my own ideas of drainage. I shall, in this article, begin with the building of the greens first. It may be that the site selected for the new course is on ground of an undulating character and the position of the greens may make it essential to build them up in a variety of ways. One may have to be built on a flat piece of ground, another on a hilltop and another on the sloping side of a hill. The construction of each one may call for entirely different methods. The one

## CARE OF THE GREEN

on flat ground may have to be raised slightly. The one on the hilltop may have to be let down, and the one situated on the side of the hill built up in some way to provide a suitable putting surface. As I said in my first article, the construction work should be carried out, as far as possible, so that it should fit in with the existing natural conformation of the ground.

I shall first deal with the building of the green on the hilltop. It is very essential, I think, that the green should, if possible, be sunk, or in other words, constructed on the punch bowl pattern. My reasons for advocating this is, firstly, that a green situated on the top of a hill is more liable to burn up in the hot summer months than one placed on a flat, and also that if it is so constructed it will have so little shelter from the keen winter winds that would otherwise sweep across it if exposed on the extreme top.

In the summer months, when it is essential to apply water to the turf, if the green is cupped less water will be required for this purpose. In other words, if the green is let down a little so as to form a saucer, moisture will be more easily retained, whereas if it is built on the extreme hilltop it would be like pouring water on a duck's back, it would all run off and little or no benefit would be derived from the application of the water. Another and very important point to be considered has to be borne in mind also, namely, the top dressing of the green. As every one knows, grass, like a human being, must be fed, and this remark ap-



## CARE OF THE GREEN

plies more especially to putting greens where there is continual mowing and tramping over, with the inevitable result that the grass plants weaken in course of time. When this state of affairs takes place it behooves those in charge to apply nourishment of some kind and if the green is built on the lines I have suggested there will be less chance of whatever top dressing is applied being washed away than there would be with one placed on the extreme top of a hill. As is well known, the soil on the top of a hill is of much poorer quality than that met with on the lower levels. The reason for this is that the continual wash from the rains has the tendency to deposit all the richer soil from the higher levels on the flat surface below, enriching the one at the expense of the other. Therefore I say, if a putting green has to be constructed on the summit of a hill it should be lowered somewhat for the reasons I have stated.

When I say lowered, I do not mean that the putting green should be constructed in a deep hollow hewn out of the crest of the hill. My idea is that the green should be built in a slight depression only on the lines I have stated in the foregoing. Drainage on a green situated on a hilltop is of very little account, in fact it should take care of itself, as the most important point in the circumstances is to retain all the moisture possible. The depth of soil on a green so situated is a most important matter and calls for the closest attention. On low-lying ground a much lesser depth can

## CARE OF THE GREEN

be done with but a depth of at least ten inches should be applied to a green on a higher level. The soil will help to retain the moisture for a longer period if put on at this thickness and there will be less chance of burning up taking place. Less artificial watering will also be required during the hot summer season. If seeding down has to be resorted to this depth of soil applies more so, and in my opinion no less quantity of good soil should be spread over the surface. If turf is to be used, a lesser quantity might possibly be done with, but even in the case of turfing care should be taken to apply enough before placing the sod in position. When seeding has to be resorted to, some good old rotted stable manure should be forked into a depth of six inches or so, and an inch of humus spread over the whole area of the green afterwards. The humus should be kept as near the surface as possible to give a start to the young grass plants. The humus should be raked in and mixed with the topsoil by means of an iron rake. I have found from experience that if the roots of the grass plants come in touch with the stable manure too soon and before the plants get strong enough there is a tendency for them to die out as the manure is perhaps too strong for them in their tender condition. Another thing I have seen is that if they have been strong enough to stand when they have got their roots down to the manure the plants have a chance to become coarse, and resemble more like what is required to make hay than the nice, fine carpet that

## CARE OF THE GREEN

is desired to form a true and even putting surface. Now humus does not do this, but on the contrary it gives to the young plants just the proper stimulant to strengthen them in the right way. It does not rush the young plants as the stable manure would do, but carries them on during their baby state so that when their roots do get down to the manure they are strong enough to withstand its strong influence.

The same, to certain extent, applies to the treatment for turfing, but the grass being turf and therefore older plants, the manure may be kept nearer the surface and a less application of humus is required. I strongly advocate this form of treatment for greens in exposed positions, such as those situated on hilltops.

So much for the greens placed in such positions as I have just mentioned, and I now come to the ones to be built on the side of a hill. There are two ways to set to work to build a green which is placed thus. First, there is the plan of cutting into the hillside and building up the lower part from the earth excavated therefrom. This I think is the most common one and is seen to-day on many courses. I do not advocate this style at all and in my opinion it should be avoided as far as possible. A green built in this way must of necessity look artificial, and as I have said in my former article the great idea should be to get away from this as far as possible and try and make everything fit in to look as natural as it is possible to get it. Where the location of the proposed green is on a slope

## CARE OF THE GREEN

that is perhaps very steep it may seem impossible to do otherwise than excavate into the hillside. I admit it is by far the cheapest and easiest way to build the green, but would it not be better in the end to build it another way and one that would not look so unsightly?

We will suppose the green is being built by excavating the hillside. The first thing to look to is drainage. On a green built up in this way drainage is a very serious question, as I have in my time seen greens constructed thus with what would seem to anyone a perfect system of drains, turn out to be perfect failures on account of being always wet. A green built thus must form a pocket in the hillside. The wash from the higher levels must find its way down towards it. The slope is aggravated to a great extent by the one that has been made to make the fill for the lower part of the green. This means that a greater drawing power has been made and the water must of necessity run with greater force towards the green. At the bottom of the slope a drain may have been put in to catch this flow of water, but in nine cases this style is a dismal failure, as the water passes over the top of the drain and gets on the putting green where it collects. This wash may do no harm to the part of the green that has been made up as it may find its way in time to the drains that have been put in. However, the higher part, the part next the bank is wet and a hole may not be placed there except in very dry weather, therefore this portion of the green is of very little use.

## CARE OF THE GREEN

Another way of dealing with this wash is to put in a grass hollow all around the base of the bank with a drain running in the bottom. This is a much easier way but far from being satisfactory. Another plan I have seen tried was to run a series of hollows across the hillside on the side of the green so as to divert the water around either end of the green. This I have seen done in addition to the one lower down. This scheme may to a great measure help to keep the green dry. With all this, however, a green built in this way has the tendency to become damp, especially on the side next the slope. In my next article I will explain the method I myself have found to work best in keeping the surface of a putting green built on the side of a hill perfectly dry and in first-class playing condition.

## Hillside Green

In my last article I described the common way of building a green on a hillside, viz., cutting into the hill and building the green from the soil excavated therefrom. I also pointed out that a green built in this manner was very far from satisfactory owing to the drainage question. In this I will give my own experiences in constructing a green situated on a slope or hillside. As I have previously pointed out, drainage is essential and is, or should be, the first problem to figure out if a dry surface is to be obtained. This, of course, holds good on any green no matter where situated. I am dealing, however, with the green to be built on a slope to begin with. A green built by cutting into the hill must of necessity look artificial and as I have previously pointed out the great thing in golf course construction is to keep away from this as far as possible and carry out the work in a way so as it fits in with the surrounding ground and when completed it has a natural look with no hard lines to it.

Well, my plan in constructing a green under such circumstances is to build onto the hill, making the contours of the green fit in with the existing slopes as much as possible. I have to point out, however, that a green constructed on those lines will be much more expensive to build but the extra expense, in my opinion, is money well spent as the results obtained are

## CARE OF THE GREEN

much greater and better than would be on a green constructed on the other plan. The green itself would look better, as the lines would be more natural.

The drainage would practically look after itself as the flow of water would follow the old course of the hillside and run under the newly constructed part, or in other words, the soil placed to build the green. A good plan, however, is to build up a portion of the foundation of the green with stones, gravel or any other material that would give drainage. A green built in this way would have no deep-cut bank in the hillside to draw the water and the top part of the green would be just as dry as the lower section. Water commonly finds its way out from the shoulder of the hill, so that my contention is that by constructing a green on the lines I have pointed out, this water would give no trouble whatever. There must, however, be a certain amount of surface water flowing from the upper slopes, but this could be very easily taken care of by constructing a slight grass hollow deep enough to divert it around the green. I have built greens in this fashion and with success and never had any trouble with water. Another thing, if a system of bunkering the green has to be carried out these can be easily placed in the built-up bank of the green, and by placing them there, there will be no necessity of worrying about water laying in them, as the drainage would be underneath on the old slope. I do not mean to say that this idea can be carried out under all conditions

## CARE OF THE GREEN

as circumstances may occur which necessitate some excavating; but if possible, I think it would be wise if the green could be constructed on the lines mentioned, as I am satisfied it will give every satisfaction.

I have, however, seen greens constructed on the above lines that turned out dismal failures simply because when the construction was in progress and when the surface part was being placed on before the topsoil, which was to form the seed bed, the ground had been so firmly set by wagons, etc., that a bed of cement-like nature had been formed, with the result that all surface drainage from the green itself had been closed and sourness took place, with the inevitable result that the finer grasses all died out. So much for the construction of a green on a hillside, and which I think I have made quite plain, but let it be remembered they are my own ideas; someone may have some other and better. Now, no matter where the green is situated the first thing those in charge of the construction work should do should be to see to proper drainage. This is the first and most important part. We will now consider the green built and ready for the finishing part of the work, topsoiling.

Ideas differ as to the quantity of topsoil required to grow good grass. Some may put on a depth of twelve inches, others may deem more is required. I have in my long experience tried it every way. The depth in my opinion, must be guided to a very great extent by the quality of the topsoil, the situation of green also



## CARE OF THE GREEN

has to be considered. Let me step aside and give an example.

On the Lido Golf Links, at Long Beach, where the whole place was pumped up and the fill composed entirely of sand, a plating of meadow sod was first placed in position as a foundation; on this, topsoil was put on to a depth of two and one-half inches. This may appear to be going to the lowest extreme and that to get grass to grow on such a shallow depth of soil was out of the question. I have, however, at the present time as good golfing turf on greens and fairways as one would wish to see, and this, as I have said, on only two and a half inches of soil. In my opinion this quantity is just cutting things too fine and I personally advocate a much greater quantity.

I do not, however, advocate a too deep surface of topsoil but just a medium one. To put it in a general way, six inches is, in my opinion, a sufficient depth to grow good turf suitable to withstand the wear and tear of a golf course. If the greenkeeper gets the roots down that depth he has nothing to fear about the grass not being strong enough and also healthy. The topsoil must, however, be of good quality; if it should be poor some means must be taken to enrich it so that it may nurture the young grass plants and give them root growth. I am not a great believer in artificial manures for this purpose. I find the natural ones the best.

In preparing a seed bed one cannot go wrong in

## CARE OF THE GREEN

forking in a good quantity of humus and mixing this thoroughly with the topsoil. The humus is a fine stimulant and acts slowly and is also lasting. It does not rush the young plants but carries them along with just sufficient strength to make them hardy. We will presume the humus has been forked in with the soil. The next operation to be carried out is to tramp, not roll, the surface. By tramping, all inequalities of the surface are disclosed and filled up so that a perfectly true, even and uniform bed is ready for the seed. When the whole surface has been firmly trod by the foot, all inequalities made good it should then be raked very evenly, all stones, rubbish, etc., removed. A roller should then be used once before sowing the grass seed.

It is a great mistake to sow grass seeds on loose ground, as it is very possible a great many may be buried too deep with the inevitable result that a patchy catch will be the result. If seed is buried a quarter of an inch it is sufficient. Sow at the rate of fourteen or sixteen bushels to the acre. When the seed has been evenly sown all over it should then be raked in first one way and then across in the opposite direction. By this operation no drills will be noticeable when the plants come through.

After this operation is completed roll once more with a light iron roller and the work of seeding is completed.

There are two seasons when the work can be carried

## CARE OF THE GREEN

out—seeding—namely spring and autumn. Autumn seeding I consider the best time. It is getting cooler and rains can be looked for at this part of the year. Dews are also prevalent and even this helps along the young plants to some extent. A good time to start in is about the second week in August. I would not advise beginning earlier. This would allow about ten weeks of good growing weather and by that time the young plants should be sufficiently strong to stand the rough and cold weather of the winter months.

Another reason I prefer autumn sowing is that spring is generally very short and sometimes very cold, also the ground has not recovered from the frosts of the winter and therefore is very cold. Spring being so short, the young plants have not had sufficient time to get established before the hot, dry summer is on. For these reasons I prefer sowing in autumn. When the grass grows to about an inch or so long it is time then to start work on it. It should be given a roll with a light iron roller once and once only. The roller will put the surface of the green in hard enough condition for the mower which is to follow. In former years it was the custom to allow the grass to grow to such a length that it had to be cut with the scythe first time.

The idea seemed to be that the young grass should be allowed to grow to at least six inches before mowing was resorted to. In my opinion this was entirely wrong, as if allowed to grow to this length before

## CARE OF THE GREEN

mowing, instead of a close, thick bottom of hardy grass, a loose, thin, weakly surface took its place. I suggest that the grass be mown when about an inch or so long with a good sharp putting green mower—a roller mower preferred. An old and dull mower is apt to pull out a great many of the young plants; therefore use a new sharp one to make the first mowing. As far as possible, that is to say, if the grass has not been allowed to get too long, the cut grass should be allowed to lie on the surface, and not collected, as I maintain it is good mulch for the young plants and should be allowed the chance to work in as a fertilizer.

After the first cut with the mower, which should be set fairly high to start with, the grass should be mown as often as required and at every succeeding mowing the mower should be set a little lower, as by doing so the young plants are gradually being treated to a hardening process and root growth is encouraged, with the result that a close, thick, hard, wear-resisting carpet of turf is gradually being built up. If the grass is allowed to grow long to begin with, great trouble will afterwards be experienced in building up a smooth, firm surface suitable for playing over and also more expense will be incurred in making this desired result.

One thing that has to be carefully watched at this period, and it is one thing that I have seen overdone many a time, is rolling. The old idea seemed to be that if a firm, true surface was to be desired this could only be done and obtained by the use of the roller. The

## CARE OF THE GREEN

roller was supposed to give the desired results, and especially if used when the surface was wet. I do not doubt that a smooth level surface was obtained by those methods, but at the expense of the grass itself. Unless the surface is kept open it is an absolute impossibility to have healthy turf. It may be possible to make it look all right rolling for a year or so, but assuredly if these methods are continued the person in charge will eventually find himself in a hole by seeing his fine grass plants gradually die out and weeds quickly appear in place.

I wish to specially point out this question of over-rolling as I know it has been in the past the rock on which many a greenkeeper has become wrecked. A firm surface must be got in some way, otherwise putting would be a hopeless part of the game.

## Rolling the Green

In my last article I finished up on the question of rolling and in which I pointed out the impossibility of maintaining a healthy carpet of turf if this method of procuring a level and true surface was continued. Use a mower fitted with a roller, and keep the grass low enough for a putting surface, which means mowing as often as it requires; in fact, in my opinion, this operation cannot be overdone. Mow often and close is my motto and always has been. Now by using a roller mower the surface gets all the rolling required. If the greenkeeper thinks that the green might be benefited by a little more rolling I strongly advise the use of wooden rollers. A roller of this type should be from four to five feet wide, made in sections of one foot. Another point in using the wooden roller is that it picks up any worm casts or other matter lying loose on the surface.

Every green committee should see to it that these rollers are part of the green outfit. I do not mean that it may be possible to absolutely do without iron rollers, as perhaps after a hard winter the surface may be thrown up by the action of frost, and to get it back to a level condition the wooden roller would be of little or no use, being too light. The iron roller should then be used, but only so far as putting the loose surface in condition again. To perform this the greenkeeper

## CARE OF THE GREEN

should choose a day when the green has dried out so that he would run no risk of "packing." However, if care has been taken in the fall to give the greens a good heavy topdress of sharp sand "packing" will be reduced to a minimum.

I am perhaps a bit old fashioned in some people's opinion, but I hold the opinion and I am speaking from experience that too little sand is used on the greens nowadays. I am a strong believer in sand as a dressing for turf, especially so if the soil is in any way of a heavy character, and to a lesser degree where it may be of light sandy nature. I hold that a far better, truer and even surface and a healthier carpet of turf can be maintained by the careful use of sand than by all the rolling in the world. In the case of young grass this treatment has to be watched very carefully for if put on too thickly or too often a loose surface may be built up and in hot summer weather the young plants might suffer. I find a good plan is to mix the sand with some good loam of proportions of about three of sand to one of loam. This will do away with any risk of "packing" or the opposite. Apply very lightly and brush well in. This dressing can be applied at any time but the best seasons are spring and fall.

If water is laid on, as it is almost always the case on every golf course nowadays, this dressing could be easily applied in the driest season. I now come to another point and one I consider a very important one, and one that has to be seen to very carefully by the

## CARE OF THE GREEN

greenkeeper, namely watering of young turf. I shall deal with the older class of turf later. I have said that nearly all golf courses as a rule have a system of watering laid on, some to both fairways and putting greens. Now it does not hold that because an unlimited supply is at the greenkeeper's disposal that he should keep on sousing the greens, etc., with it and especially so in the case of young turf.

I have seen over and over again greens watered almost every day. Now I contend this is not natural. We do not look for rain every day, then why water every day? To me this sounds only common sense and if this system is kept up something is bound to happen sooner or later and those in charge will find themselves in a fix. It will be found that the grass will get weak and soft. It may, I admit, look green, but not a strong healthy green and one essential to withstand the hard wear and tear such as it is undoubtedly subjected to on a golf course. Another point in regard to this continual watering is that invariably the surface does not get a proper soaking at all but only a sprinkle, the result being that the young grass forms surface roots and does not go down. Weeds will also soon appear and take the place of the grass plants. What I suggest, and what I have found from experience to be the best way to apply water, if the greens require it, is to thoroughly soak the surface once a week. Soak it so that the water gets down and does not only wet the top. By this system the roots



## CARE OF THE GREEN

will go down and should the surface get dry the plants will have moisture below, where it should be, and they will go after it and at the same time become much stronger and healthier.

I have never yet seen good healthy grass die out for want of moisture. I have seen many times in the old days when no system of watering was installed, the grass got brown and looked burned up and dead, but immediately after the first rain a sudden transformation would take place and the grass recover its natural color. Therefore I say it behooves those in charge to be very careful in the application of water.

So much for this; and I now come to the question of feeding the turf. I am not and never was a very strong believer in the use of artificial manures. I do not mean I have not used them, as I have, and found some of them not so bad, but I am a firm believer in the natural manure. Let me put it as plainly as possible and in a few words. A green has gone back somewhat and requires some nourishment. No doubt some artificial manure, as I have said, if properly applied will pull it around again, but others will only give results that are extremely of short duration and when they have spent their force those in charge may find the green in worse condition than before.

Let me just give a little explanation of what I am driving at. A man may feel tired and worn out after some hard work, and to revive him he may take some stimulant in the shape, perhaps, of a glass of whiskey

## CARE OF THE GREEN

or other beverage, and he may feel the better of it, but does it continue long? Now if that man had, instead, taken a good meal of solid food the results would sure have been more lasting. The same remark applies to grass plants. They must have both air and good solid nourishment and as natural as possible, I contend. Put a dressing on of good, natural manure when the grass requires and the very best results will be obtained, and lasting ones at that.

Every greenkeeper ought to have a compost pile at his hand ready for any emergency; one never knows when something is to go wrong. The compost heap should have lain for at least a year and should be composed of the following parts: Start on the ground with a foot of good topsoil, on the top of this a foot of good old rotted stable manure. Then another foot of topsoil and so on. A little humus added to the topsoil is beneficial. If this has lain in a heap for a year and turned over, a splendid natural dressing will be at the greenkeeper's disposal. Put this through a screen before applying, to get rid of all small stones, etc., and it will also mix the whole up evenly. Apply very thin and evenly and rub well in. This should be applied on a fine dry day as it will go out of sight much more quickly. If properly applied no inconvenience should be given to the members playing on the green. By using this compost some body is being put into the ground. I find a dressing of "Humus" applied now and again also very beneficial.

## CARE OF THE GREEN

There is another dressing I find of great benefit to the grass and I use a lot of it at times, this is malt sprouts. I find this dressing, if applied in early spring or in late fall, very good in giving a quick growth without rushing the grass away too much or weakening the plants. I believe in an occasional top-dressing of lime also, as it helps to sweeten the ground. Care, however, has to be taken in its use, as it is inclined to help clover should there be any in the turf. When a green is sown down there is bound to be a certain amount of weeds make their appearance and these should be removed by hand. If they should be in any large quantities, after their removal the green should be given another light reseeding, then topdressed.

I do not believe in any of the poison cures for weeds, they certainly kill them, I admit, but I hold that what kills out the weeds must at some later time harm the grass. I may be wrong, but this is my opinion. The above gives some idea of what the greenkeeper finds himself up against, in fact, it is one continued fight from the start to finish. Tees should be treated in the same way as the greens, as the turf is just as important on them and the wear and tear is far greater. Now as time goes on, it will be found that where at first a few worm casts were noticeable they have multiplied very considerably and have become an absolute nuisance. As with a human being, so with turf, it must be kept clean.

Now where worms are allowed to burrow all over

## CARE OF THE GREEN

and cast their deposits on the surface it is an absolute impossibility to keep the grass clean, no matter how the greenkeeper tries. He may try to brush them off but a great amount is broken up into small particles and allowed to remain on the green. If he should, as he must, have to get the greens ready for early morning play, the sweeping process may turn out a failure, as being wet they cannot be swept off but are only plastered all over the surface of the turf, on which it is next to impossible to putt on. This state of affairs cannot be allowed to continue, as the grass will soon assuredly suffer, and in time die out and where there was once a fine, firm, clean, true carpet of grass all kinds of weeds have taken its place.

PETER LEES HAS ADOPTED

**V E R S U L F A**

Trade Mark Registered

---

---

**A Fertilizer and Worm  
Eradicator Combined**

**An unequaled preparation which fertilizes  
the Turf of the Golf Course and eradicates  
the worms by one application**

August 12th, 1918.  
United Liquid Sulphur Co.,

61 Lynbrook Avenue,  
Lynbrook, L. I., N. Y.

Dear Sirs:

After making a thorough test of your "Versulfa" in every possible way, I am thoroughly satisfied it has all the qualities of a "Worm Eradicator" and Fertilizer you claim for it.

It certainly exterminates the worms, and also works wonders with the grass.

I may mention I made trials with it also as a Fertilizer alone, on turf that had been pretty well burned up from the excessive heat spell, and after one application the grass rapidly took on its natural, green, healthy color again.

I certainly think you have a great future for "Versulfa" both as a Worm Eradicator and also as a turf Fertilizer and I strongly recommend all Golf Clubs to give it a trial.

One great point in its favor, in my opinion, is that it contains no poisonous matter, and can be used with perfect safety anywhere and at any time.

I am yours very truly,

PETER W. LEES.

**The last word in making such fine turf as re-  
quired for Putting Greens**

**UNITED LIQUID SULPHUR CO.**

**Sole Distributors**

**101-103 East 125th Street  
New York**

## Worms on the Green

In the preceding article I tried to point out the dangers of over-rolling, in this I mean to deal with the question of worms in the soil and the desirability of getting rid of them. It is an undoubted fact that worms multiply much more quickly in soil that is firm, or packed, than in soil that is of a loose character. To the observant greenkeeper this is very evident, and on courses of a heavy clayey soil he will soon find that they will have become an absolute nuisance on the putting greens, and measures will have to be taken to combat their burrowing operations, as otherwise if allowed to multiply and deposit their casts all over the surface, in a very short time he will find himself in trouble with his grass.

As I have said he may try to sweep the casts off but this at the best is in the end a hopeless battle and sooner or later the greenkeeper will awaken to the fact that the worms have beaten him. In the case of young turf, those circumstances will, of course, do harm much more quickly than in the case where old turf has been worked up to a putting surface, but in either case the greenkeeper will be faced with the problem of fighting his enemy, the worm, sooner or later.

I make bold to say that I, myself, I think, was the first greenkeeper to tackle this great problem. Away back in 1895 I held the position as greenkeeper to the

## CARE OF THE GREEN

Edinburgh Burgess Golfing Society at Barnton near Edinburgh, Scotland. I had worked the putting greens up from the old turf, and good greens I had too, but as time went on the worms seemed to multiply to an extraordinary extent until, especially in spring and fall, it became an utter impossibility to keep the surface in anything like decent putting condition. To begin with I tried sharp sea sand, this helped a little, but only for a short time, as very soon things got as bad as ever and perhaps a degree worse. I was almost at my wits' end, but was by no means beat in the battle, so looked about for another weapon to circumvent my enemy. At last I hit on something that was really of some good. I got on the right side of one of the members, who was a wholesale druggist and I persuaded him to give me a quantity of corrosive sublimate (a very deadly poison). After several experiments in out of the way corners I at last hit on the proper quantities to use per gallon of water. I, however, went about the work of exterminating the pests very cautiously and that fall I treated three greens.

I certainly removed the worms and the greens played splendidly all winter, being clean and firm with a splendid putting surface. The poison did not seem to have injured the grass in the slightest, but when spring came I surely got a rude awakening. The greens I had treated did not answer to the spring growth but went gradually back and I found myself in a worse dilemma than before. After a great struggle I eventu-

## CARE OF THE GREEN

ally pulled them round again but I then and there made up my mind I had finished for all time with corrosive sublimate as a worm eradicator on a wholesale basis.

Afterwards I made tests with it to find out exactly how it acted on the grass plants. I made a very careful study of its action and found that although it did not at first appear to injure the turf it eventually did so, and the character of the soil was a great factor in determining how long or short a time would elapse before the turf would begin to show signs of deterioration. On heavy soil I found its effects to act more quickly than on soil of a lighter character, but in both cases the results eventually were one and the same. I came to the conclusion, that I was off the right track and looked about for some other solution of the problem.

I had read that worms were very sensitive to their skins so I thought that if I could work in something from the surface that would, shall I say scratch them a bit, they might be inclined to curtail their operations to below ground. This also after a trial turned out a failure. I then tried lime water with no better results and was almost in despair. I had by then shifted my greenkeeping operations to the Mid Surrey Golf Club near London, where I very soon found myself face to face with my old enemy.

I had heard of some powder that seemed to fit in in my fight with my enemy but had not been experi-



## CARE OF THE GREEN

mented upon just long enough to ascertain how it should be used. I obtained a small quantity of this powder and after many experiments found out just exactly how to use it to the best advantage. Again, however, I went warily so as to make no mistakes. After allowing a reasonable length of time to expire so as to ascertain what effect the powder would have on the turf I found to begin with, that I had effectually got rid of the worms and at the same time the powder contained the properties of an excellent fertilizer.

As is well known it is possible to play golf all the year round on the courses situated around London, the climate admits of this. At that time, however, it was the custom to lay up the summer putting greens and play temporary, or winter greens, when the bad weather set in. This had been the annual custom at Mid Surrey. Well, after I had thoroughly convinced myself that I was at last on the right course, I set about to exterminate the common enemy on every putting green on both courses (the ladies have an eighteen-hole course separate from the men's). I well remember one of the best known golfers, one who has held both amateur and professional championships coming up to me when I was busy on the work of general extermination and offering to make a bet that in six months' time I would not have a putting green on the two courses worth playing on. It is to his credit that at a later period he was amongst the first to congratulate me on the successful war I had carried

## CARE OF THE GREEN

into the enemy's country and later when he himself had been put in the position of secretary of another well-known course, I had the honor to be called in by him to treat the putting greens there in the same way.

Therefore, I may perhaps be pardoned when I claim that I may have the honor of being perhaps the first greenkeeper to successfully tackle the problem of the worm. Apart from the party I have just mentioned, I was attacked in the press at the time as well. As everyone knows Darwin was a great authority on the worm. I have read his writings on the subject with very great interest. In olden times it was maintained, and perhaps in certain quarters the opinion still holds good that the worm is most assuredly nature's drainer. This is what I was told when I went after his extermination. I had it pointed out to me that if I killed him out I was stopping up all natural drainage and that in a very short time the soil would become sour and waterlogged.

I had made my experiments, however, and my answer to those critics was absolutely the opposite. In place of a black smudgy, sticky surface of turf I presented to the members a fine, clean, dry and firm carpet on which it was possible to play all the year round without the slightest chance of doing harm to the grass plants. At Mid Surrey the members were so pleased with the results that I eventually killed the worms out of several of the fairways with the very best results. Therefore, I say that where worms be-

## CARE OF THE GREEN

come a nuisance on putting greens, get rid of them, it is absolutely impossible to keep a true putting surface with them in the ground. Let me not be understood to say that when the worms have once been got rid of that the greenkeeper can afford to sit back and take things easy. Far from it. As I have already said drainage is most essential and has to be carefully looked after.

Worms give no drainage in my opinion because if this were the case when their burrows got filled up with water they would very soon get drowned out. Try a bit of soil where worms are numerous and observe just how dry their burrows are all lined with leaves, etc., which they have gathered from the surface. Place a worm in water and see how long he will survive. We will take it for granted that the greenkeeper has succeeded in exterminating the worms from his greens. He may have been in the habit of giving them a yearly top dressing of sharp sand and he may be inclined to think that with the extermination of the worms the surface has become so fine that this dressing should be discontinued, if so he is mistaken as he should see to it that the surface is kept open so that air may reach the roots of the grass and drainage obtained at the same time.

The greenkeeper should, however, see that this dressing is not overdone. In the foregoing I have tried to point out the advantages to be obtained from the eradication of the worm and what I have written

## CARE OF THE GREEN

I have gained from practical experience and in conclusion I emphatically say, get rid of the pests once and for all if the proper sort of putting surface is desired, as with them in the ground this is an impossibility.

Let me just add that on one green, the sixteenth, at Mid Surrey, I gathered up three and one half wheelbarrow loads. The green measured thirty-five yards square. Tees and fairways should be treated in the same way, but where it is not possible perhaps from financial reasons the approaches should certainly be done as it is out of the question to play an accurate approach shot where the ground is infested with worms as in dry weather, the ball may be diverted in any direction, should it pitch on one of the small hillocks, and in wet weather it might stick in the mud deposited on the surface. In my opinion, the approach to a green is just as important a part of the greenkeeper's duties to see that it is kept in condition as the putting green itself.

## Care of the Green

In my preceding article I dwelt on the desirability of removing the worms from the soil and at the same time issued a note of warning to the greenkeeper against taking things easy now that he has got rid of his enemy. By their removal he has presented to his members a beautiful carpet of fine, clean, true, surface of turf on which it was a pleasure to putt. I have seen mistakes made time and again with quick and disastrous results, and this applies more so to young grass, than to older and stronger turf. The putting greens must of necessity be mown and also lightly rolled from time to time to keep the playing surface in good shape. Now with this continual work being carried out, without question it means that the surface will eventually become "caked" or bound up.

On soils of a heavy or clayey nature this state of affairs, will of course, take place much more rapidly. To combat this the greenkeeper must adopt some plan to remedy it, otherwise he will find that his turf will assuredly begin to go back and he may find himself in a worse position than before. Therefore to remedy this evil I find that a succession of light applications of sharp sand, applied from time to time will effect this purpose; care, however, must be exercised as to the number and amount put on.

I find that the best time to apply this dressing is in

## CARE OF THE GREEN

the fall just before the growth stops. Apply a quantity, spread very lightly over the surface, choosing a fine dry sunny day. When spread the sand will soon become dry and powdery and it therefore will rub in much more quickly and go out of sight. If it is applied in this way no inconvenience will be given the members playing, and if one-half of the green is treated at a time no trouble will be given at all. Rub the sand well in with *the back* of an iron rake and afterwards brush all over. There is no need to rest the green when carrying out this work. Another reason I have for recommending the fall season for carrying out this work is, the frosts of the coming winter will of course open up the ground, therefore allowing the sand to percolate further down, therefore doing more good, as the lower it gets the better. These operations can, of course, be carried out in springtime as well, but I find the best results are got from the fall application. I have seen this also done during the summer, but I personally do not advocate this time of the year. When applying compost I find it always a good plan to mix a quantity of sand along with it. There is no nourishment in sand and it should only be used for building up and opening up the soil so that the plants get air to their roots. Another dressing beneficial for the same purpose is finely ground charcoal applied in the same way. I now come to another dressing and one I approach with great diffidence, as opinions greatly differ as to its use on putting greens, etc. It is asserted, per-

## CARE OF THE GREEN

haps it may be correctly, that it encourages clover, but from my own personal observations I cannot say that it does, but of this I am certain, it does not in my own opinion breed it, that is to say, I have not yet seen clover appear after its application where there was no sign of it before using it.

No one has any use for clover in a putting green, especially where it appears in patches, as it makes putting very uncertain, as it is next to impossible to gauge the strength of the green and on newly seeded greens, on its first appearance, it should be removed at once. On the fairways it does not amount to so much and does no real harm perhaps. There is very little chance of the seed blowing into the putting greens, as owing to the continual mowing it never gets a chance to run to seed. After all is said and done I cannot truthfully say I am a friend of clover anywhere on a golf course, fairways or greens, and I am at war all the time with it. I have no use for it at all. Well, the dressing I am about to mention is lime. I am and always have been a great and firm believer in its use on turf. I honestly believe that if more lime were used the greenkeeper's duties would be made more easy and pleasant for him and his worries would be reduced very considerably.

Soils will at some time or another have a tendency to go sour especially on inland courses. In England I have seen on one of the best seaside links the soil, although of a sandy nature, go sour. The continual

## CARE OF THE GREEN

work expended on it being the cause of this state of affairs. By the use of a liberal application of lime a transformation was very soon effected and the course pulled round to its former condition. As I have said, this state of affairs will take place much more quickly on soil of a heavy character and I would earnestly recommend all greenkeepers to be much more liberal in the use of lime than they have been in the past. I feel sure it will pay in the end and help them out of one of their difficulties. I have had some experience and I know it has always stood by me where this state of affairs had appeared. I would strongly advise all greenkeepers not to wait for this sourness to make its appearance, but to take time by the forelock and keep the soil always sweet and lime will, I am sure, help them out in this. In passing let me just mention the methods I employ when clover makes its appearance in a green.

Clover, I class as a weed, and it should be treated as one. In the case of newly sown down putting greens it is possible it may have been in the soil on which the green was built, as with the machinery the seedsmen have on hand nowadays it is almost impossible for the seeds to be imported with the mixtures of the different grasses with which the green had been sown down. However, clover has appeared somehow, first in small patches, perhaps in single plants. They should be removed at once by hand and this can easily be accomplished if proper care is taken. In the other case,



## CARE OF THE GREEN

where in old turf it may abound in large quantities and hand weeding is an impossibility, the method I find to work best is this: As all greenkeepers know, clover dies down in the fall. Now just before all growth is gone, towards the end of September say, I take a sharp-toothed iron rake and start in and rake the clover up, doing this raking in every direction so that I get a hold of the runners. I then take a good sharp mower with a very thin plate, a half worn one for preference, set the mower as low as I possibly can and cut all the runners I can get a hold of. I repeat this as often as I think is necessary so as to get as many of the runners as possible. In this operation I may, perhaps, rake out some of the grass plants, but I expect this and have made arrangements to replace them. When I have finished I then rake the ground well up again, put in a little seed, top dress lightly and I am through. I do not mean to say I have killed out the enemy entirely, not by any means, but I have choked him so that what grass plants were left and which will still show vitality for some time to come until the very cold weather sets in and the seed I have put in has germinated and established itself, and both have taken the place of the clover, I shall then in the spring have grass instead of clover, which is still there but cannot assert itself owing to the thick turf, through which it cannot push its way.

In course of time if this treatment is carried out in a systematic way the greenkeeper will have no more

## CARE OF THE GREEN

trouble from clover as he will undoubtedly kill it out eventually. So much for clover, but there is one more weed which it is very undesirable to have in the putting green (all weeds are), but this is one that I have seen sown along with grasses on golf courses and is one again I have no use for, namely, yarrow.

I put him in the same category as clover and make war on him at his first appearance in a putting green. I would suggest the self same treatment of him as I have given for clover. On a newly sown putting green especially if those two are allowed rope in a very short time they will kill out all the finer grasses and no amount of topdressing will bring the green back to its former excellent condition. Another good plan to follow when they make their appearance in a putting green is to give instruction to the workmen when mowing the green to put as much weight as possible on the mower when they come across those patches so that the knives get as low as possible, as the closer they are cut down the more chance the grass has to come through and keep them under.

I will now assume that the putting green is perfectly free from weeds and that the greenkeeper has seen to the dressing of sand and lime. He has, however, to keep feeding his grass the more so if he is continually mowing as he has to.

In a former article I pointed out the urgent necessity of seeing to this very important part of the greenkeeper's work and one which he must not neglect on

## CARE OF THE GREEN

any account. In England it is possible to play the courses all the year round and where the worms have been removed the summer putting greens are never rested unless in the case of very bad weather. Owing to the very severe weather we have in this country in winter this is practically impossible, at least up in these latitudes, and the golf courses are for the most part closed until spring opens up. However, as long as it is possible some of the members generally make their way to the links if it is possible to play at all, and in spring they take the very first opportunity to make their acquaintance again. Owing to conditions it cannot truthfully be said it is golf they are playing but are merely out for the exercise. More harm can be done in one day (especially to young turf) than months of the greenkeeper's art and skill can make good again. However, the greenkeeper will have made provisions for this, and away back in the fall he has prepared temporary greens and trees to meet this contingency, and his summer greens and tees are being carefully rested until the weather opens up and he can let his members play on them once more without doing any damage whatsoever. In my next article I will endeavor to give a few hints as to the treatment of greens which have been laid up during the winter months.

## Spring Work on the Golf Course

After the long and severe winter we have passed through and with spring upon us the greenkeeper has now to bestir himself to get his course and putting greens in shape for the coming golfing season which will soon open. The golfer who has not had the time to go south will without doubt take the chance at the first possible moment to pay a visit to his home links, and very naturally be anxious to put in a round after his long winter's rest. As I said in my previous article he may possibly have put in his appearance during a break in the arctic weather and played around just to open up his shoulders and have some exercise, but he did not look for or expect anything in the way of good golfing conditions.

He was merely out for the fun of the thing, that was all, and took everything he found had been done for him in a philosophical and good natured manner.

He knew the greenkeeper had done his best for him under the trying circumstances, and for once in a way he had no reason to kick or complain at the efforts of this very much abused, at times, important person. With the first appearance of good weather he will most naturally make his way to his favorite course and will expect to find it in good playing condition. Personally I think the first few weeks in spring is the hardest part of the greenkeeper's work. He has to make good

## CARE OF THE GREEN

all the damage caused by the ravages of the winter weather and this is no light job should there have been severe frosts.

If, as it happens, especially on courses situated on high lands, inland and away from the sea, a covering of snow has fallen before the severe frosts set in this will help out to a very large extent to protect the ground surface. The snow will help to keep the frost from getting at the grass plants and also at the same time give them a certain amount of warmth. If, however, the frost comes while the ground is clear of snow, and with any severity, a very different state of affairs will happen, and the greenkeeper will anxiously await the results. Snow does good to the course in more ways than one, it keeps the ground warm to a certain extent and should it lay to any great depth, it keeps the player away, and of course gives the course a much needed rest. After the severe frost of the winter months it will be found that when the frost has left the ground the surface will be all heaved up into small hills and hollows so much so that a putting green which in the beginning of the winter had a surface as smooth and even as a billiard table, will resemble more of an Alpinization scheme, on a small scale, which it had been deemed necessary to carry out for the proper development of the course in general.

This last winter has been an exceptionally severe one with penetrating frosts. I am afraid that a very great deal of winter kill will have taken place on many

## CARE OF THE GREEN

courses. I have seen it already on some courses I have visited lately. Where winter kill has taken place it behooves the greenkeeper to put this straight right away. The bent grasses are more sensitive to this evil than the fescues and where there is any great amount of fescue in the turf affected I would suggest the following course of treatment:

First. I would suggest that the area affected be spiked very thoroughly by hand. The greenkeeper can easily make one of those most necessary tools himself by using a good stout piece of board a foot square and filled with stout nails or spikes. This tool used in the same way as a turf tamper or beater will fill the affected area with numerous small holes and at the same time will loosen up the surface. When thoroughly spiked apply a mixture of grass seed suitable to the other part of the putting green. Brush the seed lightly so that it may find its way into the small holes made by spiking, then cover over with a top dressing of good rich compost which should be well rubbed in. Let me say that I suggest this treatment only where there is any sign of life left at all in the turf, but where the turf has entirely died out more drastic measures may have to be taken, and the greenkeeper may have to entirely returf the affected part from his nursery.

Let me here just point out one more point in regard to winter kill and it is this. Winter kill takes place for the most part on the lowest parts of the green, that

## CARE OF THE GREEN

is to say where water lies and freezes hard. A putting green properly constructed can have all the necessary hollows to make it interesting, but so built that no water will gather in such quantity that it will freeze to any great thickness and remain for any great length of time.

So much for this winter kill. I could say more but will again take this up at a later time as I hold some strong ideas of my own about it and also as to its cause and how it takes place. As I have before said, the frost will have opened up the surface of the green, but not where winter kill has taken place so much, hence my idea of spiking up this part. It will be seen that the frost having gone out of the ground, it has left behind numerous small holes or receptacles for seed.

Now I would suggest that where the putting green is thin and reseeding is imperative to secure a thick carpet of turf no better chance could come the green-keeper's way than to take advantage of what nature has placed in his way, namely to first sow his seed (before rolling). The seed will find its way into all the small receptacles if, after sowing, he brushes it in lightly, afterwards applying a top dressing of good compost, well rubbed in, and afterwards given a light roll. I say roll, as care should be taken to keep the surface as loose as possible, but of course smooth so that the newly-sown grass seeds may germinate freely and find their way through.

By carrying out this procedure it will be found to

## CARE OF THE GREEN

work well and a smooth and even surface of turf will assuredly be procured.

In the case of the old turf, however, more drastic and firm measures should be applied. For old turf that has been thrown up by the frost into an uneven surface I suggest the following treatment. As soon as the frost is *all* out of the ground and the soil has dried out a bit, a thorough good roll with a heavy iron roller will probably put the surface back to its original smoothness, but I would particularly put out a word of warning to the greenkeeper to take every care not to overdo this part of the work as by overrolling he may just possibly go to the other extreme, and one worse in my opinion than any other, namely, forming the surface into a cement-like condition through which it would be utterly impossible for the young spring shoots to make their way.

I find that where the surface has been very badly heaved up into hills and hollows, a good plan is to fork the hollows up and then roll. By doing this less rolling is necessary and the surface is kept more loose, but true however. So much for rolling, etc. Of course after the rigors of the winter it has passed through, and to push it along as fast as possible, so that it may be in condition for play, the greenkeeper has to resort to some sort of stimulant, or fertilizer, to help it along. I myself find an excellent stimulant, and one that fits in just here.

Malt sprouts. A top dressing of malt sprouts will



## CARE OF THE GREEN

help on the grass most excellently and at the same time keep it hardy and able to withstand wear and tear of hard play. So much for the putting greens, the tees should be treated in a similar manner.

On the fairways the frost will most assuredly have worked the surface up into a much more loose condition than the putting greens, as the turf will not be so thick, or close, and therefore it will have got a much better hold of the ground. I would suggest a similar treatment of the fairways practically as I gave for the putting greens, namely, take full advantage of the fine open surface nature has provided as a seed bed, sow your seed, top dress if necessary, and roll very lightly. I believe it to have been the case, although personally I have never seen it carried out, but have seen the after effects, a steam roller has been called into use for the purpose of rolling the fairways in spring. I agree that a fine smooth surface must assuredly be got by its use, but at what a cost! What was in former years beautiful turf, clean, though perhaps maybe a trifle slow, transformed into a little less than a mud heap, where all sorts of coarse grasses and weeds had taken the place of where once the finer grasses held supreme sway. Let me once again issue a word of warning against overrolling and more so in spring time when the young plants are most tender and so easily killed.

If rolling has to be done, as I admit it has to be, use a light roller, and only put the surface back to its origi-

## CARE OF THE GREEN

nal level, but on no account try to push it beyond that as disaster will assuredly follow if this system is pursued and the club, or the greenkeeper responsible for so doing will soon find themselves in a hole.

# Dunlop-the ball 'for accuracy'-experts say

**M**ANY a time, that putt that rims the cup or misses by an inch from "holing out," is due to lopsided balance—an off-centre core, inside the ball. Consistent golf can only be played with a consistent ball—a ball that is always perfect in balance, always weight accurate, and always true in shape to a hair's breadth. The **DUNLOP VAC** is such a ball.

We know from comparative driving machine tests that the **DUNLOP VAC** is the longest driving ball made.

## **DUNLOP VAC BALLS**

are for sale by golf professionals.

\$1 each

\$12 a dozen

"29" small size, medium wt.

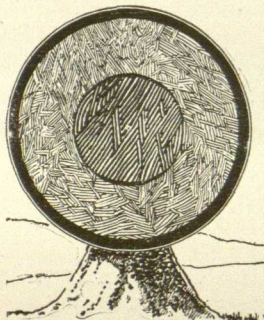
"31" small size, heavy wt.

## **DUNLOP RUBBER CO., Ltd.,** Birmingham, Eng.

Founders of the Pneumatic Tyre Industry

NEW YORK: T. W. Niblett, Suite 2014-X, 305 Fifth Ave.

TORONTO: Dunlop Tire & Rubber Goods Co., Ltd.



It's what  
you  
don't see  
*that counts!*

## Early Work on the Golf Course

In my preceding article I finished up with the warning against overrolling. No matter how much care and attention the greenkeeper may have bestowed on his putting greens in the preceding year to work them up to the very highest state of perfection before winter set in, if care is not exercised in the judicious use of the roller during the first few weeks in early spring, he may find that all his labor spent on the greens in the previous year may all have been wasted and his greens may very soon be in a worse condition than before. At no time of the year is it so important to keep the surface open as springtime. Spring growth is a tender growth and should be nursed accordingly. At other times of the year the greenkeeper might be able to afford to take chances, but at this season he cannot, and must not attempt to do so. If the grass plants are not properly attended to at this time the greenkeeper will most assuredly be up against it for the rest of the season. After the long and severe winter it is of course essential to take advantage of the first signs of spring weather to help on in some way and encourage the quick growth of the grass. To get a quick growth it is invariably the custom to apply some top-dressing, artificial manure, perhaps, to get a quick growth. This may be all very well and the results obtained from such methods appear very satisfactory.

## CARE OF THE GREEN

Springtime in this country is a short season, some years one may say we practically get none at all. However, there is a certain amount of growth and at the first opportunity the greenkeeper takes advantages of it. After spring comes summer, and very often dry, warm weather sets in right away. In England one can depend on spring weather, but in this country no chances can be taken. As I have said, the greenkeeper takes the opportunity when the first signs of spring weather appears to get busy topdressing so as to get the first and earliest growth.

To help on the growth of his grass he proceeds to topdress with some kind of fertilizer. This may be all very well and his labor may help on a quicker growth. With a short spring season, perhaps none at all, we may find ourselves all at once in dry, warm, summer weather,

Now the dressing the greenkeeper has so recently applied may have just started to perform its work and the tender grass plants will have benefitted a little from its application. However, dry, warm weather has set in and all at once owing to those conditions growth becomes checked to a certain extent. At this early period the nights are always cold, with perhaps a touch of frost in the air. Watering under such conditions would of course do more harm than good. The dressing applied to push on the growth would, under such conditions, fail to perform or carry out the full

## CARE OF THE GREEN

advantages the greenkeeper hoped to obtain from its application.

It may be asked that if topdressing cannot be applied in spring to get the very best results (as to the majority of people, this may appear to be the most feasible time to carry out this work), what season is the most suitable? In my opinion the early fall season is the one most suitable for the application of topdressing. To some it may seem strange to say this, but my own personal experience bears this out. I have tried it out every way but I confess to being partial to fall dressing. If applied in early fall there is more heat in the ground with the result that the topdressing acts more quickly. The grass plants are much more hardy than they would be in spring. With the continual mowing that has been necessary during the summer to keep the grass at the desired length for play, the plants must require some sort of food to strengthen them before the cold frosts of winter sets in. Therefore I favor topdressing with good rich dressing in fall, as against spring.

I think if the greenkeeper tried out this plan he would have less worry when spring came. In any case he would not require to topdress in the same drastic manner. Spring growth is of course slow, and a dressing applied then takes a long time to work in, whereas in fall, growth is much more stronger and the dressing disappears much more quickly and performs its duties more rapidly.

## CARE OF THE GREEN

Another point in regard to fall topdressing which is very greatly in its favor, that is, when the first sign of spring growth sets in the greens having been topdressed, will benefit by this right away, and full advantage will be obtained all round, and the greens will therefore have a chance to all come on at the same time, and a uniform and early growth of grass will result. Of course it is quite possible that conditions may warrant another topdressing in early spring but I am satisfied that a general dressing will not be necessary if they have been treated in early fall.

I find that a dressing of "Malt Sprouts" is very beneficial in early spring. I am personally a great believer in this topdressing and apply it when I think it is of benefit to sickly looking grass. A ton goes a long way, as it has to be applied very sparingly and care must be exercised to spread it on evenly, as if applied in a slipshod manner it will burn out the grass where put on too thickly.

Sheep manure (pulverized) is another good and beneficial dressing and should be applied in the same way as the malt sprouts. Should the greenkeeper, however, not have been able to topdress his greens in the fall he should take the first opportunity and push on the work of topdressing with good compost as fast as possible so as to get all advantage of the first spring growth. Should he think it necessary, a mixture of fine grasses should also be applied, but before proceeding with this part of the work it would be better and

## CARE OF THE GREEN

of more advantage to the green to spike roll it before sowing. A seed bed would be made for the seed and far better results obtained.

Those remarks also apply to tees. They are just as important as the greens, in fact everything connected with the maintenance of good turf on a golf course, whether greens, fairways or tees, require the greenkeepers most earnest attention and care as the one without the other will spoil the look of everything.

This is a good time to fill up all iron cuts on the fairway with soil and seed, especially if there has been play in the late fall. It used to be the fashion to fill these up with sand only and I have been told by greenkeepers who had charge of courses situated on heavy clay soil that by applying sand it helped to lighten it up. This may have been so to a certain extent, but perhaps they never stopped to think of how many years it would take for the members to cut divot marks in the whole of the fairways, so that a uniform dressing of sand would be applied all over. Fill up all divot cuts with soil and seed.

If the ground is heavy, and the club can afford it, apply sand all over to open it up. This means money, however, but it is well spent, if it could be done, and the club's finances could bear it. In regard to spring treatment of the grass when it has finally got going some greenkeepers let it get away, that is, let it grow without mowing.

The belief is that by so doing the plants are being



## CARE OF THE GREEN

strengthened thereby. I consider this a great mistake and is absolutely wrong. If a crop of hay is desired this treatment of course would be all right. To procure a carpet of turf for a golf course this procedure is all wrong, and I would advise the greenkeeper to keep his grass mown as short as possible at this time, as at all times, but at this time more especially. By so doing he is strengthening and hardening up his grass plants and at the same time building a much more closer and thicker bottom.

Therefore I would say mow when necessary and mow close. This is one sure way to build up good turf on a golf course.

In a former article I went into the question of rolling, but just let me add another word of warning against overrolling at this time. Keep the surface firm, but open and do not choke the young, tender plants. After the long winter in which everything has been allowed to look after itself the greenkeeper will find that its ravages has left its marks behind perhaps in washouts here and there especially on hilly and undulating ground, and more so on courses that have been seeded down in late years.

On courses so situated washouts very seldom occur, but where this state of affairs has taken place the greenkeeper has to set about and fill up and reseed. Now is the time to get busy on this work also. Bunkers, which in my opinion get far too much attention and kept in too good order, have to be seen to and got

## CARE OF THE GREEN

into shape for the opening of the links. I maintain that too much care and attention is sometimes bestowed on these very essential parts of the course, and money thus spent and greater advantage on other work in the upkeep of the more important parts of the course, namely, fairways, greens and tees. I admit it is very annoying if one gets into some one's heelmak who has had the misfortune to have made the acquaintance of the bunker previous to your visit. Be this as it may, the fact remains that a bunker is a part of the course to be avoided, and has been placed there to punish bad play, if this is so, why waste time and money to have it nicely raked and combed out every day and kept just so? It all looks very pretty, I admit, but would it not be more like real golf to have it look more as it should look, natural and rough? I do not mean to have them in any way unfair to the player. I only mean that in my opinion they look too artificial and pretty when raked every day, as they commonly are. I merely bring up this point at this time, as it is certain that it will be amongst the first questions the greenkeeper gets asked when he is called before those higher up—are the bunkers all in good order as well as the turf. Spend money on the turf, especially at this time, put all possible labor on the fairways, tees and greens to get them into shape. These are the main essentials and the ones most important.

## Early Summer Work on the Golf Course

In these war times, when the question of food saving is up to every one of us and the farmer is asked to do his utmost to get all he can out of the land, may I just suggest that golf clubs might be able to help out a little also in the way of food production. It is a well-known fact that many golf clubs have ploughed up all land outside the course and raised potatoes, etc., in this way helping out the country's food production. But I think it possible for them to go a little further in this way and by grazing sheep on the courses keep down their wage bill and at the same time help out on the food question still more.

To any one of an observant character and who visits the various courses, and instead of having his mind entirely fixed on the game he will notice, especially at this time of year, the number of weeds that have sprung up, especially on the fairways. Putting greens and tees it is possible to keep free from weeds, but the fairways are another problem. The continual mowing necessary to keep the turf in condition for play naturally keeps the many weeds from going to seed. They are still there, however, and yearly getting stronger and choking out the grass. Now I have always maintained that sheep on a golf course are a great benefit, as they keep down the grass to a certain extent, and

## CARE OF THE GREEN

where the weeds have established themselves in former years they will quickly disappear if sheep are allowed to get at them. I have always, as I have said, been a firm believer in sheep on a golf course, and at the present time am more so. They may do some little damage, but this is counterbalanced manyfold by their work on the fairways in keeping down the grass and also in getting rid of the weeds.

This question of grazing sheep on the course may also become a source of revenue to the club as it is a well known fact that sheep fatten much more rapidly on a golf course than they do on an ordinary farm meadow. Therefore, I say, a club might do worse at the present time than have a few sheep grazing on the links.

As I said in my preceding article we have had little or no spring and growth thereby has been backward. It is just possible that a warm, dry spell may set in and add to the greenkeeper's difficulties. His first thoughts when this occurs is to make preparations for applying water. At this time of year the nights and mornings are cold and the application of water might do more harm than good if not applied at the right time. Where artificial watering has to be resorted to I suggest it be done in the early afternoon and late morning. The sun has a stronger heat power and as the ground has not yet got properly warmed up, so to speak, the water if applied at this time will not have the same chance to chill the grass plants.

## CARE OF THE GREEN

In the height of summer, of course, it is best to water night times. It does more good and is safer. I have already said something in regard to watering but it may not be out of place to just warn those in charge against the common habit of "sprinkling" the greens. This "sprinkling" is a fatal mistake and assuredly sooner or later will lead the greenkeeper into trouble.

As I have already said, if watering is necessary, owing to an exceptionally dry spell, thoroughly soak the ground and not merely wet the surface. If this is done it will be found that once, or perhaps twice a week is often enough to apply water. The common system of watering, or "sprinkling" almost every day is entirely wrong and should be discontinued if the grass is to be kept in a strong healthy condition, after the severe winter we have lately passed through the last few weeks have shown up the places on the greens, tees and fairways that have suffered from the excessive cold weather. Many of those spots which the greenkeeper took a chance on coming around with the advent of growing weather, have failed to come up to expectations and other and more drastic measures have to be resorted to and very probably the greenkeeper has to take the bull by the horns and returf all of these places. On most courses it is seldom one comes across any sign of anything being done in the way of providing for such contingencies and when it does take place the greenkeeper is at his wits end to get out. All intelligent greenkeepers and green com-

## CARE OF THE GREEN

mittees have always a turf nursery at hand to meet these occasions and can get to work and fix things up right away. However, where this essential has been overlooked, or neglected, those in charge have to find some way out. Turf must be put in to correspond as nearly as possible with the existing turf on the green, so that an even texture and a true surface is established all over the green. One of the worst things that can happen is to have a putting green with the patches of all kinds of grasses or turf mixed up. It is an utter impossibility for the player to judge the strength of the green under such conditions. He may have to putt over a section of the green where several fine, smooth patches of turf are, and in between them sections of turf of a coarser character. The player is to be pitied where those conditions prevail, as he may throw away several strokes on such a green, no matter how well he may have played to reach it. Well, when a putting green requires "patching" because of the turf dying out from some cause or other, my method for rectifying, and putting to rights this state of affairs is this: I go to the back of the putting green, or the sides, and I take the turf from that section, and after cutting out the old and dead turf, I place the turf I have removed from the back or the sides in its place. It may seem almost a sacrilege to do this work in this way, but it is the best and the only way to get satisfactory results. What I mean is, that I have no fear of the turf "taking" and thriving as the turf taken from

## CARE OF THE GREEN

the same green has been nurtured on the same soil and conditions as the other parts of the green, therefore it has a better chance to thrive. Let me explain briefly what I mean. I have seen first class turf brought from some other parts of the links to returf wornout places on putting greens situated on another and distant part of the course. Every care and attention was bestowed by the greenkeeper, or those in charge to see that it was properly put in. For a short time it would show signs of doing all right. Eventually, however, it began to show unmistakable proofs that all was not right and various methods were tried to nurse it on. All the attention, however, could not induce it to grow in a healthy way, and eventually it became necessary to again returf.

The second time the greenkeeper might be lucky it chance was his way for the simple reason he may have got the turf for the renovating from some other part of the course where the soil was similar to that on which it was desired to carry out the operations of re-turfing. It is a good part common sense as it is quite impossible to gain the desired results if the conditions of the soil, situation, etc., are absolutely different. The putting green to be renovated may be, for instance, situated on a low part of the course where, perhaps the soil may be of a heavy nature, so that turf, if taken from some other part where the soil is of a lighter character it will not thrive so well and will in time eventually die out.

## CARE OF THE GREEN

The same holds good in regard to turf taken from light sandy soil and placed on heavy. Therefore, it behooves the greenkeeper to see that the conditions are as near similar as possible, in regard to where he is taking his turf from and to where it is to be placed. If he follows out the idea of taking his turf from the green itself, unless, of course, patching on a large scale has to be resorted to, he will have little or no trouble with the turf he has placed in the green. In place of the turf he has removed for patching, he has only to go to the side of the fairway against the green, and pick some good turf to fill up.

It will certainly be a little rough at first but with care and attention it will soon work in, and eventually it will not be noticeable from the other parts of the green.



## Summer Work on the Golf Course

In my last article I gave a few hints as to the work confronting the greenkeeper in the early summer months.

In this I will try to explain the work that will confront him at this time of year, and a few hints as to the best way of doing it. In my preceding article I went into the question of watering and also of weeds, in a general way.

Now in recent years a weed has appeared and has given the greenkeeper great anxiety, in the first place as to how it got into the greens, and secondly the best means to get rid of it. I, myself, had great trouble in combating it, and spent quite a long time in experimenting in many different ways to find out the best way to kill it out.

I have never been a believer in using poison in any shape or form in killing out weeds.

At this time of year, if there should be any weeds in the putting greens they will now be showing. Plantains, dandelions, and all top rooted weeds should be removed by hand, and as the roots of these go down a long way great care must be exercised in their removal, otherwise if any part of the root is left, in nine cases out of ten, they will shoot again. A good plan is to remove them when the ground is moist as the green-

## CARE OF THE GREEN

keeper has a much better chance to get the whole plant.

The weed that I am about to mention, a few years ago was practically unknown, but has now become very general on many golf courses. I can remember not so many years ago when it was practically unknown. The weed is "pearlwort." To anyone who is not acquainted with it, at first look it is very difficult to observe, as it has the appearance of very fine grass. Soft in texture and growing in a thick mat, it looks splendid, as it is of a rich green color.

Even in the driest weather it retains its color. When it gets a firm hold on a green, it will most assuredly in a very short time overcome the grass and kill it out entirely. As I have already said, this weed has only of late made its appearance, and opinions differ as to how it has got in.

I am of the opinion that the watering of the greens has a lot, if not all, to do with it. In my observations, which I have made very carefully, from time to time, and in different localities, I noticed that on putting greens where artificial watering had not been resorted to, or reduced to a minimum, the absence of the weed was very apparent, whereas on greens where watering had been carried out during a dry spell, it had made its appearance, and was spreading to an alarming extent. I have had it said to me when I was at work killing it out, why bother with it, the surface plays all right and it looks splendid to the eye.

## CARE OF THE GREEN

This may be all right from the player's point of view at the time, and where it is only in small patches it may not appear to matter much. However, when it is allowed to spread disaster must assuredly follow.

Well, as to its appearance, my idea as to its presence is caused by the greenkeeper himself to a very great extent from the fact that when applying the water, he simply sprinkled the surface, instead of soaking the green thoroughly. I am strongly of opinion I am about right in regard to the appearance of this weed.

Let me here state that if a small spot appears in a putting green, in a very short space of time it will be through the whole of it. There may be other reasons for its appearance, but I feel sure the one I have pointed out is the principal one. Now, supposing the greenkeeper should be faced with the problem of getting rid of this weed should it have made its appearance, he has to set about and find some way of getting rid of his enemy.

Should he be of an observant nature, on its first appearance he will most likely cut it out and put in a fresh sod. Where it has, however, got a firm hold and it is absolutely impossible to cut it out, without cutting out the entire green, other means has to be resorted to.

I think I have tried every means I can think of to combat it and effectually kill it out without putting the green out of commission, and the following treatment I have found to work the best:

## CARE OF THE GREEN

The very first thing to do is to keep the water away from it. Do not water the green at all. Let it burn up, the turf won't die out, even if it should get brown. When it has burned up and a dry spell is on, put on plenty of lime and rub it well into the pearlwort. As soon as one dressing is out of sight apply another and if it should be necessary a third. The lime will help the grass, but will kill the weed, and after the first shower of rain the turf will come again, but the enemy has become sick and will gradually die out. Should there be any left in the green in fall after this treatment, it will be found that the following spring it will be gone altogether after the frosts of the winter. I have been called foolish in regard to my treatment of this weed and told that the only effectual way to get rid of it, is to cut it out and replace with fresh turf. May I be allowed to point out to anyone who wishes to see for himself that my ideas are right, if he will take the trouble of looking at the putting greens at Garden City.

Two years ago when I took over charge of them there was not one but what had "pearlwort" to a greater or lesser amount. I started in one the course of treatment I have pointed out and today they are clear of it. One green in particular was exceptionally bad—No. 16. It was practically nothing else but "pearlwort" and the only remedy appeared to be, to either returf or seed down.

I, however, got busy and have effectually killed it

## CARE OF THE GREEN

out. What little was left in the fall was in a weak state, and the winter's frosts did the rest. So much for "pearlwort," its cultivation and extermination.

There is another weed of a shallow rooted and creeping nature and one very common on many putting greens. Where it is allowed to spread it will soon assert itself and quickly take command.

I do not hesitate to say that it is as bad, if not worse, than "pearlwort." It looks far worse and is more noticeable. It spreads like wildfire during the summer months, and where there may possibly be some grass plants left where the former weed has been, in the case of the one I am about to mention, the grass is entirely killed out. It is much more noticeable and looks worse and at the same time makes putting more uncertain. The weed I mean is mouse-eared "chickweed." Like "pearlwort," he seems to be continually in flower, or seeding. The treatment he has got to have must be more drastic than the one given to "pearlwort." It will be found that he grows in bunches, or clumps. Like my other enemy I have tried many ways of getting rid of him, but I have come to the conclusion that the best and most effectual one is to cut him out entirely and replace with a fresh sod. Some rake him out, but this process leaves a bare, and unsightly spot in the green and even though it should be seeded and topdressed, it takes some considerable time for the place to heal up. Lime, if applied, will

## CARE OF THE GREEN

also kill it out, but I have the same objection to using it, as I have to raking it out.

The presence of this weed in the green is largely due to the system of "sprinkling" indulged in, as with the "pearlwort." Being a shallow, or surface-rooted weed, if the surface is not properly "soaked" so that the water reaches the roots of the grass the "chickweed" thrives and spreads, and where there were only one, or small spots of it in the green, if this continual "sprinkling" is persevered in those spots will grow very quickly, and the seed throw out fresh patches. Whenever weeds appear something is wrong, and it behooves the greenkeeper to see to the cause and remedy it. In my opinion, the foregoing are the causes of the appearance of the two weeds I have mentioned and I feel sure my remedy is the safest and best, at least, I have found them so.

There is another weed, grass you can call it, if you like, which makes its appearance about this time of year, but is at its height a little later on in the season. I have seen greens one week looking perfect, and perhaps the next entirely full of it.

I had not met it until I came to this country, as it is unknown on the other side of the Atlantic. When I found myself up against this enemy, I of course had to make war against him.

I found out that if care was taken he could be easily kept under, even although he was not entirely killed out. He seems to grow in a night, and thrives in any

## CARE OF THE GREEN

sort of weather. This is "Crab—or Summer Grass."

In my next chapter I will start by giving my ideas of how it should be treated to keep it under control.

## Midsummer Work on the Golf Course

In my preceding article I dealt with "Pearlwort," as also with "Chickweed," the cause of them appearing in the green and also the best means of getting rid of them. At this time of year all sorts of weeds make their appearance, perhaps not in the putting greens themselves, maybe in the "rough" alongside the fairways and also 'round the greens. These weeds, if allowed to seed, will cause the greenkeeper no end of trouble, as, if blown about by the wind, they will most assuredly find their way eventually into the greens. Some of the lighter varieties of the seeds blow a long distance. Therefore, I maintain that the greenkeeper should see that the weeds are cut down often enough so that they have no chance to seed, ripen and blow all over the course.

Dandelions and plantains should be removed by hand, care being taken to get the whole roots. All weeds are the common enemy of the greenkeeper and he is, or should be, constantly at war with them. In the latter part of July or the beginning of August, a weed makes its appearance, all at once, in fact almost in one night. Until I came to this country I had never seen it, as I had not met it in Europe, although I had heard a lot about it from men I had sent out here to look after courses. This is summer grass. It spreads at an alarming extent and if not tackled as soon as it



## CARE OF THE GREEN

makes its appearance will soon gain complete mastery and choke out the fine grasses. It seems to come up from nowhere and is a puzzle. It is next to impossible to kill it out, so the greenkeeper has to set about doing something to fight it. Having a broad, coarse leaf it very quickly "dulls" up a fine fast putting service if allowed to gain the mastery. I have tried several methods to combat the pest and the one I have so far found to give the best results is a system of raking the green where he has made his appearance.

What I mean is this: Get a good half-worn iron rake with sharp teeth. Rake the green all over so as to get the leaves of the grass standing on end. When this has been done take a good sharp mower, with a half-worn sole plate, so that it can be set as low as possible, to cut the grass low. The lower the mower is set the better. If this is done two or three times this enemy will give little or no trouble for the rest of the season. I find if this work is carried out that as well as keeping it under so that the finer grasses have a chance, a thicker carpet of turf will have been retained for the late autumn play. If allowed to hold sway and no effort is made to keep it in check the green must assuredly suffer, and when it disappears in the fall, a thin, sickly carpet of grass will be left in its place. It seems to thrive in any kind of soil, and under all kinds of conditions, wet or dry. Some others may have different, and perhaps better, ways of dealing with this

## CARE OF THE GREEN

pest, but this is the one so far I have found to be the most satisfactory.

VIII We are now in the time of year when the greenkeeper is kept busy, what with weeding, watering and mowing. I mean this is the most trying time of the year for the greenkeeper, as a lot depends on his skill in fighting the many difficulties confronting him.

He has, if the dry spell lasts long, to see that the watering is carried out in a judicious manner. To see that the water is applied at the proper time, and also the right amount given each green—fairways, if he is lucky enough to have a system for watering them—as also the tees. Now it appears to me that if artificial watering has to be resorted to, especially for any length of time should a dry spell last, the grass plants must get somewhat weaker. They would be practically lying dormant during the dry weather if they were not artificially watered. I also maintain that by this means of watering them, artificially, the grass is kept by a forced growth under circumstances which are, to say the least, not natural. Well, my contention is this: Where grass, for any length of time is kept growing under the above conditions, it must surely of necessity grow weaker from this unnatural treatment, and if means are not taken to counteract this, the grass must suffer in condition and quality.

Therefore, where I am forced to apply water, artificially, for any length of time, I make it a point to see that the grass plants get fed from time to time so as to

## CARE OF THE GREEN

give them nourishment and keep them strong, hardy and healthy. This appears to me to be only common sense. I have an idea there would not be so many greens affected by winter<sup>®</sup> kill, if this scheme was followed, as by keeping the grass strong and healthy it would then be in better condition physically to withstand the extreme cold weather of the winter months.

Artificial watering during the dry summer months without nourishment of some kind must assuredly weaken the grass. I have already, in a former article, dealt with the system of watering I consider best for the grass, namely, to soak the ground well, not just sprinkle. Other work has also to be seen to at this time of the year. Autumn will soon be on us and the greens will have to get a topdressing of something or other so as to put some "life" into them for the late autumn play, as also for the coming cold winter weather. In his spare time, if he is a thoughtful greenkeeper, he will see that his compost heap is turned over so as to have it good and fryable for putting through the screen before applying it to the greens. He might even be applying some of it to his greens now and watering it in to advantage, as I have just pointed out. He could also get busy building another heap for use later. Should he have enough spare ground he will see that he gets some hay from it to help out during the winter, in fact he has a hundred and one things to keep him busy at this time.

Where there is a lot of mowing and a great many

## CARE OF THE GREEN

mowers are in use to keep the grass down, there is always something going wrong and this he has to see to sometimes after his day's work is, or should be done. Speaking of mowers, let me just mention in passing that I do not believe in the idea of letting the grass grow long during a dry spell, but on the contrary I believe and recommend that the grass be mown as low as possible in all sorts of weather. Keep it short is my motto, at all times, whether in wet weather or during a dry spell. As I have said in a previous article, I am a firm believer in the use of lime and I find a dressing applied at this time of year, well watered in, of great benefit to the grass plants.

I have at all times been a firm believer in the use of natural manures. I may be called a bit old-fashioned, perhaps, in regard to my stand here, but I am a firm and staunch disciple of the use of the old compost heap and would recommend a dressing being applied now. It is a good plan to keep putting on a little at a time occasionally. Just a slight dressing, not to interfere with the play. I find this to work out well, and have always carried this plan out.

In my next article I will deal with some of the work which it is necessary to carry out for the early fall apart from what I have already mentioned, and also give a general view of the work on the golf course from time to time. In my previous articles I have tried to give an idea of what should be done at the time of the year in which I was writing.

## General Review of the Greenkeeper's Work

As a windup to my series of articles which have appeared in the PRO, and, after a few hints as to what is perhaps necessary work at this time of year, I shall close with some remarks of a general character which may be of help to my fellow greenkeepers.

In my preceding article I dealt on the summer grass, which is now at its worst, if one can put it that way. This is one of the greenkeeper's worst enemies at this time. I have also tried to help out in regard to the best way of combating it where it makes its presence felt in great abundance. In passing, let me be permitted to say: where it appears only in single plants at wide spaces, weeding by hand will get rid of it. Hand-weeding is slow, no matter what weeds are being removed, but if carried out thoroughly it is, in my opinion, the best way of removing them.

In any case, when removing weeds of any kind, the greenkeeper should fill in the bare spots that have appeared by their removal with a dressing of seeds and topdressing. I have pointed out the absolute necessity of the greenkeeper, or those in charge, seeing that the "rough" is kept mown from time to time, not only from the point of the members losing balls, temper,

## CARE OF THE GREEN

etc., but from a more important one: the keeping of the weeds from going to seed.

This is a most important point and at this time of year should be carefully seen to. Where the rough is "clean," that is, free from weeds, I believe in letting it remain as rough as possible, but not so bad that it penalizes the player too much. A player getting into the rough should be penalized to a certain extent, as, like a bunker, he has no right to be there, and should he be unfortunate enough to get into it he should have some sort of chance of showing his skill in the way of recovery. It is not only the poor player who visits the rough from a pull or a slice, but also the crack can just as easily get there should he step from the straight and narrow path. Therefore, I say, give them both a chance of recovery. There is no room for a hay field on a golf course when the comfort of the members playing over it is taken into account. Golf should not be hard work, but a pleasure.

I have touched on the question of topdressing, which should be very closely watched at this time of year, as, if applied judiciously now, the greenkeeper will find that his turf will be far more able to withstand the hard winter weather that is coming, and also that he will have less trouble with his greens next spring. I have previously pointed out the necessity of the greenkeeper topdressing at all times when he sees the necessity. He must, however, exercise care and not to overdo it, as he may find that he has, through too

## CARE OF THE GREEN

much kindness, reduced his grasses from a hard, healthy and wear-resisting quality, to a soft, green, undesirable, sickly turf. This state of affairs can very easily be brought about at this time of the year, and more so if artificial watering has been resorted to, to any great extent.

About this time of year, or perhaps a little later, another of the greenkeeper's enemies makes his appearance, and that in a very short time should the weather break and a quantity of rain has fallen. The enemy I mean is the earth worm. Now is the time he seems to revel in his operations, and just at a time, too, when the greenkeeper is anxious to give his club of his best and have his course and putting greens in tip-top order. The members of the club may have been away on a vacation and have just returned home, and, of course, take the first opportunity to try out the links. If the worms have been at work the greenkeeper has his work cut out to have his greens made presentable at all. At this time of year we are liable to get heavy dews in the morning, and that being so the work of sweeping the putting greens, mowing or rolling them, is no easy matter. To sweep the worm casts when wet, leaves the surface a dirty muddy patch which looks bad and uninviting to the golfer. Then is the time to tackle the enemy and get rid of him. The question arises as to the best and cheapest way this work can be carried out effectively and without injury to the grass. I have tired about all the eradi-

## CARE OF THE GREEN

cators that have been placed on the market from time to time. Several were very good and some of them cannot be had any more. If, however, any club is in difficulties about eradicating the worms I am in a position to let them know of an "Eradicator" that will free the soil of the worms entirely, and at the same time act as a splendid fertilizer. It is non-poisonous, can be used with every safety, as there is not the slightest fear of injuring the grass. Anyone can use it if they follow the directions, which are very simple. This is, in my opinion, which I have arrived at from experience in using it in every possible way to find out its qualities, one of the very best ever put on the market. It is cheap, and that is another great thing in its favor, especially now in these war times. I shall be pleased to give all information to any Greens Committees or greenkeepers in regard to it if they write me to my address, which can be had from my advertisement in the PRO. After the worms have been removed, it may be found necessary to open up the surface in some way, especially if the soil is heavy and of a cloggy nature. Even if the worms have not been removed, as they certainly should be, about this time it may be found beneficial to give the greens a dressing of sharp sand. Sometimes this work is left until later, but I recommend this dressing being applied whilst there is still a good growth left, as it will then more quickly disappear and do more good. Little or no sand is required if the "Eradicator" I recommend is used, as



## CARE OF THE GREEN

this itself opens up the surface. I have already in a former article pointed out the necessity of the greenkeeper having a good compost heap on hand. It can now be used with results beneficial to the grass. By topdressing now, the grasses will have derived the full benefit of it, and also have had a chance to harden up before the cold weather sets in, so that they will be better able to withstand the new climatic conditions.

In concluding this series of articles, I have done my best to put my ideas, as I say, as plain as possible, so that they may be more readily understood. I have tried to put them as it were in a talk between one greenkeeper to another or others. If I have been the means of helping out even one of my fellow greenkeepers, who has found himself at some time in difficulties, I shall believe that I have done some little good, as I earnestly trust I have. I have tried my best to; no one can do more. As I said in the beginning, what I have written on the various subjects are my own experiments and experiences gained through practical experience, and are the ones I have found to give me the very best results, but I wish it to be distinctly understood I do not wish them to be taken as hard and fast rules to be followed to the letter. May the articles, if possible, help out, if only in some small way, the better care of the golf course and putting greens is the wish of the writer.

