# CHAPTER III

#### PUTTING GREENS

Putting Greens—Construction—Light Sandy Soils—Thin, Poor and Gravel Soils—Medium Soils—Stiff and Clay Soils—Final Preparation—Turf versus Seed—Seven Rules on the Construction of Putting Greens.

#### Putting Greens

Before attempting to describe how putting greens should be constructed I think it will be as well to discuss the subject generally, because, judging by what I see all over the country, the very reason for a putting green's existence seems to be ignored or forgotten by so many people who design courses.

If we accept the axiom that a putting green is purposely made to putt on, and that it is only possible to putt accurately on a smooth surface that will only permit the ball to keep in motion so long as it is under the influence of the stroke and no longer, it is obvious that the general plane of the surface should be reasonably level.

I do not intend to suggest that the surface should be dead level; on the contrary it should not; it should be slightly undulating so that each stroke requires thought and consideration.

The undulations of the surface should be in strict ratio to its size; in a small green they should be very gentle, but a little more pronounced on larger ones, keeping in mind all the time that at least 75 per cent. of the putting surface should be available for cutting holes.

I think it was Mr. Croome who said : "The final act of the drama must be played on the flat." He was certainly right. The ground should be reasonably level in the vicinity of the hole wherever it happens to be cut.

According to the original laws of Golf, players were forbidden to tee up within a club's length of hole, but as the game became more popular larger and larger areas were perforce devoted solely to putting, and these areas developed into what we know now as putting greens.

In the old days when a green was "made," as opposed

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to being won from the rough, the surface was usually dead level with an area of about 400 square yards; as the game developed they were made larger and larger, some measuring upwards of half an acre.

The chief reason why greens were increased in size was because the small ones could not stand the wear and tear of constant play; consequently the holes had to be moved frequently, and this could only be done by devoting a larger area for the purpose.

Unfortunately, however, many of those who plan golf courses have lost sight of this, and apparently think that the additional area is given to them for the sole purpose of exercising their skill in landscape gardening, with the lamentable result that there are hundreds of enormous greens all over the country which do not contain as large a putting area as the old 400-yarder.

It is too absurd to go to the expense of making large greens, with their heavy cost of upkeep, unless they are constructed in such a way that the greenkeeper can change the position of the hole as often as may be necessary for the welfare of the turf and putting surface. Then there is the question of water; if an adequate supply is not available it is practically impossible to keep a heavily undulating green in good condition, for the reason that the tops of the mounds are bound to dry out and the turf die every summer.

I, therefore, strongly recommend Committees to bear in mind the following points when considering plans for new greens.

Greens with pronounced undulations are always more difficult and expensive to construct, and afterwards keep in good condition, than those with more moderate undulations, and unless an adequate supply of water is available they are practically impossible.

The size of a green should be regulated by the length and character of the shot it is designed to receive. There is no need in any case to exceed 1,000 square yards of putting surface.

Do not allow the enthusiasm of the Architect to influence your decision too much. He may see in his mind's eye the most wonderful green in the world—the world is full of them —but remember, and remember insistently, that the Club has not only got to pay for the construction, which may be easy, but it has also got to keep it in good order, which may not be quite so easy.



SKETCH AND PLAN OF AN ATTRACTIVE GREEN BY CARTERS.



Think of the greens in terms of acres, five acres will give 18 greens of an average area of 1,350 square yards each, which is surely enough for anyone, four acres about 1,070 yards, three acres about 800 yards, two acres 540 yards, and remember that they have to be mown, rolled, fertilised, weeded, worm-killed and top-dressed with compost, sand, charcoal, etc., if they are to be kept in good order.

I always bear these things in mind when advising Committees, and Committees will also be wise if they bear them in mind, not only when they are being advised, but, more important still, when they debate the matter prior to coming to a decision. In other words, be wise before the event, not afterwards.

#### Construction

Clear the site of the existing turf and lay it out flat in a convenient position if it is fit for relaying or stack it for compost if it is not.

If there are several greens to make, and the turf is worth saving, it is as well to scrap the turf on one or two, choosing, of course, the worst, make the greens and lay them with turf taken from the next to be broken up and so on.

If this system is adopted the turf can be cut and laid the same day, whereas if it is replaced on the same site as it originated, it obviously has to lie about for as long as it takes to make the green, possibly two or three weeks, and it is bound to suffer to a degree.

Remove the surface or top spit if it is worth saving and place it aside, then contour the greens in accordance with the Architect's plans, but remember that built up or undulating greens on thin, poor or sandy soil without an adequate supply of water are an impossible proposition for the greenkeeper; so if water is not available it is wise to keep the surface below the general plane of the surrounding ground if conveniently possible.

When the greens are roughly contoured study the drainage; soils from sand to sandy loam will require no assistance, medium to holding loams may require draining in the hollows, and holding loams to stiff clays require very careful thought. The question of drainage will be argued separately, and as in most cases it is difficult to know how much will be necessary before the green is finished and in play, I only propose to deal at present with bad cases which actually affect the construction of the green. If the soil, or more particularly the subsoil, is sufficiently heavy to hold water in excess, provision must be made to get it away quickly, otherwise the production of a good putting green is quite impossible.

Put a peg in the centre of each depression, and plan the course of the drains in such a way that they connect up the lowest parts of the green where water is likely to accumulate, and follow the general fall of the ground. It does not matter whether the drains are straight or not provided only that all junctions are made at acute angles and they all have a regular fall to the outlet.

Lay the pipes carefully, test them by pouring in a bucket of water at the high end of each, and see that all of it travels to the outlet and none of it hangs up; if it does, correct the fault, otherwise the drain will be an absolute failure.

Fill up the trenches with clean, graded, small ashes or breeze, seeing that it does not contain any dust likely to enter the drains and obstruct them.

Cover the whole site with 3 to 6 inches of ashes or breeze, according to the nature of the soil.

The green is now ready for top-soiling ; a question which requires deep thought and great care if it is to be a success. And here I may mention that the question of cost comes in as the proper preparation of a 6-inch layer of soil over 1,000 yards of green entails the repeated handling of about 170 cubic yards, obviously a costly and laborious job. The soil should be prepared, fertilised and generally worked up until it is sufficiently rich to carry the turf, contains enough humus to retain and conserve moisture reasonably, free and open so that the roots of the grass can travel easily in their search for food and moisture, and, last, but not least, it must be sufficiently porous to enable the surplus water to pass through it rapidly. If the soils falls short in any one of these particulars, it will always be difficult to keep the turf in good condition.

## Light Sandy Soils

This division is usually deficient in lime, grass foods and humus, all of which must be supplied.

Take the soil and spread it evenly over the site to a depth of not less than 6 inches.

If the soil is deficient in lime, add it in the form of Pulverised Chalk (Carbonate of Lime), at the rate of I lb. per square yard, and rake it in. Then add peat moss stable manure or old well-rotted short straw manure at the rate of one to two loads per 100 square yards, and work the same in, in such a way that it becomes mixed and incorporated with the surface soil, and none of it is buried more than 3 inches.

If possible add an inch or more of a good light loamy soil, and work it in, in the same way as the manure.

This will give a layer on the surface about 3 inches deep, composed of the natural soil, mixed with the manure and the loamy soil.

Tread, roll and rake the surface until it becomes quite firm, fine, true and ready for turf or seed as may be decided.

### Thin, Poor and Gravel Soils

These should be treated in the same way as sands, excepting that it may not be necessary to add any of the light loam. If the soil contains stones in excess they should be screened out, but if it is of a binding nature they must be replaced with sharp sand or sifted breeze, otherwise it may get too hard for the grass to thrive.

### Medium Soils

Add Pulverised Chalk if necessary, and one load of wellrotted dung per 100 square yards, or failing this a dressing of Carters Complete Grass Fertiliser No. 1 at the rate of 2 oz. per square yard.

If the soil is inclined to be sticky work into the surface sufficient screened breeze to correct this fault; the quantity required will vary with the soil, but it can be ascertained by experiment.

### Stiff and Clay Soils

This section requires very careful treatment with the object of making the soil so porous that it can pass the rain as it falls to the drains and will not at any time retain moisture in excess.

It does not matter how well a green is designed and drained, it cannot succeed unless the surface soil is sufficiently deep, open and porous as to allow the roots and moisture to penetrate freely.

I have seen scores of greens that are a constant source of worry and trouble, the turf does not thrive, it loses its colour and becomes mossy, in the Summer the surface is as hard as iron and in the Winter wet and muddy. The reason for this is plain ; one only has to cut a hole, and sure enough there is the clay immediately beneath the turf. This fault is most apparent in the old-fashioned cut-out greens, where the Contractor, either through lack of knowledge or funds, used the top spit soil for levelling up the low end, and laid the turf direct on the clay; and in undulating greens where the good soil has been wastefully used for making mounds.

It is hopeless to make a green on clay unless every scrap of the surface soil is saved for top-soiling, and if it is too stiff it must be broken down.

The top spit soil should be thoroughly mixed with breeze passed through a  $\frac{1}{4}$  or  $\frac{1}{2}$  inch square mesh sieve, in such proportion that it is impossible for it to retain moisture in excess.

It should be understood that the turf does not live on the soil, it simply holds it in position, all the nutriment being derived from its chemical constituents, which are but a small percentage of its bulk.

To put it plainly, when dealing with stiff clay soils make the surface of the green like a bad filter bed, and remember that if it is overdone it will be easier to work it up afterwards by top dressing than it would be to break it down by the same means.

Add Pulverised Chalk if necessary at the rate of 1 lb. per square yard, well-rotted short straw manure, using one load per 100 square yards, or failing this Carters Complete Grass Fertiliser No. 1, at the rate of 2 oz. per square yard.

I must again emphasise that a deep porous soil that will retain sufficient moisture for the use of the turf, but not too much, is the ideal to aim at, and if it does not exist naturally, it should if possible be provided artificially.

### The Final Preparation

Every load of material used in the construction should be spread evenly and well trodden into position. Breeze if used thoroughly mixed with the soil right the way through, and the manure incorporated with the surface soil, and none of it buried deeper than 3 inches.

If the work has been properly done, the green should be covered with the same depth and quantity of soil all over.

The surface should be trodden, rolled and raked until it becomes quite firm, fine and true, and when walked upon hardly shows a mark.

#### Turf versus Seed

If expense is no object and speed a consideration, turf should be used, because, if it can be obtained of suitable quality on the estate and in sufficient quantity, the greens can be played upon with certainty the following season. If, however, sufficient turf is not available, or when dealing with arable fields, there is no alternative but to sow seeds, as the expense attached to purchasing and transporting sufficient turf for 18 greens would amount to a very large sum. For sowing and turfing see Chapters XIII and XIV.

### Seven Rules

On my travels round the country I see so many freak greens upon which one can neither putt, grow turf, nor mow, that I have decided to risk committing the awful crime of repetition, and appearing to make an important point out of the obvious, by laying down seven rules on the making of putting greens, and I cannot too strongly advise Committees, in selecting an Architect, to decide on one who they are satisfied believes in and practises the precepts therein laid down :—

- 1. The surface of the greens should be sufficiently undulating to make them interesting, and so level horizontally that the ball will only roll so long as it is under the influence of the stroke. If a green contains any gradients so steep that the ball if just put in motion will travel by gravity, it is obviously a bad green, because the player cannot possibly control the length of its travel or its direction.
- 2. The undulations should be gentle, wide and sweeping so that one can putt over them without losing control of the ball and mow them without skinning the crests.
- 3. At least 75 per cent. of putting surface should be available for cutting holes. If this were remembered, there would be fewer wonderful greens, but more putting greens.
- 4. The size of the green should suit the length and character of the shot, but in no case is it necessary for the actual putting area to exceed 1,000 yards, and it is just as well to remember that big greens are as costly to keep as they are to make, consequently big greens mean a big ground staff and a big weekly pay-sheet.
- 5. It is absolutely essential to remove and preserve the top spit soil before contouring a green, and replace it after-

wards so that the turf will have at least 6 inches of good soil to grow on, and on no account should it be used for making mounds, and the turf laid on unproductive subsoil, as is so frequently done.

6 When dealing with heavy soil, the drainage of the green is of the utmost importance, and every hollow should be regarded as a possible pond. All hollows and valleys should be provided with piped drains, and if necessary the whole area of the green covered with a layer 3 to 6 inches deep of clean ash, breeze or clinkers. Mix the surface soil with sufficient clean breeze, graded through a  $\frac{1}{4}$  inch square mesh sieve, to open it up so thoroughly that it simply cannot retain moisture in excess, but will pass it rapidly to the cinder foundation and then to the drains. This admixture of clean breeze is of the utmost importance, and if it is not used in sufficient quantity when dealing with heavy, impervious soils, the surface is bound to be wet in spite of the fact that it may be made on a properly drained cinder foundation, for the simple reason that without its aid the water cannot penetrate the soil quickly.

7. The best soil available should be used for surfacing a green, and if it contains large stones that will interfere with cutting clean holes, it must be screened. The soil should be tested for lime and fertility generally, its mechanical condition examined, and every expedient adopted with a view of making it as receptive as possible to grasses. The ideal being a rich, porous soil that cannot retain moisture in excess.

Martin Protocol and Date



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