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

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

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

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

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

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

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

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.