

you have broken the water column in that soil by putting in a layer of sand or a layer of gravel, close to the surface.

A layer of sand or gravel put at sufficient depth, of course, may be very valuable to keep soils drained. The inner face between the surface layer and the gravel underneath will be continually saturated in your putting green conditions.

If that layer is only five or six inches deep on the surface, then the water holding capacity of that soil, or the amount of water which is in the soil in that surface layer, is always above the maximum porosity limit of that particular soil. You have to keep that surface layer wet in order to keep the grasses from drying out, but very seldom do you reach a point where you have enough oxygen in the soil to keep the grasses healthy. This is a situation, I think, that very frequently prevails on some of our putting greens.

Tile Drainage Function

Tile drainage is considered essential under most conditions in turf areas. That is particularly true on putting greens. It serves to remove the free water from the soil, that which is in excess of the water holding capacity of the soil.

I don't think we ever need to get the idea that our drainage tiles are doing any more than just draining the free water, the water which is beyond the capacity of that soil to hold. We have had the idea in a good many cases that our tiles tended to suck the water out of the soil. I think that is a misconception. The only water which will enter the tile is the water which is beyond the water holding capacity of the soil. That is a very important fact to keep in mind.

Tile properly spaced and installed can be very effective in providing for proper aeration of the surface soil. If, on the other hand, an impervious layer has been allowed to develop in a turf soil, then water may never reach the tile.

It doesn't make much difference just how good that surface soil may be. If you have a condition where that water column is broken, and do not give the free water in that surface soil an opportunity to go down to the drainage tile, then your tile may be almost useless. In one case I was on a course in Indiana where we had had almost continuous rain for a period of a week, and the greenkeeper said, "I just can't understand why my greens are so wet." They were just as waterlogged as anything possibly could be. I said, "Where are your tile outlets?" We went over and examined about a half dozen of those outlets on his green, and there was not a drop of water coming out of a single one of them. That was after about a week of very rainy weather. Unless we have a soil condition which will permit water to go

down to the tile, then tiles are almost useless.

How to obtain aeration of some of these areas is sometimes a very difficult problem. The use of the spiker, and other similar tools have been used in the past, with varying degrees of success. A more recent piece of equipment is the aerifier, which will remove plugs of soil from a depth of five or six inches, and at a very rapid rate. That is one of the main advantages, I think, of this new tool, that you can get over a large area in a very short time. The removal of these plugs permits air to enter the soil, and frequently permits more rapid absorption of water. On putting greens a top dressing with a high sand content should be used so as to permit continued access of air into the soil.

Another thing done by the aerifier or any method that we may use, such as the hollow tine fork, is that if you have some of these layers that have developed in your greens over a period of years the aerifier or a similar tool will tend to break through those layers and prevent this water from accumulating in a saturated layer about five or six inches below the surface, or wherever those layers occur. —Address before 1949 NGSA Convention, Los Angeles.

Greenkeeper Should Have His "Day" Says Manager Burke.

Pat Burke, mgr., Smethport (Pa.) CC, writes GOLFDOM:

"The GOLFDOM article in May on "Modern Greenkeeping Sets Stage for Golf's Future" gave me a real bang. I hope that in some way the article is responsible for a better deal for the men who give us today's marvelous greens and well trimmed courses.

"Golf's 'forgotten man' is truly the average greenkeeper. He is shoved in the background and seldom receives the credit due him.

"At most clubs we have Pro's Day, Caddy Day, and other 'days' and I wonder why clubs of fine and appreciative sportsmen don't have days for greenkeepers."

Putting Green for Caddies

An all-star putting clinic featuring Johnny Palmer, Horton Smith, Jimmy Thomson, and local professional Errie Ball was the highlight of recent ceremonies surrounding the dedication of a special putting green for caddies only at the Oak Park (Ill.) CC.

The new putting clock for the caddies is an added feature of the complete caddy program at Oak Park being carried out in conjunction with the Western Golf Assn. and its national program for the betterment of caddy facilities at all member clubs.