

## Rolling

**O**WING to the vast difference in soils and climatic conditions it is difficult to give general advice in regard to rolling, yet the poor condition which prevails on many of our golf courses after a torrid spell, or after a severe winter, leads us to believe that too much rolling has much to do with it. We believe from our own observations and that of other experts that because of this many fairgreens are becoming root bound, hermetically sealed and waterproof, thereby making it almost impossible for nature to carry out its proper work. We are quite sure too much rolling with a heavy roller is a common evil. On several courses of which we know a heavy cutter and roller has been constantly employed on some portions and the ordinary horse mower on other portions, and the fact is quite noticeable that where the lighter machines were used the nature and texture of the turf is far superior.

It cannot be denied that a heavy roller or motor power for a new course is a perfect Godsend up to a certain point, but if the ground has been properly prepared its use could probably be limited to two weeks or a little more. A sure way to injure the soil is by packing it in such a way as to exclude the air. If this is done the activities of the chemical agents in the soil are greatly lessened and thus the making plant food available is retarded. On the other hand when the soil is kept in a more open condition and the air is allowed entrance, oxygen being such an

active element and combining freely with other substances, there naturally follows a chemical action and changes take place more actively.

In many sections of the country the soil on golf courses will not permit of packing and one can readily see the great harm which has been done in permitting this condition to prevail. The turf on many courses has been absolutely ruined by heavy rolling and oftentimes the rough is far superior to the fairway simply because it has been left practically untouched. The soil, therefore, is in a better state of receptivity to absorb water, thus augmenting the water reserve and providing the moisture necessary to give vigor to healthy grass growth.

The method pursued in constantly rolling the fair greens with a heavy roller has in some cases formed a surface almost as hard as asphalt, through which only a very small percentage of the rainfall can percolate. Instead of going deep into the soil where it belongs it runs off into low spots, sours the greens, kills the grass and encourages the germination of every weed seed that is blown in. Weeds with large top roots bore down and thrive where it is impossible for grass to do so. Evidences of this can be seen on almost all courses where the soil is of a clay nature and a heavy roller has been used, and it is a wonder that those in charge of affairs have been so slow to recognize the trouble.

Water is of so much importance to the life of grass that we see thousands

of dollars spent annually in the piping of putting and fair greens all over the country and yet by the methods pursued of racking and caking the soil by heavy rolling, the object sought to be gained is in a great measure nullified. When it is considered that water is the greatest essential for plant life it is easily seen why so much is expended in the piping of golf courses. The water acts upon the plant food in the ground by turning the materials into solution and thus making them available for absorption. It should be the aim of those looking after the golf course to see that the ground is kept in a friable condition and always maintain the porosity of both fairgreens and putting greens. If this is done less water will be necessary for their maintenance and the textures of the grasses are sure to be better.

A heavy roller is a very good thing to have on a course where the soil is of a sandy nature, but its use should be limited to Spring and Fall rolling wherever the soil is clay.

### Clover Greens

**M**ANY beautiful lawns and greens are spoiled by the presence of a large percentage of clover plants. The little dwarf clovers usually found in mown turf are natives of this country and are generally most in evidence after a wet season or after the application of manures rich in phosphates or potash.

Clover in lawns, especially lawns devoted to games, is very objectionable, because the foliage being soft, pulps under foot, stains the balls, and becomes extremely slippery and danger-

ous, especially to lawn-tennis players: it holds the dew longer than gress, and consequently keeps quite green during dry weather when the grass burns brown and so gives the lawn a patchy appearance, its foliage being stiffer than the leaves of the grass makes the lawn or green slow, or worse still, slow in patches, and it dies away to a considerable extent in the winter.

The clover plants grow in two distinct formations, sometimes they are found forming self-contained patches, having apparently smothered out all the grass within their reach, and at other times they are found growing interwoven with the grass plants.

A clover plant or patch when in full foliage, in itself, presents a very accurate surface, and a green composed entirely of clover when in full foliage plays "slow" but fairly accurately; in fact, more accurately than it would if only partly composed of clover, but in the winter when it loses its foliage little or nothing is left but its branches which lie on the surface of the ground like so many pieces of stick, and make accurate putting impossible.

If the clover is interwoven with the grass plants it is not so objectionable as when it grows in patches, but as there is always the danger of it growing more vigorously during a favorable season and forming self-contained patches, every effort should be made to eliminate it, or, at least, to keep it in check.

The eradication of clover is always a difficult matter owing to the ramification of its roots, and any attempt to uproot it is doomed to failure and great damage will be done to the turf.

Clover belongs to the natural order of leguminosæ, and has the power, in