

of the soil. It lengthens the growing season for the grass and enables the grass-roots to resist drought, because the roots go into the soil earlier in the spring. It also improves soil ventilation; that is, it increases the rate at which the oxygen of the air can penetrate the soil.

Diseases Appear When Poisons Prevail

During Brown Patch weather one of the most important items necessary is to have a proper amount of air in the soil. But some greenkeepers are at a loss to know what is the best method to obtain it. We know that when the soils are in the best condition for the support of heavy turf about one-half of their interstices are filled with water; the other half with air.

For several years I have been a great user of charcoal, which I use for several reasons, and I believe that when a liberal amount of charcoal is in the soil, owing to its expansive power, especially when the soil is very moist, it allows more air to penetrate into it than would if it were not used.

If we were to pay more attention to our compost which we use on our putting greens, we would help to eliminate a great deal of the Brown Patch disease. We often use the soils from the compost before the nitrifying bacteria have had a chance to put the organic matter which it contains in a

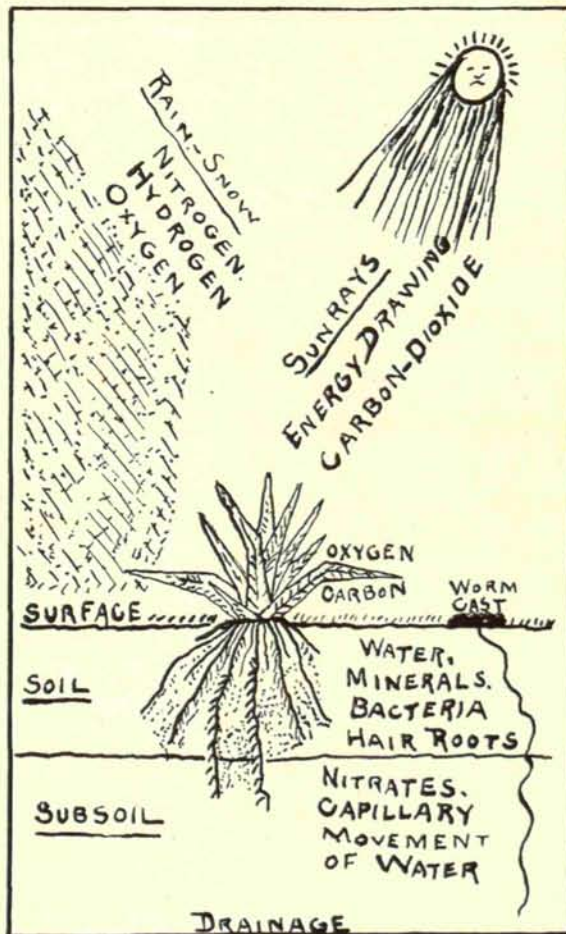
proper soluble form for the tiny young hair roots of the grass plant to make use of it.

I have observed while visiting various courses, that a large number of greenkeepers are using what we may call too much black muck, not properly composted, which often creates a toxic or poisonous condition in the soil.

During Brown Patch weather, in order to keep the grass in a healthy condition I fertilize each morning six putting greens after they have been mowed with six to eight pounds of sulphate of ammonia, and no more. I get it on the turf in liquid form and allow it to remain on the turf until evening, and then water these six putting greens. It makes no difference how high the temperature may be after the ammonium sulphate has been applied. We have never by our methods burned any of the turf. This has a tendency to promote a healthy condition, especially when the humidity is heavy, and further helps to ward off the Brown Patch disease.

We are informed that this disease is only on the blade and does not to a great extent affect the roots of the grass, which is true, but we should be mindful that when the humidity is heavy it causes the soil at the surface to sweat and keeps the air from pene-

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Rough drawing showing the influence of atmosphere, moisture and fertilization on a grass plant

Long Life and A Clean Cut

From the Viewpoint of the Manufacturer

FOR some reason, not easily explained, the impression has prevailed for many years that golf course machinery as a class does not need much if any intelligent care. This idea may have been derived from the carelessness of the average farmer, who is notoriously neglectful of his farm implements. Farm machinery in many instances is allowed to rust out rather than to wear out.

Editor's Note: The manufacturers of the United States and Canada are each spending thousands of dollars annually in perfecting labor saving machinery to increase the efficiency of the greenkeeper. Golf clubs invest huge sums of money in outfitting their courses with high grade machinery, which given intelligent care, is in a large measure responsible for the fine playing conditions enjoyed by the modern golfer. Much of the rapid increase in golf's popularity during the last ten years is directly due to the carefully designed equipment placed on the market to save hand labor in the maintenance of our golf courses.

Golf course mowers that were built a few years ago could stand pretty rough treatment, as they were strong, heavy cast iron affairs, and rugged enough at the slow speed at which they were propelled by the overburdened horse. But the situation is entirely different today.

As soon as the gang mower had demonstrated its wonderful efficiency, its economical importance was soon realized.

Lawns and fairways that had always taken days to cut were better done by the gang mower in as many hours. Anyone familiar with the mowing practice before the gang's discovery will remember that it required at least four horse mowers a full week to cut the fairways on a golf course that now is finished in one day. Had this saving in time been secured by merely joining together a plurality of the old roller mowers, there would have been nothing extraordinary in the discovery, but the demand was insistent for much faster travel and far better material than came within the compass of this older type. The old mowers were too weak to resist the strains and blows that they were subjected to by the greater speed and yet could not be made stronger without unduly increasing their weight and in consequence their draft.

To make a machine that would be much lighter but stronger became therefore, one of the many structural problems that could be solved only through long tests and experience before the gang combination came to have the approved and accepted dependence that it has today.

The required speed has been so easily furnished by lawn tractors, it is unfortunately too often forgotten that the combination includes a highly specialized apparatus for the mowing and which, while being dragged around at eight to ten miles an hour, over rough surfaces and all sorts of obstructions must be always in shape to give a good account of itself every day. It is unreasonable to class this especially designed and adapted apparatus, capable of doing far more work in a given time than any other mower has ever before done in the history of the world, with rough and ready farm implements. The fact is, few machines deserve better care or more intelligent inspection. Experience has shown that when anything fails in a gang mower, to function satisfactorily, the cause is almost invariably due to inattention, accident or lack of knowledge on the part of the operator. In such a case, he should make no attempt to repair it himself with a bit of wire, as often done, but should report it to the greenkeeper in charge, who may then take steps to have it fixed before the failure becomes chronic and a source of irritation and increased expense.

Check Your Machinery Every Day

It is still more important, however, that the operators should be taught what they must do to keep the machine in dependable order. They as a class, have in recent years acquired a better knowledge of mowing equipment but many still fail to appreciate the value of giving it *regular and systematic attention*. It should be made clear to them that their machines must be kept clean and should be oiled and greased, not in a hap-hazard way, *but every day*. A half hour spent before quitting time is enough for this and will be the most valuable period in

the whole day's work. A hose should be used for the cleaning operation. Bolts and nuts should be regularly examined and tightened. The manufacturers instructions usually accompanying such machinery should be followed with special care.

Sheltered Equipment Lasts Longer

As a final provision for the protection of tractors and mowers, arrangements should be made to put the entire outfit under cover every night. Exposed parts of such machines rust more or less rapidly, which of course means decay. It would often pay a golf club a good interest on the investment to purchase one of the small, inexpensive, portable and ready made garages of the kind that are being widely manufactured. They are just large enough to accommodate a tractor and mower combination. Such protection as a measure of economy will soon justify itself.

Cylinder Knives Sharpened Too Often

It is not as well known as it should be that frequent sharpening or grinding of the unit knives is a mistake. They require nothing like as much sharpening as they get. In fact they rarely need to be ground at all. On some courses throughout the country, the mower units are never touched oftener than once a year, at the time of their annual overhauling. The wear of the blades is thus reduced to a minimum and the life of the unit reel greatly prolonged. If the reel is set as it should be, to barely touch the bed knife, never to scrape hard against it, it will wear evenly and will need no further attention. This sounds like radical advice but it is based upon long practice and experience and can readily be demonstrated as sound. The operation of cutting is not like that of a pair of scissors but more like the blow of a sickle. The high revolution speed of the fly knife drives the grass against the bed knife and cuts it off more through the force of the blow than the sharpness of the knife itself.

Nothing could bring to the quest for economy more valuable assistance to those who have a golf course in charge, than careful investigation of this entire subject. The manufacturers would welcome their cooperation to bring about a better appreciation of its fundamental importance.—*Courtesy of the Worthington Mower Company, Stroudsburg, Pennsylvania.*

TO EVERY MEMBER!

Before the playing season starts, will you please mail a story about your course to The National Greenkeeper?