

# '35 HAD ITS TROUBLES

By JOHN MONTEITH, Jr.

**T**O PROPERLY understand the difficulties of last summer, one should take into consideration not only the weather conditions that prevailed at the time but should also go back to weather conditions of preceding years. In districts where greatest damage to turf occurred last summer there had been an abnormally wet spring with abundant rain and high temperatures during the early summer months. This condition had followed two or more years with unusually dry summers. The sudden switch from years of drought to the extreme opposite in itself caused much trouble where greenkeeping methods could not or at least were not adjusted rapidly enough to meet these changed conditions.

Much of the difficulty encountered with turf last summer was undoubtedly either directly or indirectly associated with heavy rainfall. A favorable period of growth throughout the spring developed an unusually thick mat of grass. The heavy rainfall saturated the soil and wherever drainage was poor the soil was kept so completely filled with water that air was practically excluded for many days or even weeks at a time. The root system which normally should have been pushing down to a considerable depth during the spring months was therefore kept relatively near the surface. As long as favorable weather conditions continued the turf presented an excellent appearance and there was no warning of any of the dangers ahead. A sudden change in the weather found the grass poorly prepared to withstand adverse conditions even though superficially it appeared extremely vigorous.

## Watering Schedules Troublesome in 1935

During the preceding years of drought, watering schedules had been developed on many courses that were completely effective to meet these conditions. During the past summer the heavy watering schedules used in the preceding drought years unfortunately were continued on almost the same liberal basis, in spite of the excessive reserve of water in the soil this year.

On other courses where full allowance

was apparently made for the heavy rainfall there was a decided tendency to go to the extreme in the matter of avoiding watering. When the root system of turf is shallow, due to various reasons, it is particularly important to watch watering closely. This is apparent when one realizes that a grass plant with a deep root system has a large reservoir of water to draw from even though the soil is only slightly moist. Grass with a shallow root system on the other hand has only a small reserve to draw from in the top layer of soil.

If this top layer becomes comparatively dry the turf may suffer even though the soil below may be extremely wet. A greenkeeper therefore has to be particularly on the alert at the time of sudden changes in weather conditions if the root system is practically all in the surface layer of soil.

## Watch Drainage To Govern Rainfall

Excessive rainfall is something that may be expected during any season throughout the Middle West and the East. Although there is no way to prevent it from falling there are several ways to remove the excess soon after it reaches the ground. First, attention should be given to surface drainage, for on most soils it is possible to remove large excesses of water much more rapidly from the surface than from the soil. Pockets where water collects are always treacherous from the turf maintenance standpoint. In many cases they cannot easily be drained but in all too many cases of damage due to this defect, the expense for providing an adequate runoff would have been trivial and much less than the final cost of replacing the turf killed as a result of this neglect.

In some instances cases were even observed where new sod had been laid in such damaged pockets without any attempt being made to throw in even a few buckets of soil to raise the level of the



Workmen are doing what they can to repair extensive turf damage caused on this St. Louis green by a combination of adverse weather and other conditions. The damage is typical of hundreds of Mid-West greens during 1935.

soil sufficiently to prevent a repetition of such losses in future years.

After the soil becomes thoroughly saturated during heavy rains the water escapes slowly unless conditions are favorable for its removal. On many golf courses soil conditions are such as to favor the retention of water for long periods. When the subsoil as well as the upper layers of soil are thoroughly soaked it may take days or even weeks for sufficient water to escape to make conditions favorable for root growth. In the case of many soils where the subsoil is not well drained or where there are shelves of rock, most of the water has to escape through the soil and move in a lateral direction, resulting in so-called seepage into the soils at lower levels. Where cases of seepage occur the soil may be kept saturated much longer than would be the case if it were well drained.

#### Protect Your Turf Against Soil Packing

The most common and effective way of removing excess water from soil is by use of properly installed tile drainage. The best tile drainage systems however are not entirely satisfactory especially for putting greens where the soil is of a nature that puddles and packs readily. The ordinary system of tile drainage used on golf courses is essentially the same as that used on farm lands, but on golf courses it is important to have the water removed more rapidly. Lack of cultivation combined with constant trampling and use of heavy machinery tends to pack heavy soils on golf courses and results

in slower escape of water from such soil than from cultivated farm soil.

The dry seasons that prevailed in many parts of the country for at least two years prior to 1935 tended to give those in charge of golf courses a false sense of security in relation to the soil drainage situations on their courses. The season of 1935 certainly called attention to golf courses' drainage flaws. The extent to which these warnings are heeded and immediately remedied will determine to a large extent the damage that will occur on these same courses the next year of excessive spring and summer rainfall.

#### Air Pockets Caused Trouble

Another condition that exists on many courses, particularly around tees and putting greens, is poor circulation of air. Turf growing in dead air pockets is much more likely to suffer from injury during seasons of ample rainfall and high humidity than in years of drought. Therefore, damage due to this cause was more pronounced during the summer of 1935 than in the immediately preceding seasons. There are many instances in which there is no possible way to improve the natural air circulation over turf. On the other hand there are a large number of putting greens and tees where it is possible to greatly improve the natural circulation at relatively little expense. Too many people have the idea that to get air circulation around a putting green it is necessary to chop down almost every tree within sight.

Removal of lower branches and underbrush, so as to create a funnel-shaped

opening in the direction of the prevailing wind, will make it possible to turn air currents downward and across a green to get the maximum benefit from air movements. Such openings are not only of benefit to the grass but frequently serve to provide golfers with a much appreciated breeze.

### Use Care In Opening Channels

This opening of air channels should be done with great care. Reckless slashing of trees and shrubbery may often destroy attractive features in the landscape that will take many years to replace. We often see beautiful trees or lovely banks of shrubs destroyed at the command of an individual who has suddenly gone wild with the idea of air circulation and sunshine for turf. After this destruction is accomplished there is no apparent benefit for the simple reason that too little attention was paid to the direction of the prevailing winds and perhaps to some wholly unattractive tangle of underbrush or unimpressive tree standing off several hundred feet from the area to be improved.

The summer of 1935 turned the spotlight on some faulty fertilizing programs. Probably the most conspicuous of these flaws was that of excessive use of organic fertilizers for putting greens. Organic fertilizers have their place in turf maintenance programs, but just because they do not burn when they are applied is no reason to use them to great excess.

During dry summers and little rainfall, such as 1933 and 1934 in the Middle West, the danger connected with the use of too much organic fertilizer is far less than in seasons of heavy rainfall. During dry seasons some fertilizing programs on golf courses were so adjusted as to include more and more organic fertilizer. As long as favorable weather conditions continued there was no harm. Damage resulting from too much organic fertilizer is most likely to occur during hot sultry periods when the soil is wet. The explanation of this seems to be that during dry seasons decomposition of organic material is gradual and much of this fertilizer is preserved in the soil because of the insufficiency of moisture or other factors favorable for its decay.

Many putting greens in the Middle West entered the season of 1935 with an abundance of organic fertilizer in the top layer

of soil. Often this was added to by further applications of the same fertilizer formula. Everything went nicely as this fertilizer became gradually available during the spring months when the cool wet weather encouraged only a gradual decomposition of this reserve fertilizer. Suddenly the weather changed to a series of hot sultry periods at which time the organic fertilizers in the soil decayed at a very rapid rate, with the result that large quantities of nitrogen were liberated just at the time the grass was least able to withstand such heavy application. The result was quite similar to fertilizer burns with an excess of any quickly available nitrogen.

It was reported that around many putting greens thus fertilized there was observed an odor which announced only too well the active decay of organic matter. The excessive use of organic fertilizers all had a share in the production of these odors and the ultimate yellowing and killing of the grass that followed. Warnings of this type of danger have been given by the Green Section and various writers in different magazines on many occasions.

It is to be hoped the summer of 1935 has added more warnings which will be heeded by those who do not forget too easily, and that future years will witness more rational fertilization based upon a clear understanding of the factors underlying the use of organic and inorganic materials.

### Moisture Favored Fungi

Brown-patch and other turf diseases took their toll. Since fungi invariably grow best when there is ample moisture, conditions were favorable throughout the Middle West for the fungi to cause turf diseases during the past summer. The preceding dry summers had been unfavorable to fungus growth and therefore there was less than the normal amount of disease. Consequently the greenkeepers developed an unwarranted sense of security and felt confident that because diseases had become less prevalent it naturally followed that their methods had become more foolproof. They therefore decided to continue throughout the summer of 1935 with little modification of the programs developed in 1933 and 1934.

Preventive treatments put on at regular but infrequent intervals which were adequate to hold diseases in check during

1933 and 1934 failed during 1935. Those greenkeepers who were familiar with the behavior of the mercury remedies, as observed fully ten years ago and on countless occasions since that time, adjusted their disease treatments in accordance with the needs for them and were able to keep brown-patch and dollar-spot in check. A few of those who stubbornly maintained set schedules regardless of attacks of disease apparently obtained some satisfaction in telling others that "the chemicals just didn't work this year." As a matter of fact the chemicals continued to work just as they had always worked. It was the fixed schedule that did not work.

#### Poa Annua Pulls Fade-Out

All grasses suffered during the summer to some extent but in a general way there was a decided difference in the ability of the various grasses to withstand unfavorable conditions. As is usually the case under such conditions, annual bluegrass (*Poa annua*) suffered most in both greens and fairways. The preceding years had been comparatively favorable to this grass, with the result that it thrived and spread rapidly, took complete possession of large areas and became the dominating grass on many acres of green, tee and fairway turf. Weather conditions in the spring of 1935 distinctly favored this grass but when weather conditions were so quickly reversed in early summer, *Poa annua* simply faded away. The resulting great scars in turf that only a few days before had been so nearly perfect completely baffled club members and naturally led to rumors of fertilizer or chemical burns as well as to many other terrible tales of what the greenkeeper had or had not done to the turf.

Of the putting green grasses the creeping bents stood out as the most resistant to the combined injuries of the summer throughout the Middle West. Those planted with the stolon method using the most widely planted strains, Washington and metropolitan, were the outstanding greens in the regions of greatest turf losses. On greens of mixed grasses, it was interesting to observe the large patches of many different strains of creeping bent remaining green and healthy, entirely surrounded by brown grass or bare ground. Such greens clearly indicated the importance of creeping bent for putting greens in regions where such unfavorable weather conditions are likely to be repeated any year.

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Likewise there were many cases which indicated the value of colonial bent as an ingredient in the seed mixture, especially for seeding approaches and borders of greens.

The winter and early spring months offer many opportunities to greenkeepers to improve their courses and make provisions to avoid some of the difficulties that are common on courses during the summer. The best time to detect flaws in the surface and tile drainage on a course is in late winter or early spring when there is an abundance of water. At that time notes should be made of the areas where drainage obviously needs attention. It may not be possible to correct these flaws at the time and the work may even be postponed until the following fall. Often the most convenient time to do the work comes when there is no excess water to indicate the full extent of the drainage work that is needed.

Golf course budgets should be so prepared as to make provisions for work that can best be done during periods when there is little play on the course. Too many club officials believe course expenditures should cease when the mowing season ends. Installation of the drains and removal of trees or underbrush are examples of many tasks that can be done more economically and with far less disturbance to play during late fall, winter, or early spring, than during the busy playing season. If such work is done during the season of greatest play the club members quite rightly object to the interference so caused. If the work is not done, extensive injury to turf in the middle of the season may be expected any year and the members naturally blame the greenkeeper for the damage. The greenkeeper even with the best of foresight and planning can only solve these problems if the club officials made provisions in the budgets for this type of work during the season when at least 99.99% of golfers think there is nothing to do on a golf course.