

Fertilization

By ROBERT J. HAYES

Read at the 6th Annual Educational Conference of the National Association of Greenkeepers of America, held at New York City, January 19-22.

THE purpose of such gatherings as these is to consider the various changes taking place and which materially concern us as members of a profession maintaining, developing and caring for golf course turf.

Greenkeeping as a profession is being more and more recognized as one where practical experience and thorough knowledge of one's job counts, in order to succeed. It is my desire to stress this particular point at this time when like many other types of business and professions we are affected by this period of depression. Many of you realize that a great deal more is expected and demanded from the greenkeeper now than ever before due to this condition.

We are coming to realize more and more the need for the exchange of ideas, seeking remedies for our problems and stressing every effort to procure the utmost and best results, for they are demanded of us. Therefore, to succeed, we must keep abreast of the times and the various changes taking place. We must also acquaint ourselves with the short cuts and new practices or methods being developed to make our job easier and better.

In the East the problems of many greenkeepers this past year have been most trying. It is therefore my desire to suggest some of the things we may do to help ourselves in these changing times.

The importance of knowing the condition of the soil where turf must be maintained cannot be too strongly considered and under such circumstances periodical soil tests should be made to determine what degree of acidity the soil is.

It is my opinion that many of our turf troubles



ROBERT J. HAYES
Greenkeeper at the Pelham (N. Y.) Country Club, one of the most prominent golf clubs in the Metropolitan district.

are directly due to excessive accumulation of acids causing toxic conditions of the soil, retarding growth of turf, locking up necessary minerals for root growth, etc., thus depriving the grass of the necessary food elements. It can be reasonably determined that such conditions will affect the turf during the summer. Our soils in this vicinity are such types that need considerable watching and testing to overcome this trouble.

Acid soil not only deprives the turf of its food but retards the growth of many bacteria which are so necessary in the soil to

change the ammoniates to nitrates so that the grass can take it up for blade or leaf growth.

Many of us must put up with *Poa Annua*, whether we like it or not, and where very acid conditions are evident, through tests, we run into difficulty trying to keep it in healthy, growing condition. This we have been told, is due to its need of a soil near the neutral point and favoring alkalinity. Being a native grass, where we must tolerate it, we must maintain it and my opinion is to give it attention prior to hot spells of summer.

POA ANNUA LIKES LIMESTONE

*P*OA ANNUA responds to limestone treatment and it is my opinion where lime is applied in May or early June that it will respond to this treatment with healthier growth and greener color.

So much for testing soils. The next problem we have is feeding. Excessive amounts of food will do more damage than no food at all. Complete balanced food applied in the early Spring in combination with compost will amply repay their applica-

tion, and if again applied in the Fall will benefit the turf more.

Various formulas are recommended but a selection should be made to fit one's needs and requirements. I am convinced in maintaining my own course that limestone has its value and have, after making an application, noted its direct benefits and needs. Nitrogen may promote leaf growth, phosphorous increases the root system, potash furnishes the starches and brings the plant to maturity, but I am convinced lime is more important under acid or toxic conditions, than the three, for fertilizers cannot beneficially function if applied to toxic soil, and in some cases do more damage than good.

Turf that does not procure proper nourishment, or is in poor condition due to toxic or acid soil, will be affected by the various diseases we have to combat.

The misuse of many of the fertilizing elements, particularly the acid fertilizers, has given us no end of worry. Of course, we all know that moisture, top dressing and drainage are necessary, but proper feeding in balance will produce good turf through common sense application.

Then again grasses are like human beings and have their likes and dislikes as far as plant foods are concerned. Therefore we cannot take the word of others as to the merits of any product unless we are convinced of its value.

Changes are continually taking place, new improvements are being made, and each and every one of us must keenly watch these things for our own good. Our profession can and will be better recognized when we endeavor to solve our own problems through contact with those desiring to assist us, and through our own experimenting to control diseases and poor growth.

In conclusion, I wish to say, that it is my earnest opinion that no difficulty should be experienced in maintaining turf if good judgment is used and we convince ourselves that plant life, such as grasses, are subject to their environment, that is, they must stay where put and cannot move when conditions for their growth and development are unfavorable. We, as greenkeepers, must study our problems today more than ever and with common sense and sound judgment, provide proper growing conditions in order to fulfill our part in the game.

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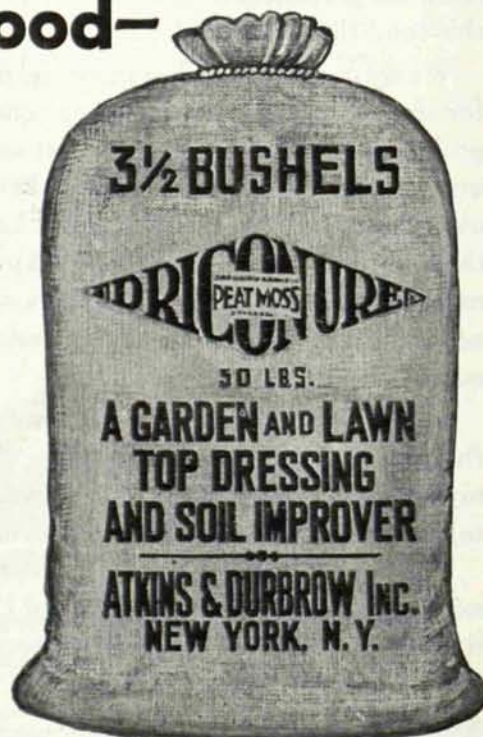
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Greenkeeping Yesterday and Today

By J. O. CAMPBELL

Read at the 6th Annual Educational Conference of the National Association of Greenkeepers of America, held at New York City, January 19-22.

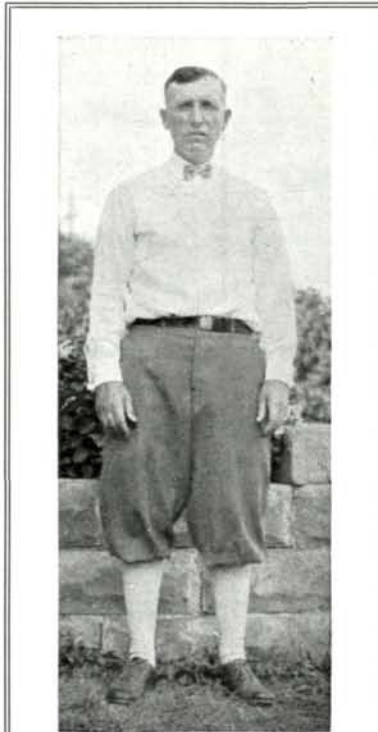
IT WAS suggested to me that the subject, "Greenkeeping Yesterday and Today," might be an interesting one to most of you. I am not an authority on anything, and what I am going to say, at least the greater part of it, has been said many times before. But I will try in as few words as possible to compare these two periods of time. I have no intention of going back to 1888, when John Reid laid the foundation for the game of golf in America.

Not so many years ago, any pasture or farm was considered good enough for a golf course. Now, before a tract of land is either purchased or leased, it is looked over very carefully, an estimate made as to the cost of building and maintaining a course on that particular property. There is, or should be, a golf architect employed. It is also a wise thing for the club to employ and have the greenkeeper on the ground. He should be there during the construction period. The reasons are obvious.

GOLF COURSE IS JUDGED AT THE GREENS

THE judging of a golf course is done at the greens. For that reason turf is the principal and important thing on the course. Yesterday we used very few different strains of grass, mostly blue grass, red top, fescue and meadow grasses. Turf diseases were rare. Today over the greater part of the United States, especially in the north, the bent grasses have taken first place for putting greens.

Much is demanded today of putting green turf. The greens are either seeded or stolons. The seeded ones are of a mixed bent, usually South German. This produces an excellent turf, but does not de-



J. O. CAMPBELL

Greenkeeper at the Wethersfield Country Club, Hartford, Conn. He stresses the importance of good greens upon which the course is judged

velop a uniform color as do stolons. Another objection we find to using mixed bent is, some is non-creeping and does not form as matted and compact a sod as does true creeping bent. The velvet seed which is included produces a very fine leaf and stem growth, but is susceptible to brown patch and other turf diseases.

One of the best known seeded turfs is Cocoos or Seaside bent. It is distinctly a creeping bent, spreads rapidly making a very fine turf. Personally, I prefer bent stolons, either Washington or Metropolitan strain. In recent years a large percentage of the greens in this country have been planted by the vegetative method. This makes a green which is uniform in color, more resistant to brown patch, and a truer putting surface.

A good golfer is partial to these greens when they are properly cut and maintained. This same grass

without the proper attention, produces a grainy texture, and is faster with the slope of the green, and not so fast in other directions. This is one of the problems the greenkeeper of yesterday did not have to contend with.

TURF DISEASES TODAY ARE NUMEROUS

The diseases of turf today are numerous, principally large and small brown patch (the latter being called dollar or pepper patch), ring patch and pythium. The mercury compounds are universally used as a cure and preventative for brown patch. It might be called a specific for all fungus diseases.

There are several other conditions almost as destructive as the diseases, winter kill, snow mold, algae and scald being the most common. I believe

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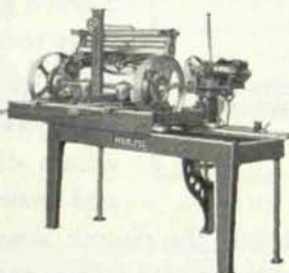
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these are mostly caused by poor drainage and improper contouring.

Then to add to our troubles of today are the insects, earth worms, and grubs. At the present time Japanese beetles and earth worms seem to be the worst offenders. Japanese beetles cause considerable damage to fairways and greens, especially the latter, as they prefer the soft soil for depositing their eggs, and the tender roots furnish especially good food for the grubs. Thanks to Professor Leach for the lead arsenate treatment, these pests along with the earth worms are easily kept under control.

I believe every new green should have the lead arsenate treatment during construction. As an illustration; three years ago I built a green, and treated the soil with lead arsenate before planting. I have never had any trouble with worms or grubs on this green, but this last summer, I visited a new course on Long Island. The owner and I walked up to a green. The first thing I noticed was that hundreds of worm casts had been mashed down and rolled out with the mowers. He thought the condition was caused by the *balls* hitting the green. If a little lead arsenate had been applied at the time of construction, the balls would never have caused this condition.

FERTILIZING PROBLEM USED TO BE SIMPLE

FERTILIZING several years ago was simple compared with today. Barnyard manure at first and later on Sulphate of Ammonia was added, this was also used as a cure for all turf ailments. Today there are many brands of commercial fertilizers on the market, with new ones making their appearance frequently.

Sulphate of Ammonia has, and I believe always will hold its place among bent grass fertilizers. The nitrogen is readily available; it is a quick stimulant and has a tendency to eliminate weeds and clover. There can be no definite amount set to use. By testing the soil at frequent intervals, one can readily determine whether there is enough acid present.

Straight bone meal was at one time considered a very good fertilizer, but now it is used mostly as a base for other fertilizers. There are a number of ingredients in most brands of fertilizer, including blood, fish, bone, nitrate of soda, acid phosphate, potash, cotton seed meal, ammonia phosphate and Urea. Activated sludge is also used extensively.

Low handicap players demand a truer putting surface than ever before, so it behooves us to remember our compost pile, as all commercial fertilizers known will not true up a green. The old methods used in making a compost pile have never been improved upon to any great extent. Every one of us has our own ideas as to the proper method of making compost. Lime was used extensively a few years ago; it was considered almost indispensable. Today it is used only for correcting an extremely sour or toxic condition of the soil.

MARKED IMPROVEMENT IN EQUIPMENT

THE equipment was also simple a few years ago. Almost the first thing one saw on visiting a course was Old Dobbin coming down the fairway with an antique mowing unit behind him. Up until about 1921 the equipment used was horse-drawn, slow motion, single unit for fairways, ordinary farm mowing machines for rough, and high-wheeled, five-bladed lawn mowers for the greens and tees. The fairway rollers were cast iron or hand made of concrete. I have had the pleasure of destroying some of these old-type rollers.) They were not pliable to the contours of the ground. The same type were used on the greens except they were smaller.

Greens were rolled often and kept in such a hardened condition that it was almost impossible to grow turf. The first power mowers were of both the push and pull types. These types are still in use, but are being steadily improved, being built of better materials, have finer cutting qualities, easier adjustments and are much more easily handled. Today there is one make of putting green mower which is electric motor-driven. The roller type of putting green mower is quite popular.

We now have power sprayers, built especially for golf course work. Years ago fertilizers were broadcast by hand, partially mixed with soil or sand, the result being uneven distribution.

There seems to be a difference of opinion regarding the best method of watering. Some still prefer hand watering. I have had good success with traveling sprinklers. These sprinklers are placed on the green every other night at about 9 p. m. and removed at 7:30 a. m. They cover an area of about 80 feet in diameter and are placed to take advantage of prevailing winds, and to cover the mounds around the green. This method is satisfactory in this section during the hot, dry weather, but where

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NO ECONOMY IN OBSOLETE MACHINERY

I do not believe it is economy to use, even in these days, obsolete and worn-out machinery. There are new labor-saving devices being perfected every year, and I think it would pay clubs to take advantage of this new equipment.

The beautifying of the grounds around the club house, seems to be one of the necessary things today. The improvement can be seen on a visit to almost any club, or a study of the illustrations in any golf magazine. This opens up a wide field, and gives unlimited opportunity for the greenkeeper to show his skill and knowledge along this line.

I would like to say just a few words about trees. A few years ago, they were ruthlessly cut down, no matter how fine a tree was, it had to go if it interfered with construction in any way. Now that is not true to such a great extent. There is a greater realization of their importance and beauty. Thanks to Mr. Martin Davey we are better able to understand their needs and care.

The greatest difference of all between yesterday and today is in the greenkeeper. Often the owner of the farm was employed at the time the club acquired the property, or he was a farmer living in the vicinity of the club. Sometimes he made a fine greenkeeper, often he did not.

GREENKEEPING TODAY IS HIGHLY SPECIALIZED

TODAY greenkeeping is a highly specialized profession. The man who aims to stay in front must keep even or one step ahead of the times in order to meet new demands, which are greater in the field of golf than any other sport. His responsibility is greater than at any time in the history of golf. He is expected to be a turf specialist, have a knowledge of golf architecture, drainage, landscaping, plumbing, carpentry, entomology, botany, be an electrician and mechanic, as well as an expert accountant, and just for good measure be financial and marital advisor to club members, besides knowing how to get the most labor out of the smallest number of men.

Thanks to the National, State and District organizations, such periodicals as the NATIONAL GREENKEEPER, Golfdom, and the United States

Golf Association Green Section Bulletin, it is possible to know what is being done all of the time in every part of the country. Any man who fails to take advantage of these things is bound to lose out.

Today greenkeepers must know a great deal about construction. They are asked from time to time to build tees, lay out fairways, put in drainage, or rebuild greens.

PROPER CONSTRUCTION OF A GREEN

I WOULD like to tell you my idea of the proper construction of a putting green. After the location is selected, plow surface and remove top soil. Remove all stone to a depth of at least 12 inches. Lay sufficient drainage to a depth of approximately 24 inches, using 4 to 6-inch land tile, about 15 feet apart, laid with the fall of the land. It is best to cover the tile with burlap bags or a 2-inch layer of straw, refill trench, proceed to build up the green to about an 8-inch depth in the lowest level. This soil should be first-class top soil.

In grading, slope the green to hold the shot. The back of the green should be not less than 16 nor more than 24 inches higher than the front. This will take care of the surface water. The contouring is very important; this should not be abrupt but gently sloping, and irregular in shape. Cover with about 4 inches of good top soil, and two inches of compost mixed with arsenate of lead at the rate of about 6 pounds to the 1000 square feet, to grub proof the green. Rake and roll until a fine seed bed is completed. Then plant seeds or stolons.

Greens built this way are cheaper to maintain, and are less liable to develop brown patch or scald. Good drainage is the foundation of a good putting green.

Usually when the finance committee start looking for a place to reduce club expenses, they start with the greens maintenance budget. This does more damage in one year than a greenkeeper can repair in four. The cost of maintenance cannot be standardized; there are no two courses exactly the same, nor even two greens on the same course with identical requirements. That is one reason why the same greenkeeper at the same club over a period of years will invariably cut maintenance costs to a minimum. To do this he must have the full cooperation of the finance and Green committee. These problems were the same yesterday as they are today.

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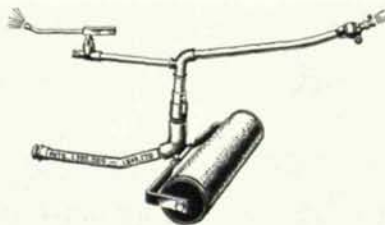
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President Morley Urges Loyalty and

*I*T affords me great pleasure to again present to you this my Sixth Annual report. We have now come to the final session of our Sixth Annual Convention which will soon have gone into history. It was a year of attainment to some, but a year of hope deferred to others.

We have now reached another milestone along the highways of life. Another year has passed with its joys and gladness, its sorrow and its care. The blessings that have been bestowed upon this organization during 1931 are plainly indicated in this annual report.

There is no use denying the fact that 1931 has been an off year for every golf club and association and the National Association of Greenkeepers of America has been no exception.

No chain is stronger than its weakest link; the weak link in our association is the membership roster. The influx of new members is the very life blood of this or any other organization. No association can survive unless it records a healthy growth reflected in a constant influx of new members. This is plain logic.

The foregoing may leave to some the earmarks of despair or loss of faith in our institution; far from it. Fear and despair have no room in the National Association of Greenkeepers of America's dictionary. Faith, grit and pluck have always been our symbolic and dominating traditions.

The membership at large has in the past always measured up to a crisis, when the welfare of the association was at stake, especially on occasions when the sense of duty was confronted with the acid test, "To Serve." Such an occasion to serve awaits you. Let us for the year 1932 conduct the largest and most intense "Quality" membership campaign ever undertaken.

The hopes of the present and future spring from the experiences of the past. Old 1931 has gone into history as an interesting if chaotic year. If it has been a year of trial and tempest it has also written into its records for our association a significant and shining example of achievement that raises high our hopes for 1932.

Since we have been organized we have won the friendship of the golfing world by our progressive



SCENE AT ONE OF THE EDUCATIONAL CONFERENCES OF THE NATIONAL ASSOCIATION OF GREENKEEPERS AND CHAIRMEN FROM ALL OVER

Human Sympathy in Annual Report

work. For the first time in the history of greenkeeping we have been honored by the United States Golf Association by having four of our member greenkeepers placed on the Advisory Board of the Green Section. We must all pull together with a determination that when we meet in annual session in 1933 we will be able to report that our association has more than held its own.

The year just past has to a large extent brought to me many sad and distressing letters from members who have lost their positions, appealing to me to try and secure another position for them. While we have on several occasions been able to do so the demand has been so great that it has been an impossibility to obtain positions for all. From a charitable standpoint I would recommend that our association retain all members in good standing who have lost their positions until such time as each and every one is able to secure another position.

Let us keep in close touch with all of our unemployed members so that if you find any that you know are worthy of aid to let us know. For we will not allow anyone to go hungry, especially if they have a

family to support, while we have a reasonable balance in our Benevolent fund.

I am of the opinion that there are very few members who realize the amount of labor, expense and correspondence that has become necessary to stage a Golf Show, Conference and Convention. There is so much detail work to look after in order to avoid confusion and complaints. The Golf Show we have fostered has been conducted along sane and as far as possible, economical lines.

Let us sow the seed of happiness, to stoop down and consider the needs of those thrown out of employment and to remember the helplessness of some of our fellow members.

Let us hope for a new inspiration, for a better tomorrow. To put our shoulders together to make 1932 a better year than 1931, and let us be imbued with the spirit of goodwill towards our fellow greenkeepers. Then our hearts will glow warmly with the satisfaction that comes from the consciousness of duty faithfully rendered and loving and helpful acts cheerfully performed.



NATIONAL ASSOCIATION OF GREENKEEPERS OF AMERICA AT NEW YORK.
MEMBERS OF THE UNITED STATES AND CANADA WERE PRESENT.

Minnesota Gossip

By H. E. STODOLA, *Secretary*



H. E. STODOLA
*Secretary, Minnesota
Association of Golf
Course Superintendents.*

THE first meeting of the New Year was held in the new clubhouse of the University of Minnesota's golf course. Our genial host was Art Anderson, the greenkeeper of this modern course. It consists of 132 acres of heavily wooded rolling land, and is an ideal site for a sporty golf course.

The U. of M. course was just recently reconstructed. The facilities of the University were used. Mr. Zelner of the Engineering Department surveyed the entire course. Mr. Roe, head of the Agricultural Engineering Department planned all the tile lines. Now he is working on a California hoseless system for watering. Dr. Rost, of the Soils Department, analyzed the soils. With Art Anderson on the job, work was done very efficiently. Incidentally Anderson is a graduate of the famous Minnikahda course.

* * *

One feature about the course is the way the greens are constructed. First, the grade and pitch of the green was obtained. Then four or five inches of good soil was applied. Then six inches of peat with a thin layer of sand. On this was applied eight inches of good soil. This was deeply disced and doubly disced until a good mixture was obtained.

All over the green there is a good soil bed as deep as a cup is ever cut. The beauty of these greens is that after fifty thousand rounds of golf they are soft to the tread and hold a pitch nicely without being water-soaked. Also they promote a very good growth of grass.

* * *

As to the type of grass on the greens you might say this course is a veritable experimental plot. The University has been experimenting with bent for many years and had many square feet of bent sod of different varieties. This sod was transplanted to the newly prepared greens. So they have Washington bent, Metropolitan, Erickson, Vermont and Cocoos. According to Anderson's observation, Washington is good, Metropolitan has too much nap, Virginia never gets real fine, Erickson bent is good, and Cocoos does well with little attention.

* * *

One noticeable thing about their traps is the white sand which they used. The best thing you can say about it is that it looks good in a picture. Outside of that it discolors easily and also blows away when dry.

They use power mowers on the greens and like them. The course is about the best any University can boast of. This coming summer the Big Ten Championship will be held there.

* * *

Art Anderson has worked hard and intelligently and a fine course is his reward. Mr. W. R. Smith of the University Athletic Department is manager of the course and a very capable one.

* * *

When Leo Feser called the business meeting, he introduced Mr. Smith, who outlined a short course for greenkeepers to be held at the University in February. The course will be open to all those interested in turf culture. Announcements will be sent to all Minnesota, western Wisconsin, northern Iowa, and the Dakotas' golf clubs.

* * *

One of our Minnesota members has taken over a golf course in Cedar Rapids, Iowa, and he had many interesting things to say. He is Joe Benson, formerly at Alexandria, Minn. He showed the members some pictures of his course, and said he has many new problems to contend with.

After the business meeting, Mr. Anderson served a good luncheon and then cards were played. With the National Convention in January and the Short Course in February, this Association is very busy and the next meeting will be announced later.

Baltimore News

By WILLIAM E. DUNT, *Secretary*

Mid-Atlantic Association of Greenkeepers

FOLLOWING is a report of the annual meeting and election of officers of the Mid-Atlantic Association of Greenkeepers, held at the New Howard hotel, Baltimore, Maryland, on January 4.

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The following officers were elected for 1932: R. D. Gedding, president, Gibson Island Golf Club, Pasadena, Maryland. Tom Fischer, vice-president, Burning Tree Golf Club, Bethesda, Maryland. William E. Dunt, secretary, Sherwood Forest Golf Course, Annapolis, Maryland. Richard Scott, treasurer, Rolling Road Country Club, Catonsville, Maryland. Publicity committee for Washington, D. C. R. P. Hines, and for Baltimore, R. D. Geddings.

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Owing to the mild weather in this section golfers are making use of the courses, keeping our greenkeepers busy. In some cases greens have been cut owing to the exceptional growth of grass at this time of year.

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Several of our members attended the Annual Greenkeepers' Convention in New York.