Raises the Average Temperature, and Increases the Length of Playing Season

The specific heat of water is much higher than that of soil. The greater the proportion of water a soil contains the more heat it requires to raise the temperature of the soil a given amount. The continual evaporation from the surface of a wet soil reduces the temperature or retards the increase in temperature. The heat applied to a given soil area is fairly constant, so that if this heat must be used up in evaporating water the temperature of the soil body is not raised.

Drainage removes the excess water from the soil, reducing the heat required for evaporation and causing the soil body to warm up more readily. As a result of this, a drained soil warms up much earlier in the spring, and so lengthens the growing season. This enables the greenkeeper to start his spring work earlier, which is especially valuable in a so-called "backward" spring. The growth of the grass upon drained land is greatly benefited by the high temperature that prevails on drained land in the spring and fall. Investigators have found that at a depth of seven or eight inches a drained soil is from 12 to 15 degrees warmer than an undrained soil of the same nature and in the same climate.

Reduces Heaving

It is often noted that posts and dandelions have been raised out of the ground during the winter. This heaving is due to the freezing of a wet soil. When water freezes it expands one-eleventh of its volume and in a saturated soil this expansion must be upward, the amount of the heaving depending upon the amount of water in the soil and the depth to which it is frozen. The same action tends to raise the roots of the grass out of the ground, as the soil settles back after thawing, more rapidly than the plant root. This heaving also breaking many of the small roots and is the actual cause of winter kill.

Reduces Erosion

In an undrained area all of the rainfall must either be absorbed by the soil or pass away over the surface. In a continued rainy season the soil soon becomes saturated after which all the rainfall must flow away over the surface. The particles of the saturated soil are easily displaced and carried away by the water.

In an underdrained area the soil has a greater water capacity and allows of a continual removal of the surplus water by the drains. This greatly reduces the amount of water which must pass away over the surface and thus reduces erosion. Underdrainage of slopes will often prove a profitable investment if installed for no purpose other than reducing or preventing erosion.

Surplus Water Not Used by Turf

Greenkeepers often remark that they do not need tile underdrainage, that their land has such a great amount of natural drainage that underdrainage is not needed. This is a great mistake. Remember tile underdrainage is essential in both hilltop or rolling lands and in low lands. Tile underdrainage helps in time of wetness or drought, for the simple reason that it removes the surplus water that is a detriment but retains the water needed for the growing plants and supplies same in time of drought due to the capillary action.

Better drainage (1) makes lands dry up earlier in the spring and prevents water standing after rains; (2) warms the soil so that the season is lengthened in both spring and fall; (3) ventilates and increases air content of the soil so that organic matter is decomposed; (4) removes the injurious salts and acids; (5) favors a deep root development; (6) prevents winter kill; (7) prevents shrinkage and cracking of soils in periods of drought.

Growing Chewing's Fescue On Hard Clay Fairways

By FRANK ERMER, Secretary Cleveland District Association of Greenkeepers

IN picking up the January issue of THE NATIONAL GREENKEEPER, one of the first articles that attracted my attention was one by Lyman Carrier on fescue grasses. In this he explained how true red fescue, or more commonly called Chewing's fescue, spreads by stolons into a close, fine mat.

I have had a little experience with fescue on our fairways, which were of very hard clay, and baked badly in summer. It was quite a task to get what Chewing's fescue we had to spread and fill in the bare and cuppy places you hear the golfer howl so much about while playing summer golf.

First of all I took a disc with blades set straight, and cut the fairway in three different directions, then top dressed with a good grade of screened compost. On top of this surface I seeded the poor spots with Chewing's fescue, mixed with a small quantity of red top.

As there were still plenty of bad cuppy places, I decided not to use any seed, but to try and force the fescue to spread over them. These spots I spread with well rotted manure, raking it in well to make a kind of mulch around the grass roots. With this treatment I now find the fescue making rapid strides in filling in the bare spots and living up to its reputation of making a fine, closely matted turf.

George Sargent of Scioto Country Club, Columbus, Ohio

New Member

In joining the National Association, Mr. Sargent wrote President Morley, as follows:

"I wish to congratulate you upon your splendid work in founding this organization. Such work is definitely constructive, and holds a value few of us appreciate."

Mr. Sargent is now preparing an article for THE NATIONAL GREENKEEPER, from his long experience in greenkeeping.

Bermuda Fairways, Tees and Lawns

By CHESTER MENDENHALL, Greenkeeper Sim Park Golf Course, Wichita, Kansas

B ERMUDA grass is a southern grass which likes hot summer days and will not withstand severe cold weather. Wichita, Kansas is about the northern limit for it to be successfully grown. To my knowledge Bermuda grass greens have never been tried this far north. I have been growing Bermuda grass on fairways, tees and lawns for the past seven years, and I expect to plant a Bermuda grass green on the Sim Park Golf Course this coming spring for experiment.

Bermuda grass is of the creeping vine nature. Its nature of growth is similar to Columbia bent, Bermuda being far coarser and roots much deeper in the ground. Bermuda grass roots down to a depth of four to six inches and these roots will run out from two to three feet in cultivated soil, sending runners up to the top. This feature makes Bermuda grass very troublesome around flower beds, shrub beds and grass greens planted to other varieties of grass.

Bermuda Makes Fine Tees and Approaches

Bermuda is a wonderful grass for tees, owing to its ability to quickly cover where it is torn out with a club. As for fairways there is no other grass in this part of the country that will stand so much hard usage with so little care. It requires a great deal of mowing during the hot weather, especially where fairways are fertilized and watered, as the hot months are its best growing season. I use a great deal of Bermuda grass on my approach to the greens, say from fifty to seventy-five yards in front of the green. As every greenkeeper knows, this is the part of the fairway that gets the hardest play.

Planting the Giant Variety

There are several varieties of Bermuda grass. The variety that we find does best here is the giant or hardy Bermuda. I have been growing this variety for the past five years. It has a much heavier root system than other varieties and also heavier foliage, and has survived winter weather with a temperature of twelve degrees below zero coming through in fine shape while other varieties were seriously damaged by the severe cold.

Bermuda grass is most successfully grown from planting the roots—it is seldom satisfactory to sow seed in (Continued on page 26)



A Chat With Our President

V ICE-PRESIDENT John McNamara of the Pittsburgh Field Club, Aspinwall, Pennsylvania has had good results in ridding his putting greens from ants by using black pepper.

T HE officers of this association have done their part in securing for our next convention one of the best convention cities in the United States, and one of the finest hotels in Detroit, Michigan, Hotel Fort Shelby. The management has given us a suitable hall for our meetings. It is now up to the members to fill it, and I might add that from all appearances it will be filled to capacity.

B LESSED is that friend among friends who does not have to be assured every hour or so that you are his friend, who trusts enough to count on your friendship without constant reminder that it still exists. He is the rare and precious pearl among friends. J. FESER, Wayzata, Minnesota, says the essential characteristic the greenkeeper must have is love of Nature. He may have all the other essentials, but he will fail before he has begun if he cannot love the beauty and perplexities of the Great Greenkeeper.

A N Irishman working for a Scotchman asked for an increase in pay. The Scotchman replied, "If you are worth it I will be pleased to give it to you. Now, let us see what you do in a year. We have three hundred and sixty-five days in a year. You sleep eight hours every day, which makes one hundred and twentytwo days in which you sleep, taken from three hundred and sixty-five days leaves two hundred and forty-three. Now you have eight hours' recreation every day, which makes one hundred and twenty-two days, taken from two hundred and forty-three days leaves one hundred and twenty-one days. We have fifty-two Sundays in a year, which you have off, leaving you sixty-nine days. You have fourteen days vacation; take this off and you have fifty-five days left. You don't work Saturday afternoons. This makes twenty-six days in a year; take

(Continued on page 30)

Clubhouse Gardening

Perennials Vs. Annuals

By W. D. CHINERY, Greenkeeper York Downs Golf Club, Eglinton, Ontario, Canada

O^F hardy perennial flowering plants the question may be asked, are they supplanting the old familiar and perhaps better known annuals? Personally, I think they are. The reason for this may be attributed to various causes.

In the first place perennials give far less trouble, therefore are far less costly—that is, after the first expense of buying and planting is over. They will also produce a greater variety of bloom, and if carefully handled have a longer duration of flowering. Added to this they will continue on for an indefinite time. As a matter of fact perennials are spoken of as the plants that come up every year, but this should be accepted with a certain amount of reserve, for much depends upon the treatment they receive as to their reappearance, year after year, especially some varieties of which I may have an occasion to speak later on.

Long Flowering Season

With a good collection of these hardy flowering plants, and in a normal season, one may look for a quantity of flowers early in May extending throughout the season even until November.

Now in the case of annuals, these plants require operations to commence in March or April at the latest to get good vigorous stock. This would mean artificial heat of some kind and with few exceptions perhaps one cannot reasonably expect much flowering until midsummer. Oftimes their period of flowering is shortened by early frosts, meanwhile much trouble is involved from first to last.

Show Specimens Increase Popularity

Although perennials have been known and grown for a great many years it is not so long ago since they gained such popularity with the gardening world, and one of the influences at work in this respect is no doubt the many flower shows that are held periodically throughout the country and where cut flowers of perennials are largely exhibited for competition. Still another reason is a better cultural knowledge of the requirements of these plants by those who are interested in flower gardens, also by importations of new varieties from various parts of the world and by improvement through careful selection and by hybridizing different species.

Buying Table Flowers Expensive

When a golf club is fortunate in having a well developed flower garden and cut flowers are extensively used for table decoration, it would be an interesting thing for someone to price the the flowers used for such purposes during the entire season. I think the results would be rather startling.

With regard to the culture

of perennials—a good friable soil, well drained, is best suited for their requirements. They can be grown in heavy clay soil or light sandy soil but those who are conversant with the extremes of soil structure know the demands to be made to render such soils suitable or capable of good results.

Spring vs. Fall Planting

For some reason or other a great number of people choose the spring for planting out perennials. That they may be planted at this season with safety I readily admit, but it will be found that in the majority of cases when planted in the fall they will succeed and give better results. For this reason, which is a most important one they will establish a rooting system before severe weather sets in, and all such plants consequently will start off much stronger in the spring. Whereas, those planted in spring in many cases will be pushing up their flowering spikes before they have sufficient roots to support them. In many instances it would be good policy to remove such inflorescence and so keep them from seeding, which would be a double strain on a newly set plant.

Plant Perennials and Annuals Separately

To insure success and to allow of proper treatment it is wise to keep your beds and borders for what they are intended for, viz., perennials, and not to attempt growing shrubs or annuals in conjunction. To do so will be to court failure in the end as it will be a case of the survival of the fittest.

The size of borders should be determined by conditions, financial or otherwise. Not less than six feet wide if variety and effect are desired, but one of nine feet is infinitely superior. The space allowed between each plant should be determined by size and vigor of the plant and may vary from nine inches to thirty inches apart.

(To be continued)



W. D. Chinery

13

Golf Grasses

The Bluegrasses By Lyman Carrier

Editor's Note:—Mr. Carrier was for many years connected with the U.S. Department of Agriculture, as agronomist in pasture and forage crop investigations. His work with the U.S. G. A. Green Section established the value of vegetative creeping bent for putting greens.

THE bluegrasses known to botanists by the generic I name of Poa, have been domesticated for a great many years. They are probably the oldest of our hay and pasture grasses. In England the Poas are called meadow-grasses. The species called Kentucky bluegrass in this country was introduced into New England by the colonists no doubt in the forage used to feed their animals on the voyage over. It was grown by the French at Montreal at an early date and taken by them to the Ohio Valley about 1700. There it made itself at home in the open woodlands and natural meadows. When the first English explorers reached that locality about fifty years later they found large areas of bluegrass and white clover. These two plants are most frequently found growing together. The term "bluegrass" seems to have been applied first to Canada bluegrass in Connecticut but it soon became attached to its more valuable cousin. Kentucky bluegrass is also called June grass in the north.

Kentucky Bluegrass (Poa pratensis)

Kentucky bluegrass is a valuable sort for fine turf as well as agricultural purposes. It is easily identified once you become acquainted with it, by its rich green color, narrow leaves and the blunt boat-shaped tips to the blades. It is the most common of the volunteer grasses on rich lands in the northern half of the United States. Its range extends from coast to coast. It is successfully grown as far south as the northern counties of the Gulf States.

It is strictly a rich land grass. It does not make much difference what the type of soil is so long as it is fertile. The term fertile takes in everything which a plant needs for its growth, such as moisture, drainage and food. When growing at its best bluegrass is hard to beat for fairways on the northern golf courses. The leaves have strength to hold up the ball. Ordinary trampling does it no harm.

This grass has three faults or weaknesses. First, it is slow in forming a turf from seed. The seeds are slow in germinating and it take months, sometimes a year or two before the ground is entirely turfed over. To offset this fault it is customary to use some rapid growing grass along with it. Redtop is the one most commonly seeded with bluegrass. A mixture of four parts bluegrass and one part redtop gives good results. Cocoos creeping bent seed is now being used in the place of redtop with excellent results. Redtop usually disappears after a year or two while the bent is a permanent addition to the turf and being a creeping grass repairs injury to the sod in less time than it takes bluegrass alone. Wherever the soil is poor or sour



Lyman Carrier

it is advisable to include the bent in the seeding.

The second fault of bluegrass turf is its bunchy or cuppy condition in early spring. Much of the turf kills out in winter leaving little tufts of plants interspersed with bare places. When growing weather comes the bluegrass sends out little short root-stalks beneath the surface of the soil and soon new plants start up in the bare places. By the middle of May this cuppy condition has disappeared.

The third fault is the tendency of bluegrass to languish in mid-summer. Unless given plenty of water bluegrass stops growing in July and the turf becomes sparse and off-color. This is most troublesome on heavy clay soils. Many golf courses are now installing watering systems for their fairways as well as their greens, to remedy this condition.

Canada Bluegrass (Poa compressa)

There is but one use for Canada bluegrass on a golf course and that is for rough. It differs quite noticeably from Kentucky bluegrass in habit of growth. Instead of making a uniform covering of turf the plants come up as individual stems. When cut to lawn length it leaves a stubble instead of a turf. The stems are wiry, growing in a sort of zig-zag fashion. Another noticeable characteristic of Canada bluegrass is its flattened stems. This taken with its pronounced bluish color makes it easily identified.

Canada bluegrass will grow on poorer soil than will the Kentucky bluegrass and once it gets established it keeps out other vegetation. Its sparse open sod which does not hide the ball, together with its wiry stems which offer about the right penalty to the player who gets into it makes it an ideal rough. Canada bluegrass does especially well in western New York and Pennsylvania and northern Ohio.

Annual Bluegrass (Poa annua)

There is much difference in opinion as to the value of this species but whether we like it or not we have it to contend with. "Po' Hanna," as one well known greenkeeper calls it, is about the first plant to start growing in the spring. It can be identified by its seed heads which form right at the surface of the ground if closely cut. This ability to form seed even on a closely cut putting green is one of the chief drawbacks to this grass as it gives the turf a frayed, unsightly appearance. It also has a light green color which is not so attractive as the color of several other turf grasses.

Annual bluegrass is generally considered a short lived annual, that is, it must come from seed each year. Under most conditions there are several crops a year. It does not take this grass but a few weeks to grow from a seedling to a mature stage. In some instances I have known tufts of it to live over winter and I have also found short rootstalks under ground which is one of the characteristics of a perennial grass.

There is no commercial supply of this seed that I know anything about. It seeds abundantly but so near the ground there is no economical or efficient way of harvesting the seed.

At Washington, D. C., we used to consider Poa annua as an asset to the golf courses. It came on earlier than the bents and gave a good putting surface for two or three weeks before the greens would have been in shape for play without it. As hot weather came the bents, mostly Rhode Island bent, started growing. The poa annua gradually gave way and the bents made up the turf, the change being so gradual it was scarcely noticeable.

In the Metropolitan District, however, this grass is one of the worst pests the greenkeepers have to contend with. It comes early and stays throughout the summer. It has invaded the creeping bent greens which have been planted by the vegetative method and ruined many of them. The old Washington strain is the only one that has been able to withstand the encroachment of this weed and with this strain it takes considerable vigilance on the part of the greenkeeper to keep it out.

Rough-Stalked Bluegrass (Poa trivialis)

This grass has increased in popularity quite rapidly since I called it to our seedsmen's attention some ten years ago. It is well known in Europe being the chief constituent in the famous lawns and pastures in England. The seed is harvested in Central Europe. For some reason it had never been exploited in the United States. No one seemed to distinguish it from Kentucky bluegrass although the habit of growth of the two sorts is quite different. I found it growing in the lawns on the north sides of the public buildings at Washington but as it did not form seed heads very freely it was not recognized as anything out of the ordinary.

Poa trivialis spreads by stolons in the same manner as does creeping bent. Patches of the turf are often mistaken for creeping bent. It can be identified by a distinct glisten which the grass shows in bright sunlight. This comes from a glossy undersurface to the leaves. It is fine in texture and makes a beautiful turf. In color it is a lighter shade of green than that of Kentucky bluegrass. It is frequently found on putting greens seeded with German mixed bent and appears in distinct patches sometimes a foot or two in diameter.

Taken alone Poa trivialis is too tender and soft to make a good putting green turf. But mixed with creeping bent with which it blends fairly well it gives excellent results. It will grow under denser shade than any other fine turf grass unless it is red fescue. It makes its best growth in the West on lands which are alkaline or where alkali water is used for irrigation. Several clubs in Colorado are using a 50-50 mixture of Cocoos and Poa trivialis with excellent results on their putting greens. This mixture was suggested by a green on the Calumet Golf Course at Chicago. An inspection of this particular green, which had been sodded with turf from a green on the old Calumet Course, showed it was a fairly uniform mixture of Poa trivialis and strains of creeping bent. The original seeding had probably been German mixed bent with some of the Poa trivialis seed in as an ingredient. Or it may have been seeded with one of the putting green mixtures of the early days which might contain anything from velvet bent to orchard grass.

There are many different strains of Poa trivialis and some are much more valuable for fine turf than others. It would be well worth while for some one to make selections of first class varieties of this grass and develop a seed supply from these selections. At the present time all of the seed is imported from Europe.

Woods Meadow Grass (Poa nemoralis)

This grass is mentioned because it has been in the past so universally recommended for shady lawns. It has about the same habit of growth as Canada bluegrass and is of no value in this country for turf purposes. Nevertheless there have been many tons of the seed imported into this country and sold either alone or in shady-nook mixtures. I would not know where to find a single foot of the sod of this grass at the present time. I once found a small patch of it along a gorge at Ithaca, New York and harvested enough seed by hand to plant a plat at Washington, D. C. It grew all right at first and lived over winter but died out in the middle of the following summer. The only reason I can give why this grass has been so persistently recommended for shady lawns is that there must have been some seed of Poa trivialis mixed with it when it was first introduced into this country. If the money spent for Woods Meadowgrass had been used to buy Poa trivialis seed there would be many more nice lawns in this country than we have at the present time.

(To be continued)

Report of U. S. Golf Association Meeting

THE first sessions of the 1928 annual meeting of the United States Golf Association held at the Hotel Astor, New York on January 6 and 7 were devoted to Green Section reports and activities.

In opening the meeting on January 6, Chairman Findlay S. Douglas made particular reference to the wide difference between turf conditions on golf courses twenty years ago, and those enjoyed by the golfing public of today.

Following Mr. Douglas came H. L. Westover, acting chairman of the Green Section at Washington, who read a report of the past year's service to golf clubs, stating that the club membership now numbers 1012.

William G. Knight, president of the Baltusrol Club, next gave a short address, pointing out the several ways the Green Section's work benefits member clubs. In turn, Sherrill Sherman of the Yahnundasis Club, suggested many opportunities for co-operation on the part of those who represent individual golf clubs throughout the country. At the conclusion of his talk, Mr. Sherman urged an increase in the subscription rate of the Green Section bulletin.

D. M. Boude of the Miami Valley Country Club, Dayton, Ohio, gave a report on an experiment in sterilizing compost by steam, which has been conducted in Dayton. This was supplemented by a description of the baking method used in New England to sterilize compost and eliminate weeds, given by A. H. Hood, of Boston.

One of the most interesting of the subjects at the meeting was "Physical Soil Conditions as Affecting Turf," which was the talk given by O. J. Noer, the author of "The ABC of Turf Culture," published in serial form in this magazine during 1927. All greenkeepers present listened intently to Mr. Noer's remarks on soil, the first fundamental of good greenkeeping.

Norman L. Mattice, greenkeeper and general manager of the Pine Valley Golf Club, was next on the program. Mr. Mattice explained the methods he has used at Pine Valley, one of the most famous golf courses in the United States, on which turf conditions have been markedly improved since the beginning of his management. His principle of feeding turf is followed by many of the most successful greenkeepers in the country, among them John Morley, John MacGregor, Alex Mc-Pherson, John Pressler, and other prominent members of the National Association of Greenkeepers of America.

An entertaining talk was then given by A. G. Chapman, chairman of the Green committee of the Audubon Country Club, Louisville, Ky. Mr. Chapman described graphically the problems new Green committee chairmen have to solve, and how well a friendly understanding and co-operation with the greenkeeper pays. H. K. Read, Philadelphia member of the Green Section committee, announced that a convention of greenkeepers will be held at Atlantic City next June, definite date to be decided later.

Dr. John Monteith, Jr., plant pathologist of the U. S. Department of Agriculture, was the next speaker. Snow mold was his chief topic, which he explained to be similar to Brown-Patch in that mercurial compounds have been found to be its most effective preventive and cure. A new turf disease, called Pythium, which is also the result of fungus growth, was reported by Dr. Monteith as having been found at the Arlington Turf Gardens and for which no means of control has yet been devised.

"The greenkeeper has a problem on his hands to encourage conditions that help along the growth of grass, and to discourage abnormal conditions as much as possible," said C. A. Tregillus, of Toronto, Canada, in his talk following that of Dr. Monteith. Mr. Tregillus' remarks were of much interest to all greenkeepers present at the meeting.

Professor B. R. Leach, expert on grub control of the U. S. Department of Agriculture, spoke particularly of the results obtained in lessening the expense of controlling grubs and earthworms in latest experiments with lead arsenate. Professor Leach reported it has now been determined that five pounds of this chemical to a thousand square feet will be as effective as the thirtyfive pounds formerly used in experimental work. So far as weed control is concerned, he said, "Lead arsenate is effective in the control of weeds, with the exception of plantain and dandelions."

The New Jersey Experimental Station's work on fertilizer experiments was described by Howard B. Sprague. Dr. Sprague emphasized the importance of determining the reaction in the soil to different fertilizers contemplated for use on golf courses.

New officers elected for 1928 were Melvin A. Traylor of Chicago, president; Findlay S. Douglas and H. H. Ramsey of New York, vice-presidents; Prescott S. Bush, secretary; Charles H. Sabin, treasurer.

Concrete for Fence Posts

T HE amount of water used in mixing concrete for fence posts is what determines their strength and durability after they are set.

For instance, a mixture of cement, sand and gravel in the proportion of 1: 2: 4, allows a moisture content which needs no tamping, and which when cured will withstand freezing conditions, as well as unusually wet weather.

California Greenkeeper Sends Greeting

Editor's Note:—This letter is printed because of its general interest to our readers, and because it represents the attitude of appreciation shown in hundreds of such communications received at Association Headquarters during the past seventeen months.

> Alameda, California January 3, 1928

The National Association of Greenkeepers of America Cleveland, Ohio

Gentlemen:

Your letter of December 17th received.

I wish to apologize for not answering sooner but have delayed doing so in order that I might be able to give you definite information regarding my appointment by President John Morley to serve on the committee on Permanent Organization at the coming annual convention in Detroit, Michigan, in February.

While I greatly appreciate his choosing me on this committee I find that owing to the very unsettled conditions and changes being made on our golf course at the present time, it will be impossible for me to attend this coming convention. I hope that at some future date I may be able to meet all greenkeepers of our organization in person.

I have always had a desire to meet Mr. Morley, Mr. Rockefeller, Mr. McPherson, Mr. McNamara and Mr. MacGregor of Chicago, my old home town. I hope my friend, Joe Mayo, of the Pebble Beach Country Club will be at the meeting. He is the greenkeeper in California that I know of that is on the Executive staff. The last time I saw Joe he was playing at the Olympic Club at San Francisco in the California Northern Open Championship. I would like to hear from more of the California greenkeepers through the magazine, but I guess they are a great deal like myself, pretty busy.

We have golf twelve months of the year here and we leave home these days before the sun is up and get home again when it is just about dark. One of the things that interest me most is the brown-patch problem. Some of my greens have bad spots and heal up very slowly. I use Uspulun and I have wondered if there is anything that would be quicker acting. Another thing that seems strange to me is that the brown-patch appeared while we had cold dry north winds last month, and it also appeared last summer during a few hot days. I had promised long ago to write about my course but it seems that on a new course it is all work and never enough time to even write a few lines or take a few pictures or let you know how the Oak Knoll Golf & Country Club is coming along. By the way Oak Knoll is located in Oakland while I live in Alameda about ten miles away.

Regretting my inability to be with you in February, I am,

Sincerely yours, A. B. Schoenbeck, Greenkeeper Oak Knoll Golf & Country Club GREENKEEPER'S

ALMANAC

FEBRUARY By John MacGregor Chicago Golf Club

KEEP after the machinery. Replace bottom knives on mowers where necessary, grind the reels, give everything a coat of paint after the necessary repairs are done.

Now is a good time to get your maintenance budget ready to submit to your chairman.

For the states which have enough frost, this is a good time to move trees. Dig around the tree, cutting all roots, then let the ball freeze solid, move on the snow or frozen ground with a stone boat and tractor, or horses. Trees moved in this way seldom die.



Method for preventing splitting down when removing large limbs in sections. The stub is easily handled when making the final cut. Make cut at A first and then at B

Tree trimming is still part of the program, fruit trees can be pruned now if a mild day appears. Spray for San Jose and Oyster Shell scale. "Scalecide" is very effective.

About Washington's Birthday get ready to attend the annual meeting of the N.A.G.A. and Golf Show at Detroit. We need you.

While at the Show, look over the equipment and supplies, and make your selection of new and standard makes of machines with your chairman if possible.

Convention Program Most C

THE most comprehensive program ever attempted in the history of golf in America is scheduled for the National Greenkeepers' Convention in Detroit. The list of papers to be read and discussed covers every phase of golf course maintenance, and experts from every part of the United States and Canada will present them. Any progressive greenkeeper or Green committee chairman who fails to be at Detroit for the two days of this intensive study of golf course problems will be sorry. Here is the list of papers and speakers:

SOME OF THE TURF DISEASES

By Dr. John Monteith, Jr., Associate Pathologist, U. S. Department of Agriculture.

D^{R.} JOHN MONTEITH, JR., well-known pathologist of the U. S. Department of Agriculture advises that his talk on turf diseases will embrace some of the most recent discoveries made in the diseases that block the progress of the producer of good turf. "Brown-patch is only one of them," writes Dr. Monteith, "and one of the new diseases is practically as hard to control."

THE FERTILIZATION OF SOILS

By O. J. Noer, Soils Department, University of Wisconsin.

THE reaction of soils to various fertilizers is a subject about which the greenkeeper cannot have too much sound information, and Mr. O. J. Noer can always be counted upon to talk upon this important phase of turf culture in terms uncomplicated by a mass of technical detail.

GOLF COURSE DRAINAGE

By Wendell P. Miller, Golf Course Drainage Engineer.

RAINING a golf course is a subject that in years gone by was brushed aside as unimportant when plans for a new course were laid before the New Construction committee. Disregard of this underlying principle of good turf has resulted in a tremendous outlay of money by old established clubs in an endeavor to produce the turf the present day golfer demands. Nowadays proper drainage is one of the first considerations of the committee in charge in going over the ground with the architect. Wendell P. Miller, golf course drainage engineer, in speaking at the convention will cite several instances that have come under his observation during the past few years. Mr. Miller was formerly a professor of Agricultural Engineering at Ohio State University.

GRUB CONTROL

By Professor B. R. Leach, Associate Entomologist, U. S. Department of Agriculture.

A RSENATE of lead is perhaps the nearest thing to a "cure-all" that has yet been discovered for the benefit of turf growers. How it controls earthworms, grubs, weeds, and at the same time stimulates grass plants will be described by Professor B. R. Leach, entomologist of the U. S. Department of Agriculture. Professor Leach was one of the first investigators from the department set at work on the control of the Japanese beetle, and his further experiments have disclosed hitherto unknown value in arsenate of lead applied to turf.

THE PROTECTION OF GOLF COURSE TREES

By C. M. Scherer, Principal Davey Institute of Tree Surgery.

TREES on golf courses are destroyed in thousands every year through inattention to their needs in the way of light, air, water, environment and surgical repair. Those contemplating the construction of new courses will find the remarks of Mr. C. M. Scherer, Principal of the Davey Institute of Tree Surgery, of distinct benefit. How to detect disease and the onslaught of insect pests in the protection of specimen trees; how to guard trees, both young and old, in the process of clearing land for a course, laying tile and changing the courses of streams; how to lengthen life in a tree by proper fertilization and watering-these are some of the phases of tree protection that will be covered in Mr. Scherer's talk.

CANADIAN MAINTENANCE PROBLEMS

By C. A. Tregillus, Consulting Expert, Canadian Golf Association.

SOME of the maintenance problems of the "snow country" will be taken up by C. A. Tregillus of the Canadian Golf Association. Mr. Tregillus is almost as well known in this country

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as he is up over the line, where his friendly help has earned the friendship of many of our Canadian brothers in the greenkeeping profession.

THE PROPAGATION OF BULB-GROWN PLANTS

By Joseph T. Varn Hagen, Sr., Greenkeeper Plum Hollow Golf Club, Redford, Michigan.

THE amount of money represented in a con-stant supply of flowers for clubhouses during an ordinary growing season is rarely brought to the attention of golf club officials. Some of the most decorative are grown from bulbs, and such plants have long been a hobby with Mr. Joseph T. Varn Hagen, Sr., greenkeeper at the Plum Hollow Golf Club, Redford, Michigan, Mr. Varn Hagen attended prep schools in Holland, later graduating in Art and Landscape Gardening at Geisenham on the Rhine, auxiliary to Bonn University. During the World's Fair he was sent by the largest Art Gardening firm of Holland to inspect plant and shrubbery groupings, which were directly under the supervision of the Dutch Government. From such a background, he is in a position to give the convention audience a most instructive paper, one which will encourage many other greenkeepers to "go and do likewise."

THE CONSTRUCTION OF PUTTING GREENS By Captain David L. Rees, President Metropolitan Greenkeepers Association.

CAPTAIN DAVID L. REES, who is in charge of the Progress Country Club course at Purchase, New York, is a golf course architect well-known in the golf circles of the Metropolitan district. Captain Rees is a graduate civil engineer, with an unusual experience in golf course lay-out and construction. That he fully understands the influence construction has upon maintenance, is evidenced by his greens at Progress, the building of which was under his direction, and which has has maintained since construction of the course in 1924.

BRINGING A NEW COURSE ALONG By Edward B. Dearie, Secretary Mid-West Greenkeepers Association

MANY greenkeepers and Green committee chairmen in several states know Edw. B. Dearie so well that merely mentioning him as "Eddie" is identification enough. He has several golf courses in the Chicago district under his supervision, and his experience includes laying out and building courses, installation of drainage and water systems, and various consultation services in the interest of good golf turf.



O. J. NOER Noted Turf Expert

Some Leading Figures at Detroit Meeting



EDW. B. DEARIE



FRED BURKHARDT Chairman, Show Committee

What he will have to say about bringing new courses into play will be of particular interest to greenkeepers who are starting on newly constructed courses, and to Green committee chairmen who are interested in developing out of a new course an investment that will pay dividends to the membership.

MAKING USE OF A BENT NURSERY

By Hiram F. Godwin, Greenkeeper, Redford Golf Club, Redford, Michigan.

TIRAM F. GODWIN, greenkeeper at the Redford Golf Club, Redford Michigan, was one of the first greenkeepers to experiment largely with various strains of vegetative creeping bent. When in doubt about any phase of bent culture, he represents the fund of useful knowledge to which greenkeepers over a broad area around his district turn for advice. "The turf nursery on a golf course," said Mr. Godwin, recently, "means to the club a form of turf insurance. It is as useful to the greenkeeper as the repair shop in which he keeps his machinery in order." How to plant and maintain an adequate bent nursery to keep eighteen holes intact will be the gist of Mr. Godwin's talk at the meeting.

CLUBHOUSE GARDENS

By W. D. Chinery, Greenkeeper, York Downs Golf Club, Eglinton, Ontario, Canada.

WHAT Mr. W. D. Chinery, greenkeeper at York Downs Golf Club, Eglinton, Ontario, has worked out during twenty-seven years study and experience in landscape gardening will be of the greatest interest to our convention audience. "I cannot begin to cover the subject, but I'll try to answer any questions I am asked," said Mr. Chinery when we asked him to appear on the program. Beautifying the clubhouse grounds and various areas around the course is distinctly on the books of the present day greenkeeper and those of the future. No accomplishment of the greenkeeper outside his regular course work is more appreciated by golf club members than the development of the grounds into a garden of beauty.

THE BOOKKEEPER AND THE GREENKEEPER

By E. W. Doty, Treasurer

Cleveland District Golf Association.

FOR an introduction to Mr. E. W. Doty, on our program to give a talk on the bookkeeper and the greenkeeper, we can think

of nothing better than to call your attention to a story told by Mr. Morley in his "Chat with our President" in this issue. Mr. Doty bears an unchallenged reputation of knowing how to make figures behave. Read about Pat and the Scotchman, identifying Mr. Doty with the canny Scot, and there you have him. At Westwood Country Club, Cleveland, where he officiates as treasurer, he has made the way considerably smoother for the greenkeeper, Fred A. Burkhardt, one of our first and most active charter members.

THE ASSOCIATION AND PRO-GREENKEEPER

By Alex Pirie, of Chicago, President National Professional Golfers' Association.

R. Alex Pirie, president of the National Professional Golfers' Association, joined the National Association of Greenkeepers of America early last spring, and since that time he has observed the work of our association and magazine with outspoken approval. Mr. Pirie is undoubtedly the best qualified man in America to speak on the subject of the value of the National Greenkeepers' Association to the greenkeeper and pro-greenkeeper. For many years Old Elm Club of the Chicago district has been closely identified with the name of Alex Pirie, one of the deans of greenkeeping and professional golfing in this country.

CONSTRUCTION AND MAINTENANCE OF **TENNIS COURTS**

By Mr. V. L. Delmarle, Construction Engineer, Brooklyn, New York.

THE proper construction and maintenance of clay and turf tennis courts is often a problem of the greenkeeper, and Mr. V. L. Delmarle, construction engineer of Brooklyn, New York, speaks on our program from a background of several years' experience in building tennis courts for municipalities and golf courses. At Trevors Park, City of Yonkers, Coral Gables, Florida, and at the Montclair and Crescent Athletic Clubs, the courts are the work of Mr. Delmarle.

John Morley Says:-

"Greenkeepers and chairmen of Green committees who attend our 1928 convention and golf show, will go away with a new interest in their work, and a far better realization of the benefits the National Association of Greenkeepers of America is offering to every golf club in America."

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