up by deep ravines and encumbered by outcappings of rock require special attention in order not to cause any delay.

The efficiency with which a construction organization is managed often decides the quality of its work. Day-labor requires the most careful supervision. Best results will be obtained artistically when foremen and sub-foremen understand golf and realize that they are not merely moving dirt but are creating the picture of a beautiful golf course.

To lessen maintenance cost and to eliminate the necessity of reconstruction work in the future, proper attention to construction work is most desirable. Upon it depends many times the failure or success of the country club. With steam shovel, drag line, plow and scraper it is possible to mould the surface at will and to create effects and features which can but rarely be found provided by Nature. Superb hazards and attractive greens have been built on land once thought impossible to develop.

Next Month: Chapter IV—Drainage on the Golf Course.

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How I Control Brown Patch

As told to Prof. George M. McClure of the Department of Soils, Ohio State University by Altilio Milrenee, Greenkeeper, Columbus Country Club, Columbus, Ohio

This in brief is the way Mr. Milrenee outlined his procedure. Personally, I believe that the daily poling is responsible for at least a 50 per cent control. His practice in using Caloclor differs materially from the one ordinarily followed in that a much smaller quantity is used and the material is put on dry and is not watered in. This method insures the material remaining on the blades of the grass where the fungus gets in its deadly work. This, I think, is a much better method than watering the material in because the watering immediately washes the Caloclor off of the blades of the grass, and renders it ineffective.

EARLY every morning, and by early Mr. Milrenee means between 5 and 6 a.m., he poles the greens thoroughly. For this he uses an ordinary flexible bamboo pole. Each workman has charge of three greens and the time required for poling each green is approximately 20 minutes. By having the workmen on the job at 5 a.m. this poling is completed by 6.

Following the poling the greens are watered and the watering is completed some time between 9 and 10 a.m. Following the watering the greens are mowed and the traps raked, all of this being finished by 2 o’clock in the afternoon, the workmen having finished a full day’s work by 2:30. So much for the daily treatment of the greens.

As a prophylactic treatment, Milrenee applies Caloclor at least once a week to each green at the rate of 3 ounces for every 6000 square feet of turf, which is equivalent to one-half ounce of Caloclor per 1000 square feet. At

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Hundreds of golf and country clubs, greenkeepers, landscape architects, parks, etc., utilize Illinois Grass Co.’s True Washington Strain Creeping Bent in solid turf form. Furnished in rolls ready to lay down like a carpet. Our solid turf has the reputation of being extremely hardy and uniform in texture. It is mowed with a putting green mower and is hand-weeded. Guaranteed to grow vigorously into a rich, green, velvety lawn if properly cared for. Our scientific nursery methods of preparation and growth are unexcelled.

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the same time he applies one of a number of fertilizer materials, varying the material each time. One week he may use sulfate of ammonia, the next week an 8-5-3 fertilizer, the next week Urea, and so on.

No matter which fertilizer is used, he puts it on at the rate of 5 pounds for every 6000 square feet of turf. The fertilizer and Caloclor are mixed with sand. He mixes enough for all 18 greens at once, using sand, Caloclor and fertilizer in the ratio of 25 pounds of sand, 3 ounces of Caloclor and 5 pounds of whatever fertilizer he wishes to apply. These are mixed together the day preceding that on which he wishes to apply them.

For mixing he uses an ordinary concrete mixer but he says that a thorough hand mixing does just as well, provided care is taken to get a uniform mix. This material is applied by hand broadcasting, it taking about 20 minutes to treat one green. It requires a certain knack on the part of the workmen to get the material evenly distributed. It is applied only when the turf is dry and is not watered in.

If there happens to come a rain within 8 or 10 hours after the material has been applied, it greatly lessens the effectiveness of the treatment and consequently Milrene will make a second application.

In distributing the mixture of sand, Caloclor and fertilizer to the greens, it is first put in bags or buckets at the service shed and Milrene distributes the proper amount to each green early in the morning so that it is on hand and ready for the workmen. Consequently they lose no time in making trips from the different greens back to the service house.

**BUCKNER SPRINKLERS**

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The best golf courses of the country are equipped with hoseless systems and Golf King sprinklers, because actual practical test proves that they really do irrigate the course more effectively and economically than any other type of installation. Perfect fairways mean better play, happier members, and a more prosperous club. That’s logical, and sound. Give us the chance to prove it. A word from you will bring the facts.

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SAY YOU SAW THE AD IN THE NATIONAL GREENKEEPER
JOHN QUAILL SAYS:

About this time everyone is thinking about vacation plans except the greenkeeper and the pro. While others play, they must work and keep the playgrounds and everything connected with the golf playgrounds in shape.

The boys are writing in and telling of the wonderful shape their courses are in this spring. Several of them say that they learned some things at the convention that have surely helped them to put their courses in tip-top shape.

Fred Burkhardt from Westwood in the Cleveland district is a busy man these days. They are running a large sanitary sewer through Fred's course and they have things torn up pretty bad. Fred says he has to stand guard with a shotgun to keep the trucks off the greens and fairways.

Louisville is again on the map. The famous Kentucky Derby is being held and if they treat the Derby patrons as well as they treated the greenkeepers, everyone will go home satisfied.

I was down to see Col. John Morley a short time ago and found his course in wonderful shape. The eighteenth green has been in constant use for several years both winter and summer and it sure is a dandy to be able to withstand the bumps and knocks it continually receives as it is a short hole and pitch shots are continually pounding it. John says it's all in knowing your greens by their first names and treating them as they need it.

We still have a long ways to go to reach the thousand mark. Lew Evans has sent out four thousand letters and applications to all parts of the country and is doing his best to boost the membership. Let's help him out and get a few ourselves.

Another year and all the major championships are being played on courses superintended by members of the association. To be able to hold a championship you must have a good course and to have a good course you must have a good greenkeeper. Good courses and good greenkeepers go together and good greenkeepers and the association also walk hand in hand.

The summer meeting of the Executive Committee will meet in Toronto June 23 and 24. Anything that you want to lay before the board should be presented to the secretary in writing not later than June 15.

Don't forget to write a few lines for the National Greenkeeper and send in a picture or so. Every little bit helps and it's your magazine.

THE MacGREGOR COMPOST BRUSH

You need the MacGregor Compost Brush to renovate your greens in the spring. Also to work the compost into the grass after top dressing.

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Consider Maintenance First

BY ALFRED E. LUNDSTROM

Grounds Supt., Crescent Athletic Club, Brooklyn, N. Y.

From the greenkeeper's standpoint the most important thing to consider in the construction of a country club is the cost of future maintenance, for without proper maintenance any club will deteriorate no matter how well it was constructed.

We well know that certain work must be done, and at clubs where precautions have not been taken into consideration the cost of maintenance is generally excessive, or conditions poor. Multiply this overhead by the number of years you intend to keep any club and the figures become startling. Of course, the larger and more pretentious the club the larger is the overhead.

To the average man a golf course merely consists of so many holes and a clubhouse—nothing more—and these he sees first and last. But the greenkeeper's first thought is the shop, the tools and machinery, the service roads, the compost yard and soil supply, the drainage and irrigation system, for on these depends his success.

Water and Drainage

Two very important features are the water and drainage systems, and too much cannot be said regarding these two points, for without adequate water and a drainage system that functions right, trouble is bound to come (disease, drought, wet grounds, etc.).

A careful chemical test should be taken of the water used, in order to avoid the experience of the Chicago Golf Club. A few years ago they tried to create an acid condition on their putting greens, but no matter how much acid-creating fertilizers used they were constantly becoming more alkaline. An analysis was taken and the discovery made that hundreds of tons of lime was distributed through their deep-well water system.

In the more progressive clubs of America today they are installing automatic watering systems, thereby eliminating a vast amount of man labor and hose. In my humble opinion no better investment can be made than to install such a system calling for from 100 to 110 pounds pressure, covering every fairway on the course. It is also my opinion that the most economical manner in which to create this pressure is through your own water plant, and this not only from the standpoint of cost but from the standpoint of food-values found in greater quantities in water drawn from your own lake, plus the fact that it is warmer than city water—drawn directly from mains.

Fertilization

One of the most important facts to be taken into consideration is that of fertilization, and I take pleasure in calling your attention to Mr. John MacGregor's article in the National Greenkeeper of May, 1930, entitled "The Why of Poor Fairways," in which he says that $400.00 worth of fertilizer will go further toward improving impoverished fairways than $700.00 worth of seed"; also the article of Mr. James A. Smith entitled, "The Life and Activities of Soil Bacteria".

In connection with this subject I might point out that I know of no club in America that takes advantage of the fertilizing values con-

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SAY YOU SAW THE AD IN THE NATIONAL GREENKEEPER  PAGE TWENTY-FIVE
tained in kitchen scraps. They generally go into the incinerator or the garbage can, thereby losing hundreds of dollars worth of plant food values annually. These should go into a special compost pile constructed for that particular purpose and treated accordingly.

**Nursery**

Every club should have an adequate nursery, not only for grass, but for trees, shrubs and flowers as well, on which it can draw at a nominal cost for its requirements, and these requirements are constantly increasing in the modern up-to-date clubs.

**Shop, Storage and Service Roads**

It is expensive, and may prove dangerous, to send to the factory for repair parts, or to a machine shop or garage to have machinery repaired. Therefore, every club should have a shop, with a competent mechanic in charge, and garage to cover every emergency; also adequate storage space for seeds, fertilizers, tools and machinery. Shop and storage barns should be as close to the center of the course as possible.

It is also an advantage, in order to save time, to have storage for machinery and tools at distant points. These storage places can be combined with the customary shelters without detracting from their beauty.

Much damage to turf can be avoided and a saving of time be had by having good service roads connecting with the pump house, compost yard, tool house, machine shop, clubhouse and distant points.

**Labor**

A careful study of labor conditions is very essential. Local labor is sometimes hard to get and generally unsatisfactory. Under such conditions good labor must be found at distant points. It is my experience that more satisfactory results can be obtained by supplying adequate living quarters for the greater part of this help on the grounds, if possible. Such resident labor would form a permanent and reliable nucleus on which one could depend in all emergencies, (cloudbursts, storms, droughts, fire, etc., etc.).

Rigid, stereotyped rules cannot be followed in the management, development and maintenance of any country club. What would be the correct thing to do at one club would be a mistake at another. The same applies to cost of construction and maintenance, due to difference in climate, soil, topography, water, transportation and labor conditions—not taking into consideration the aesthetic demands and differences of one club against the other.

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**Greenkeepers Study Grub Control**

By M. E. Farnham, Secretary

Philadelphia Association of Golf Course Superintendents

The May meeting of the Philadelphia Association of Golf Course Superintendents was held on May 5th at the Huntingdon Valley Country Club. During the afternoon the three nine-hole units were thoroughly inspected as well as the nurseries which interested many.

This layout—one of the newer ones in the district, was built in 1926 when the club was forced to abandon its old course. Conditions show no signs of the comparative newness of the course.

Fifty-six members and guests were present at dinner and the meeting following. Among the guests were Mr. Kenneth Welton, U. S. G. A. Green Section; Mr. B. R. Leach of “Arsenate fame”; Mr. Geo. Cunningham, manager of the local service Bureau; and Mr. C. K. Hollawell, the local county agent. Sickness prevented Doctor Monteith from being present so we were unable to personally congratulate the new father.

A dozen of our neighbors from Baltimore and Washington were also with us and it was pleasant that they were able to combine attendance at the meeting with a bit of observation of Japanese beetle grub injury which they anticipate. With this latter point in view the group visited me at the Bala course of the Philadelphia Country Club where the rough had not been grub-proofed before severely injured, while the fairways were treated with arsenate of lead in 1928. The protective effect of the arsenate is strikingly shown in these adjacent areas.

The fact that one of these Baltimore men fought a forest fire until three a.m. and left at four a.m. to drive to Philadelphia shows an interest which augurs well for the profession.

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**HUBBARD NURSERIES**

**CREEPING BENT STOLONS**

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Pure, free of weeds, and of one season’s growth

**DR. AMOS F. HUBBARD, N. Kingsville, Ohio**
The arrival of Monday, April 28, truly a blue Monday, as far as weather conditions existed, however a red letter day for the Midwest Greenkeepers, for at that date they assembled at the Medinah Country Club for their first outdoor meeting of the 1930 season.

The morning was spent inspecting the three courses, which were in excellent condition and were complimented upon by the many visiting greenkeepers. Mr. Ralph N. Johnson is the general superintendent and of course is a member of the Midwest organization.

An excellent luncheon was served and after everybody had pacified their pangs of hunger—a regular meeting of the Midwest was held.

After the meeting adjourned we visited the Medinah tool sheds and viewed their equipment—which looked wonderful, for it had been all repaired and painted during the winter season. Certainly it would have been wonderful had there been Green chairmen along who believe course maintenance ends with the closing of the golf season.

The particular thing which impressed the writer were the spacious buildings provided for machinery and soils. It seems to the writer that the general trend and loop-hole in most club maintenance is the lack of the above facilities.

The next meeting of the Midwest will be held at the Chain O'Lakes Country club, Antioch, Illinois, May 26. While the Midwest Greenkeepers Association have no official committee for common annoyances relative to maintenance of golf courses—Mr. Fred Ingwerson of Bunker Hill probably would rate as the unofficial champion. Now Fred states "that golf balls have too much wrapping paper."

Fred also boasts that he has the champ tobacco chewer of the Chicago District—darn near necessary to have a man follow this member to pick up the empty tobacco containers.

Fred Kruger maintains that he should be glad—tobacco juice will get the worms.

Speaking of Fred Kruger, anyone desiring information on fertilizers should get in touch with him.

The popular pastime of today is writing short histories, for instance—History of the Grand Canyon. Dug by a Scotchman looking for his golf ball.

Mr. John MacGregor's trouble with his golf is that he stands too close to the ball after he hits it.

We wonder how a straw vote on prohibition amongst the greenkeepers would come out???

Whoa! who said Louisville?

After a cold and disagreeable April, May finally arrived bringing abnormal warm temperatures, plus nightly rains; things are beginning to pop—sure the old cutting units in the Chicago District are "hell bent for grass".

Latest reports from the front report that grass is a trifle in the lead.

We were supposed to send a photograph of ourselves to head this page—however the proofs have continually turned out bad, the photographer maintains it is our fault—but, that is just his story—you should hear our story.

A. L. Brandon, Secy.
WILL it be a famine or a feast. Will it be a happy blending or will it be a season with problems to concern all until it closes?

The queries are those of the course superintendent and greenkeeper in Canada as he follows growth on fairway and putting surface—backward on account of conditions which prevailed in the fall of 1929. The answer is that conditions to which discriminating golfers are prepared to direct attention will adjust themselves shortly, but in general the reply is a wish which is father to the thought.

Canadian courses were maintained in excellent condition throughout the drought of the summer of 1929 which took its toll on the prairies, in fruit belts and generally throughout the Dominion. After they had passed through the summer, the expectation of greenkeepers was that courses could be tucked away without a worry. However, September was dry, October was dry and winter appeared with courses frozen and without the benefits of rainfall.

Opening in November, the winter of 1929 in Canada was earlier than any winter of a decade. It continued until February when its back appeared to have been broken and the prospect appeared to be an early spring. There was growth on putting surfaces on courses along the shores of Lake Ontario; in fact their appearance was more promising than in April when they returned to the conditions usually anticipated with the arrival of winter. However, the winter came on again and that early growth was killed or retarded until it became a winter kill, when the courses were opened.

Worst April in Years

DURING April scores of greenkeepers pondered over their problems without a spring shower to help them along. In April, conditions were described as the worst in many years. Greens which were considered a pride contained evidence of growth only in spots. There was some rainfall this month, another dry spell and then more rainfall. The drenching which courses received provided the essential growth on fairways and lent color to the argument insofar as the putting surface was concerned that what appeared to be kill was retard growth.

Experts made the prediction in April that within a month they could determine the extent of the damage which could be traced to the fall of 1929. The damage while not as great as expected by clubs whose officials had commenced to prepare to meet the condition with a generous treatment of the course exists to a larger or lesser extent irrespective of soil or the character of the grass. As a consequence, something more than the usual attention will be given to courses this season.

The situation has revealed the obvious and focuses attention upon the necessity again of liberal care of the course during a year when younger organizations are forced into cautious financing. The older clubs which commenced with a course and followed with a recognition of the social aspirations have found that early expenditures provided fairway and putting surface which could stand up under trying conditions. Annual treatment, whether necessary or not, has been the argument of the chairman of more than one Green committee when the explanation of winter kill and burnt fairways was offered and when he was told of what might have been avoided.

A touch of humor was provided in an item released by the publicity department of the
Canadian National railways while discussing the prospects of the Jasper Park season. The course is located in a game preserve and special warning is issued to golfers not to molest the deer, the bear and other animals who wander about the course.

It was found necessary during the winter to erect fences about the putting surface to prevent the elk and deer from feeding on the grass of the expensive greens during the spring, and also to prevent them from destroying the putting surface with their hooves.

President John Morley and his executive officers of the National Greenkeepers' association are to attend the annual convention of the American Seed Association which is to be held in the Royal York hotel from June 23-27. President W. J. Sansom and officers of the Ontario Greenkeepers' association intend to extend a royal welcome and show the national executives some of the best courses of the district.

The visit of Mr. Morley and his associates to Toronto for the first time in an official capacity will do more for the greenkeeper in Canada than any other effort on the part of the association. The Canadian greenkeepers to a limited extent are connected with the National association. The Canadian member, however, is a strong advocate of the organization and the recognition afforded his small group will assist him materially with his propaganda.

By the time Mr. Morley and the executive committee meet in Toronto, the Ontario Golf association will have accepted the offer of the Federal Government to establish an experimental station in Toronto, Winnipeg and Montreal to serve the needs of golf. All that the Federal Government asks is a piece of land, apparently as an evidence of good faith, whereupon it will provide the funds to maintain it and the requisite seed, fertilizer and material for the experiments.

Royal York Course Opened

THE Royal York golf course opened on May 19 with Grant Hall, first vice-president of the Canadian Pacific railway driving the first ball in the absence of E. W. Beatty, president of the system. While the eyes of all sections of the golfing public were riveted on what one of the world's greatest carriers can offer in the nature of a golfing test came the announcement that another course to be better would be located in the eastern suburbs of Toronto.

The course which expects to provide competition for the Royal York is to be known as the Glen Mawr Golf and Country Club. It is to have a riding section with bridle paths extending through its extensive acreage into the neighboring country through an arrangement with public officials. The club includes in its membership and among its active officers the socially prominent of the city and also individuals of wealth and substance.

Stanley Thompson, of Toronto, has been selected as the architect. Mr. Thompson's first important contract in Canada following the war was the Jasper Park course of the Canadian National railways. He carried his contract out to the satisfaction of officials of the railways and was then engaged by the Canadian Pacific railway to reconstruct its inadequate course at Banff after which he was given the Royal York course in Toronto by the same railway.
Michigan Greenkeepers Meet

The Michigan and Border Cities Greenkeepers Association held their annual dinner and election of officers recently at Hotel Fort Shelby, Detroit.

President Herbert E. Shave presided and after a very nice dinner many interesting discussions took place, among them being the reading of letters concerning the cooperation of the Agricultural Department of Michigan State college with greenkeepers of the state. This cooperation concerns advice on soils, landscaping and other subjects of interest.

It was decided to invite one of the professors to give a talk on the matter at one of the first outdoor meetings.

The election of officers resulted as follows: Herbert E. Shave, Oakland Hills, re-elected president; Wm. Beaupre, Lochmoor Club, elected vice-president; Wm. Smith, Red Run, re-elected secretary-treasurer; John Gray, Essex Golf and Country Club, elected director for two years; Fred Sherwood, Birmingham, elected director for two years; Cyril Hayman, C. C. of Detroit, elected director for one year.

GOLF NEWS

The Service club and the Kiwanis club of Crawfordsville (Ind.) have taken out incorporation papers and will build a nine-hole public course on land east of town which has been leased from Wabash College. William H. Diddle, of Indianapolis, is the architect.

Work was started early in the month on the new Golf News

The Service club and the Kiwanis club of Crawfordsville (Ind.) have taken out incorporation papers and will build a nine-hole public course on land east of town which has been leased from Wabash College. William H. Diddle, of Indianapolis, is the architect.

* * *

The club house of the Urbana (O.) Country Club, which burned recently, is being rebuilt and will be open for use about June 1.

* * *

A new nine-hole golf course for Earlville (III.), will be laid out on Indian creek by Joe Meister, of Aurora (III.), a professional golf course architect.

* * *

The Springfield (Ill.) Park Board is holding a contest to select the name for the new nine-hole golf course being constructed at the west end of Lawrence Avenue. This is the third public course operated by the Park Board.