



Used on **ALL** Courses
CHOSEN FOR 1933
MAJOR NATIONAL
CHAMPIONSHIPS

NO PRICE CHANGE

As previously announced there will be no increase in Milorganite prices before January 1, 1934.

Plan Fall Feedings now. Prepare your course for championship play next year.

THE SEWERAGE COMMISSION
 Milwaukee, Wis.

MILORGANITE

USED ON MORE GOLF COURSES THAN ANY OTHER FERTILIZER

The Lawn

BY LAWRENCE S. DICKINSON

Assistant Professor of Horticulture
 Massachusetts State College

Defines and Describes the Culture of
 Turf in Park, Golfing and Home areas.

CONTENTS

| | |
|------------------------------|---------------------|
| The General View | Controlling Pests |
| Molding the Lawn | General Maintenance |
| Preparation of the Seed Bed | Lawn Mowers |
| Seed Selection and Planting | Park Turf |
| Important Turf Plants | Cemetery Turf |
| Planting a lawn with Stolons | Useful Tables |
| Fertilizing | |

*Here's Your Chance to Have the Best
 Book Published on Turf Culture*



The author, Professor Dickinson,
 is an international authority on
 turf culture

Illustrated

128 pages---Price \$1.25 postpaid
 to any address

The National Greenkeeper and Turf Culture

405 Caxton Bldg.

Cleveland, Ohio

OCTOBER, 1933
VOLUME VII—No. 10

Single Copies Twenty Cents
Six Months One Dollar
One Year Two Dollars

The NATIONAL GREENKEEPER and TURF CULTURE

(Registration of title applied for at U. S. Patent Office)

Published monthly at 405 Caxton Building, Cleveland, Ohio.

Contents copyright, 1933, by The National Greenkeeper and Turf Culture, Inc., Publishers.

Entered as second-class matter, Aug. 25, 1928, at the post office, Cleveland, Ohio, under act of March 3, 1879

All Rights Reserved — None of the contents of this Magazine, either wholly or in part, may be reprinted without permission.

ROBERT E. POWER
President and Treasurer

FRANK H. PELTON
Secretary

M. J. FOX
Assist. Sec'y-Treas.

Contents

| | | | |
|--|---|-------------------------------------|----|
| THE EDITOR'S CHAIR..... | 3 | DESERT GOLF COURSES IN EGYPT..... | 9 |
| PROMINENT MEN IN THE TURF CULTURE TRADE..... | 4 | By Hamilton M. Wright..... | |
| ABOUT BERMUDA GREENS..... | 5 | FAIRWAY WATERING..... | 11 |
| By J. C. Jenkins..... | | By Fred Holmes..... | |
| PHYSICAL PROPERTIES OF SOILS AND THEIR RELATION TO TURF MAINTENANCE—Chapter II..... | 7 | WORTHINGTON TO BUILD NEW MOWER..... | 12 |
| By O. J. Noer..... | | QUESTIONS AND ANSWERS..... | 13 |
| | | TRADE NEWS ABOUT TURF CULTURE..... | 14 |
| | | MARKET PLACE AND BUYERS' GUIDE..... | 15 |

The Editor's Chair

A TENDENCY seems to exist among owners of fine turf areas that their grass plants will grow and flourish without food and protection against winter frosts. One might as well tell his growing and healthy child that he cannot eat for a week. The result is disaster and expensive doctor's bills.

* * *

SOME sage said, "An ounce of prevention is worth a pound of cure." This saying has come down through the ages and has never been contradicted. Personally I cannot understand why those who have oodles of real cash invested in golf courses, lawns, cemeteries and school and college grounds, dissipate it deliberately only to discover when it is too late that the "ship is sinking."

* * *

THE groundkeeper is no magician. He cannot overcome the inevitable laws of Nature no matter how skilful and experienced he may be. He may temporarily defeat diseases but the enemy of vegetative decay is pushing him back every day, and without reinforcements in the way of seeds, fertilizers and compost, he will sooner or later have to surrender.

* * *

I WISH I could truly convey to our readers how serious and imminent the situation really is. Every day lately I hear statements from golfers that such and such a course is in terrible condition. As I go about I see fine lawns that look like mowed pastures.

Whose fault is it? None but the owners who are or want to be ignorant of the facts. When the fatal day comes they will, of course, blame the groundkeeper even though he works from daylight to dusk with a shorthanded crew and then worries through the watches of the night.

* * *

IT COSTS so little to do the right thing at the right time. If an expensive machine in a manufacturing plant begins to go bad through wear of bearings or other parts, the owner who needs it in his business replaces them and gets the money somewhere. But he forgets he needs and will miss the healthful recreation and fresh air of his golf course and the solace of his lawn and grounds.

* * *

DRIFTING down the tide of procrastination in turf culture will next year cause such a "squawk" from hundreds of thousands of golfers and lovers of the out-of-doors generally, as will be heard in far-off Siberia.

* * *

WE ARE desirous of obtaining wide-spread opinions on all phases of turf culture practice. The Question and Answer Department was designed for that purpose and we urge groundkeepers who have solved important problems to send in very briefly the facts as they found them. Practical experience is the best teacher always and discussion through the columns of the NATIONAL GREENKEEPER AND TURF CULTURE will be distributed through our world-wide circulation. We will pay \$1.00 for each contribution.

Here Are a Few of the Foremost Men in the Turf Culture Trade.
They Are Noted for Their Energy and Honesty in the Business
to Which They Have Practically Devoted Their Lives



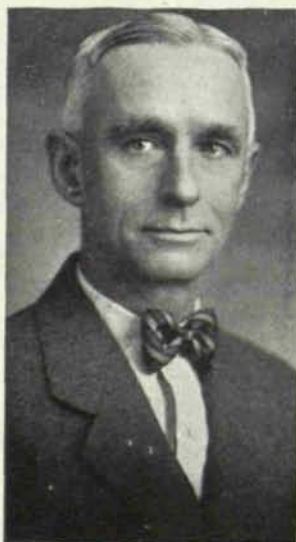
L. A. FERGUSON
Worthington Mower Company
Chicago, Illinois



C. M. SCHERER
Davey Tree Expert Company
Kent, Ohio



"SCOTTY" McLAREN
Toro Manufacturing Company
Minneapolis, Minnesota



JAMES A. SMITH
Ohio Humus Products Company
London, Ohio



J. OLIVER JOHNSON
J. Oliver Johnson, Inc.
Chicago, Illinois



PETER HENDERSON, JR.
Peter Henderson and Company
New York City, New York

OCTOBER

1933

VOLUME VII

NUMBER 10

The NATIONAL GREENKEEPER *and* TURF CULTURE

The only trade journal in the world devoted to the growing of fine turf grasses.

About Bermuda Greens

How to make them and keep them up

By J. C. JENKINS, Pro-greenkeeper
Temple Country Club, Temple, Texas

I NOTICED some time ago in your magazine you had inquiries from greenkeepers for articles of making and upkeep of Bermuda greens, and I am now trying to meet your request by giving you a little of my experience here in Temple, Texas, where I have nine greens and 18-hole putting course. All my greens are approximately between four and five thousand square feet in size.

I am going to make my article consist of four points, namely: Building a green and caring for it until ready to play, care of greens during the Spring and Summer, treatment of greens in early Fall, and care of greens during Winter when the weather permits.

My club being a small one, we have not any too much money to go in for extensive alterations. But my club gives me a free hand to make any alterations I care to that will improve the course and not cost any extra expense. The outcome is that I have built five new greens—made extensive alterations to two, and have built a new 18-hole putting course in front of the club house. I may mention all the land here is black land.

HOW TO BUILD A NEW GREEN

IN BUILDING a new green I usually plan on paper the size and shape, then go to the location and drive stakes in the 4 corners approximately to the height the green is to be at each stake. Then I drive three lines of stakes to approximate heights inside the cor-



We know of no man who is better qualified to write on the subject of Bermuda greens than is the author of this story. He has been very successful through sheer energy and originality.

ner ones, dividing the green as it were into four strips—filling in same with soil until the top of the stakes are covered.

I then start and put top of green as it will look when finished; after which I start and haul loads of sod ploughed from around the edge of the lake which our nine holes are around placing all the clods by hand until the green is sodded. Then I get a few loads of stock-pen fertilizer and cover the surface of the green three or four inches thick. All holes and crevices between the clods of Bermuda root are filled up. I then take a heavy mule roller and roll the green well—then water it well and re-roll. Then finally I get

some good light soil mixed with good sharp sand and put about an inch coating over the green and roll well with a 500-lb. hand roller. All this work is started in the Fall and continued to December, as the Bermuda is usually alive until December.

When the green starts to grow in the Spring I keep it well watered and rolled. The idea of watering is to cause a heat on the thick layer of fertilizer and make the Bermuda grow much quicker. After that I top dress it with sand soil and stock-pen fertilizer, which is well rotted and keep cutting until the green is entirely covered, at which time I give it another light top dressing and then put it in play.

BERMUDA GREENS SHOULD BE TOPDRESSED

DURING playing season Bermuda greens should be topdressed every four or five weeks, so as to

keep the runners covered and not let the texture of the grass grow rank and have a very hard stubble after being cut, which makes putting very uncertain.

I dress my greens all the time with stock-pen fertilizer, soil, and sand, and I have never used any chemicals since I began looking after Bermuda greens. Of course, some may say I am too old-fashioned in my ideas, but I have always had the very best results. My members are satisfied and hundreds of visitors who come and play from large clubs all over the 48 states congratulate me on the condition of my greens. I have had many calls for my advice from them as to how I get my results, and there is no use of spending money buying chemicals when I can get fertilizer for nothing.

Dressing greens in early Spring I put a heavy coat on, more fertilizer than soil and sand, and as the warmer weather comes I dress with very little fertilizer and mostly soil and sand. In the Fall, August and September, when the greens show signs of the hard play on them, I use a dressing the same as in early Spring, mixed with flue-soot. This I find helps to kill out brown patch fungus, and if I find large patches of brown patch fungus showing, I usually cut and replace with new turf. Another thing I notice helps check brown patch is in the early morning to wash the affected parts well before the sun gets on it and dress with a little compost from a pile kept handy to the green.

WATER GREENS DAY AND NIGHT

WATERING my greens, I don't water every day; usually two or three times a week, as I see they need it, and I water both at night and early morning and during the day I have to do some watering too, as our means can't afford a man all night. But during watering I keep the sprinkler going all day, so as the sun won't scald the green.

After the first frosts have killed the grass, I usually put on a heavy top dressing and cover all the dead grass, which in time rots and becomes food in itself for the green. The heavy topdressing gives me a better chance to keep winter weeds off the green, as you can drag the greens with a mat or use wooden spreaders which usually kills the weeds and at the same time gives a reasonable surface for winter golf and at the same time a protection to the roots from heavy freezes.

ROLLING GREENS IN WINTER

I ALSO do quite a little rolling of greens in Winter, as the black soil puffs up with rain and frost and the rolling keeps it much firmer. Don't use too heavy a roller, as you may pack the green too firm and keep the oxygen from getting to the roots when the grass starts to grow. In cases when my greens get packed too firmly I usually get round-tooth forks and push them into the green about six inches in depth and pry them up lightly all over the green. You will find it loosens up your green and the grass grows more rapidly. I prefer this method better than the spiked roller. Of course, it is much slower, but I think the better of the two methods.

This spiking I usually do in early Spring and after loosening the green I top dress it preferably with sand only. But I can't always get sand, owing to the expense of it, and I usually use two yards of light soil and one of sand, which makes a fairly light, sharp dressing. If anyone cares to try my methods and can get sand easily, use sand only as it goes down into the holes the fork makes and keeps the green open, allowing plenty of oxygen to get to the roots.

HOW TOPDRESSING IS PREPARED

REGARDING my topdressing, I usually start to haul the stock-pen fertilizer during the very hot weather every year (about 100 cubic yards), as my fairways don't need so much cutting, because we have no fairway sprinkling system. When I have it all piled up at the barn out in an open stack about two feet high, I usually get a good rain on it. If not, I put a sprinkler on it.

After I get it nicely moistened I go round the edges of the lake, which has been reduced in area owing to the hot weather and plough up all the silt and cover my fertilizer about six inches thick and let it lay there until the next Spring. In fact I don't even use it then, but turn it over as I usually have enough compost lying there ready for next Summer. That means my dressing has laid for two years, which gives it a good chance to rot well and let all weed seed sprouts get killed with the heat; that prevents taking weed seed to the greens when dressing.

I hope my article will be considered beneficial enough by you to be put in your magazine and that its readers may derive a little help from my methods of keeping Bermuda greens. I am not in the least sensitive to severe criticism by any of your readers who have Bermuda greens and if they see any weak spots in my methods, will be glad to hear their ways.

Physical Properties of Soils and Their Relation to Turf Maintenance

By O. J. NOER

Lafayette Country Club, Lafayette, Indiana

SOIL is a porous mass and the space existing between the solid particles usually called the pore space is occupied by air and water. The amount of pore space is a function of the size and arrangement of the soil particles.

Theoretically in a soil made up of equal-sized spheres in contact with one another the amount of pore space depends solely upon their arrangement. Thus a cubic foot of marbles contains as much pore space as one of small shot with the same arrangement of spheres. If the spheres are grouped in the most open fashion forty-seven per cent of the total volume is pore space, and if arranged as close as possible it drops to twenty-six per cent.

With compound spheres, that is small spheres within the larger spheres, which is the condition in well granulated soils the pore space may approach seventy-five per cent. By taking three-sized spheres and using the closest method of packing, the pore space reduces to five per cent. This is the condition existing in puddled clays. Working these soils when too wet forces the small particles into the spaces between the larger ones and the pore space then becomes negligible.

Soil grains are never true spheres, they are irregular in shape and uneven in size, so the ideal arrangements cited above do not obtain. Ordinarily in fine-textured soils the small particles are so light that they do not settle as close together in proportion to their size as do the sands. The relation between texture and total amount of pore space for some soils under field conditions is as follows:



*Per Cent
Pore Space*

| | |
|------------|-------|
| Clean Sand | 33.50 |
| Fine Sand | 44.00 |
| Sandy Loam | 50.00 |
| Silt Loam | 53.00 |
| Clay | 56.00 |

Not only the total amount of pore space, but the diameter of the individual pores is of importance. Together they determine the capacity of the soil to retain and move air and water, as well as to facilitate the extension of plant roots. These conditions are usually found in the sandy loams and loams.

PHYSICAL SOIL CONDITION BEST SUITED TO TURF

IDEAL soil conditions are most likely to occur in the loam soils. These soils have some particles large

enough to function separately, and others of medium size to form centers around which the smaller particles may cluster to form granules or crumbs. This provides a few large pore spaces which facilitate drainage and root movement, and numberless small openings with the compound granules charged with water and plant food awaiting the coming root hairs.

HOW SOIL TEXTURE AND STRUCTURE CAN BE MODIFIED

THE only feasible method of changing soil texture is to add material of different texture. Obviously the huge expense prohibits such practice on extensive areas such as fairways, parks, etc., but it is entirely feasible in the preparation of soil for golf greens and small lawns.

A common mistake is to use too little sand on heavy soils. The presence of only thirty per cent clay in a soil is sufficient to classify it as a clay, the balance may be all sand. If ten per cent of the clay in the above soil could be replaced with sand making the clay content twenty per cent and the sand eighty the soil would become a sand. Thus only ten per cent difference in clay content changes the soil from one extreme to the other. Hence, relatively small amounts of clay suffice to effectively change sands, but large amounts of sand are required to materially modify the properties of heavy soil.

It is important to provide soil of as near ideal texture as possible prior to seeding. Failure to do so may retard or prevent formation of dense heavy turf, and after turf is even partially established it is not easy to modify soil texture. Applications of pure sand, clay or humus do not mix well with the underlying soil and thus may do positive damage. Changes must be effected by gradually building a soil of good texture by frequent applications of suitable topdressing material.

SANDY LOAMS AND LOAMS MOST SUITABLE
*F*OR golf greens soils of intermediate texture, the sandy loams and loams are certainly most suitable. These require minimum additions of humus or sand. Too much humus makes them spongy and may unduly encourage worms. If the clay content is too high the soil consolidates and the surface of the green becomes hard. Rolling and traffic of players aggravates the condition and the green eventually becomes "hide bound."

Players complain that greens will not hold the ball. Heavy watering to soften the soil is a makeshift remedy and may do positive injury to the turf by filling the pore spaces, thus depriving the roots of needed oxygen. In extreme cases greens should be forked, followed by topdressing with material of proper texture. Permanent improvement must come from the use of suitable topdressing material

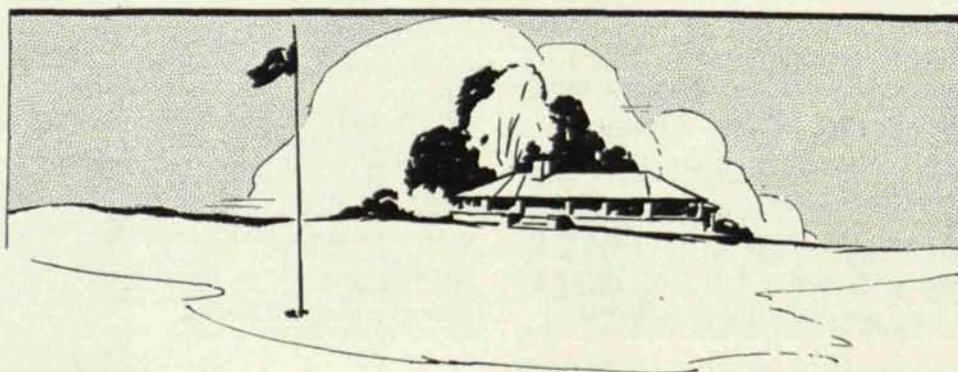
and gradually building up a layer of good soil. If soil texture is right there should be no complaint about the ability to hold the ball.

ADEQUATE DRAINAGE IS FIRST ESSENTIAL

*O*N EXTENSIVE areas, improvement of soil structure must be the aim rather than extensive changes in texture. Development of granular structure on heavy soils produces marked improvement. Adequate drainage is the first essential. When these soils are saturated with water, the excess water tends to break down and detach the small particles held in the compound granules. Thorough drainage removes this superfluous water, and as the water films surrounding the particles contract the small particles are gathered into clusters and lightly cemented by the action of humus or the salts dissolved in the soil water.

During the winter, freezing and thawing promote granulation. Too early and heavy rolling when the soil is very wet may puddle the soil. Rolling beyond that necessary to force heaved turf back is dangerous on heavy soil. If the turf is poor it should be encouraged by judicious feeding. The extension of roots and the augmentation of the humus supply when the old roots die will improve soil condition. Surface applications of manure do not add much humus to the soil, after turf is established.

When new seedings are contemplated on fairways or other large areas, extreme care should be exercised in the preparation of the seed bed if the soil is fine textured. Plowing should be done when the moisture condition is such as to prevent puddling and formation of clods. While rarely possible, plowing a season in advance of seeding improves granulation resulting from alternate freezing and thawing during the winter. Generous applications of manure applied and disced into the soil after plowing will help lighten the soil. If it is possible to grow a green manure crop and plow it under the resulting humus will prove beneficial.



Desert Golf Courses In Egypt

New type of sport offered in sand courses. Fast links on desert put any player on his mettle. Perfect record of putts found on sand greens.

By HAMILTON M. WRIGHT

PERHAPS you have never heard of desert golf courses. But golf in the desert is played on sand courses. Although of sand, hard-packed and daily tended, the golf-minded Englishmen who introduced the right royal game into Egypt, have been very clever in their handling of the sand.

Several types of sand are used for fairways, for greens, or the rough as the case may be, to assure a difference in the speed of the ball commensurate in some degree with the difference in the movement of the ball on the greens and fairways of a grass course.

Of the five golf courses in the neighborhood of Cairo, three are desert courses, located at Heliopolis, Helouan and Maadi, in the near vicinity of the city and all are full eighteen holes. In addition, there is a fine 18-hole grass course on the grounds of the Gezira Sporting Club in Cairo, and the small nine-hole grass course of the Mena House, located at the very base of the Pyramids of Giza.

GOLF ON A DESERT COUSE IS FAST

GOLF on a desert course is very much faster than golf on a grass course. Playing on the sand is a very interesting experience for golfers who have never tried it. Most people at first find it very difficult. The ball requires very keen hitting. You play the same shot on a desert course, but you must take it exactly right or your shot will be far more a complete failure than it will on grass. And on the "green" of the desert course (which is, as a matter of fact, not a green at all but a "brown" or "white") a finely swept brown or white sand is used on which is left every trace of your putting.

The surface is necessarily flat, no "borrow" is required and if a putt does not sink it is your own fault. How interesting it would be to see written in the sand the evidence of the putting of Bobby Jones or any other famous golfer—or, to bring it nearer home, to see even our own errors clearly disclosed in such matter as to admit of no argument.

In your shots "through the green" there is a unique opportunity to test the rhythm of your swing. In desert golf you must wear flat-soled shoes, no nails, and unless your rhythm is absolutely perfect you are apt to get a slip. Not that the course is actually slippery, yet it is smooth enough to put off balance one who has acquired the habit of relying too closely on the grip of his feet, to save him from the bad results of a jerky and uneven swing.

HELIOPOLIS IS AN OUTSTANDING COURSE

IN MANY respects the desert course at Heliopolis, seven miles from the heart of Cairo, stands alone in the world, though all the desert courses have their individual points. It is a sand course throughout. The fairways consist of watered and rolled sand, and the sand greens are very carefully looked after. They consist of white sand brought from a distance of five miles in the desert and calculated to give a very true medium-paced putting surface.

The fairways are smooth and hard and balls after landing will travel about forty yards further on this 6312-yard course than they ordinarily would on grass. The course is longitudinal and extends out to a billowing rise in the desert from which one obtains a sweeping view. Players never cross their tracks. It's all out and back. Par for the course is 68.

Less than thirty years ago the Heliopolis course was a stretch of desert as real as any you will find in the Sahara or Nubia. The late Baron Empain, former financial adviser of King Leopold of Belgium, and who took a large part in financing the King's vast enterprises, accumulated a huge fortune. The climate of Egypt delighted him and in the early nineties he built a handsome villa in the desert, near Cairo. From this villa spread a suburban city, of now 35,000 population fostered by the Baron, a really dazzling architectural work of stately flats and homes in the Saracenic style, enhanced by a modern race course, a handsome resort hotel, ranking among the finest in the world, and the expensive

ground of the Heliopolis Sporting Club, of which the golf course is a part.

The Baron has been succeeded by his son, one of the wealthiest young men of Europe. The young Baron is President of the Heliopolis Sporting Club and a keen sportsman himself. He is intensely interested in its program. One of the prized trophies for golf is the Baron Empain Cup.

MAADI COURSE IS ON THE NILE

IN AN opposite direction from Cairo, that is, South, is the Maadi Sporting Club, seven miles from Opera Square, where you will also find another fine 18-hole desert course. The Maadi Club was formally opened by Lord Allenby in 1920 and is therefore one of the newer courses of Egypt.

The club grounds are at the edge of the beautifully built up town of Maadi, comprising modern brick and stone homes, well-shaded streets, and lovely gardens. The fine stone club house is situated near the entrance to the grounds and straight out one-fourth of a mile from the railway station. The course leads out from the low plateau above the Nile Valley on which Maadi is located up toward the hills so that from the ninth tee one obtains a beautiful view of the city of Cairo and the Citadel on the one hand and the Pyramids of Giza on the other, with the vivid green valley of the Nile in between. Indeed you can get a lot of Egypt's best scenery from any of her desert golf courses.

The course at Maadi also has very fast fairways. The greens are made up of very fine sifted brown sand from the desert which is continuously being watered by the greensman to give a sort of pull back on the ball and make the surface true. The ball travels so fast on the fairways that it would run over the bunkers and consequently short stalks of sedge that have been placed on top of the bunkers to prevent the ball from rolling over. After all, the bunker is meant to stop the ball and so this device has been adopted to keep the ambitious pellet in place.

The bogey of Maadi golf course is 70. The length of the course is 5857 yards, the previous length being 5300 yards and the bogey 74.

HELOUAN HAS A DIFFERENT SOIL

THE next desert course to the South is the 18-hole course at Helouan les Bains, seat of the well-known health baths of Egypt which are said to have been

patronized in the days of antiquity. This is generally accounted the finest of all desert courses. It is, however, somewhat different from the courses at Heliopolis and Maadi, for the reason that the soil becomes heavily impregnated with salt and also a very slight amount of muddy silt works up through the sand, giving a slight amount of hold back to the fairways so that the course is not quite so fast as the other desert courses.

The course is splendidly bunkered and lays at a slight elevation of, say, perhaps forty feet above the valley of the Nile. The seventh and ninth greens are on this lower elevation making very interesting play down from the "hill."

Coming back to Cairo—we find on Gezira island, which divides the Nile, the Gezira Sporting Club, about eight minutes by tram from Opera Square in the heart of Europeanized Cairo. The club was established by British Officers during the British occupation of Egypt and by three years will celebrate its fiftieth anniversary. The spacious grounds occupying the center of Gezira island and extending almost to the Nile on either side, have provision for horse racing, polo, tennis (there are 28 courts), golf and for almost every other outdoor sport except baseball.

The afternoons at the club house are great social levees. King Fuad of Egypt is patron of the Club and Sir Percy Loraine, Bt.K.C.M.G., British High Commissioner of Egypt is the President. Capt. D. P. Hope Johnston is the Secretary and Treasurer. The golf course 5940 yards, bogey 72.

GRASS COURSE AT FOOT OF PYRAMIDS

THE last golf course in our list of Cairo courses is the little 9-hole grass course which lays at the foot of the elevated plateau from which rise the Pyramids of Giza. In summer this course is covered with water by the inundations of the Nile, but in winter it is hard and well rolled and kept cropped cleanly by sheep. Playing on this course one thinks of Napoleon's admonition to his troops "soldiers of France, forty centuries look down upon you," which applies equally well to a golfer who plays on this course.

LINCOLN, NEB.

New corporations announced from the state capitol offices are the Fremont Memorial park with an authorized capital of \$25,000. Incorporators are A. F. Christensen, W. W. Moore, E. K. Lee and A. C. Sidner.