

Greenkeepers' Program of Self-Education

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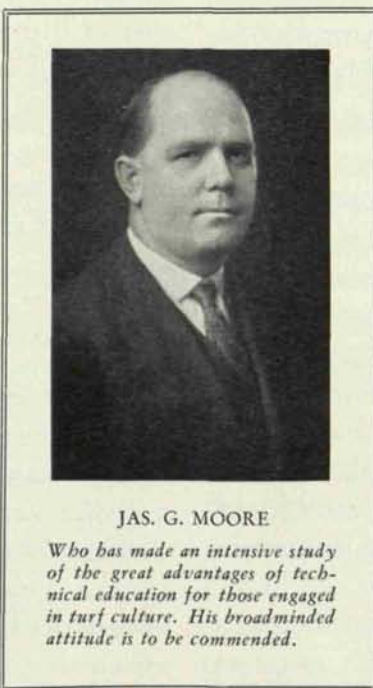
Reprinted from address delivered at the Annual Greenkeepers' Educational Conference in Chicago.

IT is a very common pastime to look at the other fellow's work and think "what a simple job." Possibly there is no harm in that sort of sport although we might be quite surprised if we attempted to do his work. It is serious, however, when we look at our own job and fail to appreciate its complexities and problems, and to think that after all it consists largely in nothing but routine.

Almost any job which has in it any possibilities for advancement, has its difficult problems and he who fails to recognize them will not hold that job for long. It is almost as fatal to recognize that problems exist and have no conception as to how they may be met. A man's job on his job then, is to equip himself to recognize the problem and so far as possible successfully solve it.

You probably all recall the day when it was commonly held that even though a man had failed at everything else he could still become a farmer. I suppose that such an opinion has prevailed ever since man began other pursuits than hunting and farming. Although it has taken a long time we are now coming to recognize that to be a real farmer, one who makes a success of the venture, under seemingly ever-increasing difficulties, must know much more than how to hold a plow in the soil, sow seed, and reap and thresh his crop. Successful farming today means knowledge along numerous lines and only he succeeds who equips himself with this knowledge.

Quite generally greenkeeping is looked upon today as was farming 25 or 30 years ago. There are many who seemingly think that anyone can be a greenkeeper. Such beliefs even crop out among boards of directors and officers of golf clubs,



when they should recognize that the most important person in the whole organization so far as the kind of a course they are to have is the greenkeeper. I fear there are altogether too many greenkeepers who have also failed to recognize this fact or at least, if they have recognized it have made little attempt to fit themselves so as to be able to live up to the responsibility of their position.

GREENKEEPERS ARE MADE,
NOT BORN

GOOD greenkeepers are made, not born, and there is no one so largely responsible for the making as the greenkeeper himself. The wide-

awake, progressive greenkeeper who appreciates his responsibilities and who wants to make himself indispensable to his club (and right now that's a rather desirable situation to be in) will have a multitude of things on which he should have more information. Like the farmer, a greenkeeper will never know all the things which would be of advantage to him, but the more of them he does know the more capable he will be in approaching the idealistic conditions which at least the playing membership expects him to maintain.

GREENKEEPER NEEDS KNOWLEDGE

WHAT the average greenkeeper needs is knowledge and still more knowledge. It has been only a comparatively short time since golf in the United States reached the magnitude where more than a few have been giving much attention to the many problems incident to producing and maintaining good greens and fairways.

Some turf problems are unsolved and possibly some are unsolvable, but the research work on turf problems carried on in this country for the past ten

years and the research work on related problems, extending back many years, have resulted in an accumulation of information which, if applied, will correct numerous unfavorable conditions now found on many golf courses. This information is available to the greenkeeper who is awake to his needs and to the desirability of improving his methods. Therefore, the greenkeeper cannot be excused if he plods along in the same old rut and fails to avail himself of such information and also the new information relating to his problems which is probably accumulating more rapidly now than ever before.

The subject assigned me really is to answer the question of how the greenkeeper can come into possession of this information. First, let me state that I believe that a good, practical course in a college of agriculture would be an invaluable asset to anyone who is to follow greenkeeping. Do not misunderstand me; I do not mean to imply that such a course is necessary to successful greenkeeping but it would give one a background which would make it possible for him to more quickly recognize many greenkeeping problems and make it easier for him to solve them under his own particular conditions. From the very beginning it would supplement his practical experience and enable him to plan his operations so as to obviate difficulties which might arise due to faulty practice. College training cannot replace practical experience but it will radically modify many of the impractical rules based solely upon experience and often faulty as regards the fundamental principle involved.

So far as I know there is no long course in greenkeeping offered by any college but the liberality in elective courses in many of our colleges would enable one to largely pursue subjects fundamental to greenkeeping.

Recognizing the needs of greenkeepers for help on their problems, several colleges of agriculture have instituted short courses for them. The plans of the various courses differ materially but all of them have the same basic idea; to bring before the greenkeeper some of the fundamentals upon which the production and maintenance of desirable turf depend. The problems of those organizing such courses have been quite as troublesome as some of yours but I am sure that the response on the part of greenkeepers has fully justified any labor which has been put upon them.

To me there has been one discouraging feature connected with the courses which we have offered at Wisconsin. It is the seeming lack of interest in this enterprise on the part of the officials of a majority of golf clubs. I am willing to concede that probably the greenkeeper is most largely concerned but the golf club is also concerned. I think it should be concerned enough to cooperate with the greenkeeper to the extent of helping him meet at least a part of the expense in his attendance upon such a course. A short course is not a holiday, it's real work. It's a mighty poor course or an unusually dumb greenkeeper that would not pay a profit to the club in a single year even though it paid all the legitimate expense its greenkeeper incurred in attending such a course.

COLLEGE COURSES ARE NECESSARY

AS THE first method in self education of the average greenkeeper I would advise attending a short course. Can reading bulletins and periodicals or studying books substitute for it? In my opinion they cannot entirely. First of all there is the stimulation which comes from association with others having like interests. Then there are the questions which arise in the consideration of every subject, possibly little points not made fully clear. Who answers them when you read an article or a book? At the course there's the man who has specially considered the subject and has the explanation or the brother greenkeeper whose experience enables him to give just the needed bit of information.

Don't get the idea that the college instructional staff are the only ones who contribute knowledge at these courses. Not an inconsiderable amount of it is furnished by the greenkeepers. But whatever the source of knowledge the discussion following the presentation of the subject matter is a feature which can only be had when there is a group.

Being a pedagog you would expect that my next suggestion would be text books. But I can hear you say, "there aren't but two or three text books on greenkeeping." That's probably true if we are looking for texts which attempt to cover the subject quite fully. Well, say we start with them. Now unless I'm mistaken, you are going to find advice in them which you are confident you know perfectly well "won't hold water." The chances are that you may be right. But are you sure you are right? Quite

likely that advice is based upon certain underlying principles with which you are not familiar. Well, what are they and has the author made the right deductions concerning them?

Immediately you want other authority and doubtless what you need is not to be found in books on golf at all but in a treatise on soils, drainage, plant nutrition, or fertilization. At once your book horizon widens for you want a more extended discussion of the subject than that given in the text. If you pursue the quest, the number of books and the variety of subjects treated will continually broaden and in their study, your knowledge of the principles underlying greenkeeping will also broaden. I am not going to give you a suggested list of books which you might or ought to read, principally because my other duties have prevented me giving the time necessary to prepare such a list.

GOLF PUBLICATIONS ARE VALUABLE

THE Bulletin of the U. S. G. A. green section brings me to the next source of self-education for the greenkeeper. Were I a greenkeeper I am very certain that I would not be without that periodical. It is the official medium of so much information which is vital to successful greenkeeping that it can be listed as almost indispensable. Nor in this connection would I overlook the value of other golf publications. I do not follow them closely and so am not in a position to even suggest which the greenkeeper would find most helpful. I am confident, however, that in any of them and in practically any issue, the greenkeeper could glean ideas or get suggestions which would be helpful in a more efficient performance of his duties.

After all, most successful greenkeeping is not confined just to care of greens and fairways, and a broader view of what is taking place on golf courses and a knowledge of the viewpoint of the other fellow may help in making our work more efficient or indicate how the club member or official can be brought to a fuller appreciation of the greenkeeper's problem and of the service he renders.

In the use of the periodical as a source of information it is not enough just to read an article on a certain subject and then trust that you will remember it. It is not possible for anyone to remember all the things he ought to remember. So, if after all you are to benefit by your reading, you will need to

know where to find the information later on when you desire to use it. This will involve at least, filing the periodical or the article. It should probably also involve providing a method of locating the article without searching page by page through a great number of magazines. This can be done easily and efficiently by first noting on a small card the subject of the article. If the title does not carry the information which would make the article readily available, invent a title of your own.

Suppose we had a title like, "A new method of controlling brown patch." It would be rather difficult to locate the article using that title. Let's name the article, "Brown patch control." Your difficulty immediately vanishes. The card would also carry the name of the periodical and either the publication date or the volume and number and page number. If later on, another article on brown patch control appeared you would simply put on your brown patch card the data as to where it could be located. If one follows this practice he will soon find that he is accumulating a store of valuable information which is almost immediately available when needed.

Some greenkeepers may be so fortunate as to be able to frequently visit some of the experimental fields of turf culture. A first-hand study of the work being done there would certainly yield information of great value to one interested in fertilization, turf maintenance, mowing, and other phases of golf course management which are ever present with the greenkeeper. Nor does he need to confine his visits of inspection to experimental plots. Every golf course is in essence a golf experimental station. While no two courses are identical in the details of the problems they present nor handled in exactly the same way, yet there is enough similarity in conditions to make it possible to learn from a study of the other fellow's methods. Not always will such study result in learning what to do, but frequently learning what not to do is of just as great importance and of course the other fellow often does things he ought not to do.

NO TRADE SECRETS

ONCE knew a strawberry grower who would never tell any other strawberry grower anything about the methods he used. He seemed to consider them trade secrets. I hope there are no greenkeepers

who feel that their methods are trade secrets. One of the best ways of self education is to talk over our successes and failures with the man who is in the same line of work. The principle upon which meetings of this kind is based is the mutual exchange of information and ideas. If we were unwilling to do that a meeting would be of little value. We can possibly to a lesser extent, profit by a mutual exchange of ideas when the numbers involved are just two perplexed greenkeepers.

I believe that another means of self education for the greenkeeper is playing golf—by all means playing his own course and it would also be desirable to play other courses. I know the danger that lies in this type of instruction but I have faith in the greenkeepers that they will not specialize in it to the extent of causing their work to be neglected, as is frequently the case with some of the club members. In the first place the greenkeeper who plays golf is in a much better position to judge of the sort of playing conditions he is providing than if he has merely a theoretical basis for his judgment as to what are good playing conditions. If he plays his course he will be in much better position to judge whether or not there is ground for the complaint of a member or official or whether the complainer was merely off his game on his last round.

Playing other courses will enable him to make comparisons with his own. Sometimes we are quite satisfied with ourselves until we begin to measure up to what someone else has accomplished and then we are forced to revise our ideas. But comparisons are not always odious; we may find that after all we have been doing quite as well as we thought, and to find this out should be helpful for it should stimulate us to greater efforts to improve upon our past successes.

I would not want to take all the joy out of a game of golf for the greenkeeper or ruin his score by insisting that he should be studying the course as he plays. I think I have heard somewhere that when one plays golf his mind should be on his game. However, I would suggest that there are times when the greenkeeper should play with the avowed purpose of studying the course in relation to his play. I am quite sure that if he does this he will discover possible changes which if made would improve the course and increase the pleasure of the members in playing it.

There may be some other ways of self education for the greenkeeper which I have not mentioned, but I believe I have suggested enough so that any greenkeeper who faithfully tries out all of them will not want for means of occupying his leisure hours for some time to come. I fully realize that many greenkeepers are probably making use of most of these methods at present. I do not want to add anything to the gloom which already engulfs us, but I will venture the guess that greenkeepers are going to be asked to make just as many bricks with less straw in the future as they have in the past when there was more straw with which to work.

The greenkeeper is going to have to be more efficient in the future than in the past. Granted that he has been doing his best in the past he is going to have to do better in the future. To do that he must know more about his job. He must make better utilization of the facilities furnished. He must be more alert to keep the club officials better informed as to the problems, without seeming to complain. Only to the extent to which he avails himself of these various means of education will he be able to meet the new demands which will be made upon him.

Greenkeepers Meet at Kingston

By PROFESSOR T. E. ODLAND

THE 4th Annual Greenkeepers field day was held at the Rhode Island State College and experiment station at Kingston, R. I., on May 22. The day was ideal and about 80 greenkeepers and other turf enthusiasts were present.

After registration the greenkeepers visited the turf experiments at the Experiment station under the guidance of T. E. Odland and H. F. A. North. The season has been favorable and the grass plats were in good condition. Various fertilizer tests, variety tests, bent grass strains from different clubs, bent grass for seed production and many other experiments and tests are under way.

From the grass plats the way led to the College dining hall where 81 were served lunch. After luncheon the visitors were extended greetings from the college by President Raymond G. Bressler. Director Gilbert of the Experiment station acted as chairman of the meeting and introduced a number of the greenkeepers and others present. The chief

address of the day was made by Dr. John Monteith, Jr. of the Green Section, U. S. Golf Association. His topic was "Turf diseases and their control."

Following the dinner and talks, the annual business meeting of the Rhode Island Greenkeepers' Club was held. The following officers were elected: President, Chas. B. Mulaney, Meshanticut Golf Club; Vice President, Everett Pyle, Providence Municipal Links; Treasurer, Martin Greene, Wampanoisset Country Club; Secretary, Woodworth Bradley, Providence, R. I.

A number of firms were represented with various lines of equipment. Demonstrations of equipment occupied the time from 3 p. m. to well towards 6 o'clock. The exhibits included lawn and putting green mowers, sprinklers and sprinkler equipment, water pumps, seeds, fertilizers, and miscellaneous golf equipment.

At no other time during the year is there a more genuinely interested and enthusiastic gathering at the college than when the greenkeepers have their field day.

Golf Course News

*A column of information brief and accurate.
Items are welcome and will be published.*

CANADIAN GOSSIP

By J. H. EVANS

SOME concern is being shown by greenkeepers and course superintendents of golf clubs of Ontario over the policy of retrenchment generally decided on for 1933. With few exceptions clubs have reduced to a considerable extent the amount set aside annually for course maintenance. The policy means lower wages for the laborer, a smaller amount for equipment and material and as a consequence courses in poorer condition as the year proceeds.

"During the past few years a considerable sum has been spent by the older clubs and some of the newer clubs. Many of the clubs will be able to retrench for a year without suffering any loss, but if the retrenchment extends for more than a season, they will be faced with some serious problems," said W. J. Sansom, president of the Greenkeepers' association, who pointed out that the greenkeeper's attitude was one of interest in his work.

The majority of greenkeepers realize, according to Mr. Sansom, that economies for a season or so, must be followed by extensive expenditures to improve conditions on run-down fairways and poorly-kept greens. Their

view is not entirely one of dollars and cents and personnel, he said.

The outdoor meetings of the greenkeepers' association will commence in June. Arrangements for these meetings were made during May, while Mr. Sansom and others visited Howard Lloyd, formerly an officer of their association who was compelled through ill health to resign his position at the Rosedale Golf club and take a place in the Niagara peninsula at Beamsville. The meetings will be of the usual character—a discussion on different subjects with some technical advice thrown in by experts from agricultural colleges.

NEWS FROM THE SOUTH

By MERLE ZWEIFEL

FOR the first time in nearly five years greensmen of the southwest have been able to effect a long, deep sigh of genuine relief and devote their attention to other than laying water lines from a nearby creek or pond. For the drouth apparently is over.

Rainfall for Oklahoma and Texas has been more nearly normal during the past six weeks than at any time since 1928 although it still falls short of the pre-drouth average. The dry spell kept greenkeepers constantly on their toes trying to pull the greens and fairways through. A few clubs had fairway watering systems installed but those who were less fortunate suffered the loss of Bermuda grass turf that will be costly to replace.

Several golf clubs will take advantage of the "wet" season and seed bare spots in the fairways with Bermuda.

* * *

A NEW THREAT?

A BRAND new plant seems to have made an impressive debut in the Oklahoma and Arkansas district quite recently and has caused much comment among turf experts. Botanists have identified the plant as Mexican clover, of a creeping variety. Although it originated in the dry, arid sections of southwest Texas, it thrives unusually well in the Mississippi valley states.

Observers have noted that a number of lawns in the northern section of Oklahoma have become infested with the weed and it will choke or smother out grasses of all kinds if allowed to spread including the hardy Bermuda. The main stem puts out runners that take root in the soil with amazing rapidity and seems little effected by close mowing.

NEW ENGLAND NOTES

By GUY C. WEST

THE Greenkeepers' Club of New England held its regular monthly meeting on May 8 at the Kernwood Country Club, Salem, Mass. In the morning, Wendell Miller, well-known irrigation expert, demonstrated and

When Skunks Are Vile

*Discussion of an unusual subject yet one which is very important.
The author has told the truth and what he says may be of great help
to turf culture experts.*

By W. D. CHINERY, Greenkeeper

York Downs Golf Club, Eglinton, Ontario, Canada

SOMETIME ago, Mr. C. Ream wrote a very interesting article for your magazine on "War Against Ants," and closed his article asking for information regarding the different pests one has to contend with in the maintenance of fine turf. Here is something I hope may interest our correspondent, also others, although I am hoping they may not have a similar experience to mine.

Though I have to revert back several seasons, the incident is still fresh in my memory. One morning early in September, 1925, one of my staff informed me that the crows had torn our number seven green all to pieces. Accepting the information as an exaggeration, I inspected the green and found to my consternation that my informant had used the right term. My first impression of the green was that a large litter of little pigs had been having a rooting match, it was figuratively speaking torn all to pieces.

I may say that the crows had bothered us somewhat by boring after grubs, etc., but the tracks shown in the dew on the grass proved to be of a four-footed animal and on making an inspection of the surroundings I was convinced by signs I saw, that the offenders were of the family "skunk." Other greens had also been visited and parts of the fairways were in bad shape from the same cause. We concluded that the skunks were boring after a large white grub presumably that of the June Beetle.

At that time we were turfing on an extensive scale and finding large numbers of larva or grubs, and although the turf we were lifting was less than 100 yards from the despoiled green we never saw where the skunk had worked. I wonder could it be that even the skunk prefers bent grass to that of a coarse mixture?

SKUNKS DO NOT LIKE STRYCHNINE

THE holes made by these pests were about the size of a walnut up to a bee's egg. Realizing we had to do something and that quickly, I procured some strychnine, also some pieces of fat meat forming

these into pieces resembling a grub, by making a slight incision it enabled us to put a little of the poison in the meat then gently rolling the same into form these were placed here and there at dusk, where the pests had operated. On making an early morning round we were rewarded with two crows but later in the day two skunks were brought to light.

The next evening we used as bait some of the grubs mentioned, these we damped with milk then slightly dusted the strychnine over them all.

This bait we placed just inside some likely holes we had located in the daytime, lightly covering the baits with soil. By adopting this method we accounted for seventeen skunks within the week and with no small satisfaction. I should state that the reason we used milk on the grubs was to prevent the poison from falling off with the movement of the grubs. Furthermore, we treated some of our greens with bichloride of mercury in the hope of destroying the grubs, but we noticed no change in this direction. In all, we had eight of our greens more or less temporarily spoiled by these carnivorous pests.

With their ranks decimated we had a little respite, though there were one or two that still persisted in visiting us and nothing we could do to stop them, they had evidently gotten wise. One bright moonlight night I also made a visit to one green and there I saw my enemy.

Now I had heard several version from some of the natives as to what a skunk would do if interfered with, and here was my chance to prove for myself. First, I circled Mr. Skunk, keeping a respectful distance. As luck would have it he was on the fairway close to the green. The beastie went on feeding, then I shouted and whistled. Failing to arouse him I loaded two guns one with shells, the other with my Lady Nicotine. I approached within about forty feet but neither my presence or tobacco smoke aroused him. I have his skin as a memento. Since then I am pleased to say we have not suffered by their depredations.

Arkansas Wants Bent Grass Greens

By MERLE ZWEIFEL

ARKANSAS' prima donna golf professional, architect, and greenkeeper, Mr. H. C. Hackbarth, better known in southern golf circles as "Hack," has been instructed by some of Little Rock's leading golfers to introduce into that state the well-known bent putting green grass and Mr. Hackbarth has taken the job seriously. In fact seriously enough that he has made an extensive tour of the states west and north of Arkansas, the object being to study the maintenance problems related to the bent grass. He will also take into consideration the effect which the climate along the Mississippi valley might have on the grass.

It is interesting to know that there is not one single bent grass green in the entire state of Arkansas, although Oklahoma, Kansas, Missouri, Kentucky, and Tennessee, almost surrounding the valley state, all have golf courses with creeping bent grass greens.

However, Arkansas can boast of some of the finest golf courses in the south. The Hot Springs resort course, a 45-hole layout, has just passed another successful season of golf, the popular Trans-Mississippi Women's tourney and the Open tournament being held there recently. And the Little Rock Country club, home of Mr. Hackbarth, certainly hasn't taken a back seat. With eighteen holes of Bermuda grass greens that club has been the scene of virtually every kind of golf championship in Arkansas.

BERMUDA FREEZES OUT

ONE of the principal objections to Bermuda grass for greens is that it is necessary to give the Bermuda a heavy coat of cotton hulls or straw in the fall of the year to keep it from freezing out and this leads to play on the temporary greens. Golf in this state is at its best in the fall and early winter, especially at the resort courses where crowds seek the warm winter sunshine of the southland.

Several of the "best minds" in Arkansas believe that the transition of putting greens from Bermuda to bent grass would entail considerable expense. The greens would have to be completely rebuilt and tiled and such a drain on the budget would not be exactly favored in these days of depression.

And there are some who believe that the humidity of the Mississippi valley would cause the dreaded

brown patch disease to spread rapidly and become uncontrollable during the warm days of June and July.

Nevertheless, Mr. Hackbarth has been assigned to the particular task of finding a bent grass that will successfully stand all requirements and he is making an intensive study of that grass.

Book Reviews

Golfer's Year Book

WE HAVE just received the Golfer's Year Book for 1933, which is published by the Golfer's Year Book Co., Inc., 6 East 46th St., New York City. It is edited by William D. Richardson, nationally-known golf writer, and Linocln A. Werden.

This book is a work of art and not only provides an accurate record of those who play golf prominently, but those who have to do with the maintenance of the golf courses. It gives a review of the U. S. G. A. championships dating back several years, also the rules of golf put out by the United States Golf Association.

A very interesting chapter is devoted to the State Associations, with the names of the officers and the results of their various tournaments. The Golf Club Directory is an intimate analysis of the clubs in the United States and Canada, and is an invaluable aid to those who wish to contact with them.

Apparently from our observation the Golfer's Year Book is very much up-to-date and indicates a lot of work and research putting into print what those who are interested wish to know.

Names of greenkeepers and professionals are well-defined and appear to be very accurate. We have no hesitancy in recommending it to our readers and we compliment the publishers upon the production of a book of this character.

Polo

A VERY recent copy of *Polo* has come to hand and is unusual in its appearance and contents. It is published by the Polo Magazine, Inc., 180 Madison Avenue, New York City and Peter Vichier is the editor.

Those interested in turf culture understand that the upkeep of polo fields is very important in the playing of the game and that the turf problem is very vital to the players and the ponies who are engaged in this sport. There seems to be a definite urge to make the turf conditions less hazardous and we are greatly in sympathy with the idea.

Market Place *and* Buyers' Guide

Where reputable manufacturers and dealers list and describe their products. Greenkeepers are requested to write the Market Place for any special information they desire about supplies or equipment.

Airport Drainage

Armco Culvert Mfrs. Association
Wendell P. Miller and Associates

Ant Control

Royal Products Company

Ball Washers

J. Oliver Johnson, Inc.
Worthington Mower Company
Ideal Power Lawn Mower Co.
G. B. Lewis Company

Ball Locators

Worthington Mower Company

Bent-Coos County State Sealed and Certified

J. M. McCullough's Sons Company
Seaside Bent Company

Bent Seed

Stumpp & Walter Company
Peter Henderson & Co.
O. M. Scott & Sons Co.

Bent Seed—Prince Edward Island

J. M. McCullough's Sons Co.

Bent Stolons

Hubbard Nurseries
O. M. Scott & Sons Co.
Stumpp & Walter Co.
Ohio Humus Products Co.
Illinois Grass Co.
Hiram F. Godwin
Lyman Carrier Products

Bluegrass—Seed

J. G. Peppard Seed Company

Brown Patch Control

Stumpp & Walter Co.
J. Oliver Johnson, Inc.
Arthur D. Peterson
American Cyanamid Sales Co.
C. B. Dolge Company
McClain Bros. Co.
Arthur Boggs & Co.
Mallinckrodt Chemical Works
Lyman Carrier Products

Charcoal

Cleveland Charcoal Supply Company
Wood Charcoal Research Bureau

Cocoas

Lyman Carrier Products

Compost Distributors

Toro Mfg. Company
The Root Mfg. Co.

Compost Mixers

Toro Mfg. Company
Royer Foundry & Machine Co.
Beardsley & Piper Company
Silver Mfg. Company
Kemp Mfg. Company

ADVERTISERS' INDEX

Boggs, Arthur & Company	Cover
Buckner Mfg. Company	Cover
Budd Mfg. Company	Cover
Diamond Calk Horseshoe Company	Cover
Fate-Root-Heath Company	Cover
Horner, R. S.	19
Ideal Power Lawn Mower Co.	4
McClain Brothers Company	Cover
Mallinckrodt Chemical Works	Cover
Milwaukee Sewerage Commission	Cover
Royal Products Company	20

Cultivators (Disc)

John H. Graham & Co., Inc.

Cultivators (Spike)

John H. Graham & Co., Inc.

Drainage Engineers

Wendell P. Miller and Associates

Dump Carts

Toro Mfg. Company
J. Oliver Johnson, Inc.
Worthington Mower Company
Peter Henderson & Co.
Ideal Power Lawn Mower Co.

Fairway Fertilizers

Synthetic Nitrogen Products Corp.
Armour Fertilizer Works
Lyman Carrier Products

Fairway Irrigation

Buckner Mfg. Co.
Campbell Irrigation Company
Economy Irrigation Company
L. R. Nelson Mfg. Company
Double Rotary Sprinkler Co.
Lyman Carrier Products

Fairway Mower Blades

The Budd Mfg. Company

Fairway Mowers

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Ideal Power Lawn Mower Company
Worthington Mower Company
The F. & N. Lawn Mower Co.
National Mower Company

Fairway Tractors

International Harvester Co. of America

Fertilizers

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J. Oliver Johnson, Inc.
Peter Henderson & Co.
Nitrate Agencies Co.
Atkins & Durbrow, Inc.
Arthur D. Peterson
American Cyanamid and Chemical Corp.
Lyman Carrier Company
Bayer-Semesan Company
Synthetic Nitrogen Products
Wayside Gardens Company
Armour Fertilizer Works
Cobwell Reduction Co.

Fertilizer Distributors

International Harvester Co. of America
Synthetic Nitrogen Products Corp.
The Root Mfg. Co.

Flag Poles

Ideal Power Lawn Mower Company
Standard Mfg. Company

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J. Oliver Johnson, Inc.

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Bayer-Semesan Company, Inc.
Sherwin-Williams Company
Mallinckrodt Chemical Works

Fairway Rollers

Toro Mfg. Company
Philadelphia Toro Company
Worthington Mower Company

Golf Architecture

Charles Evans, Jr., and Associates

Golf Course Construction

Ohio Humus Products Co.

Golf Equipment

Stumpp & Walter Co.
Peter Henderson & Co.
Arthur D. Peterson
Ideal Power Lawn Mower Company
Lawn Equipment Corp.
T. W. Wood and Sons
Worthington Mower Company

Golf Flags

Ideal Power Lawn Mower Company
Stumpp & Walter Company
Peter Henderson & Co.
Arthur D. Peterson
Philadelphia Toro Company

Grass Seeder

The Root Mfg. Co.

Greens Fertilizers

Armour Fertilizer Works
Synthetic Nitrogen Products Corp.
Lyman Carrier Products

Greens Sprinklers

L. R. Nelson Mfg. Co.
Buckner Mfg. Co.
Double Rotary Sprinkler Co.
Perfection Sprinkler Co.

Hand Mower Blades

Budd Mfg. Company

Hole Cups

Standard Mfg. Company

Hole Cutters

Ideal Power Lawn Mower Company
Lawn Equipment Corp.
Standard Mfg. Company

Hole Liners

Chilton Crocker Company

Hole Rims

Ideal Power Lawn Mower Co.
Arthur D. Peterson

Horse Drawn Mowers

Pennsylvania Lawn Mower Works
International Harvester Co. of America
Worthington Mower Company
Ideal Power Lawn Mower Co.
Roseman Tractor Mower Co.

Hose

Peter Henderson & Co.
Arthur D. Peterson

Humus

Hyper-Humus Company
Ohio Humus Products Co.
Peter Henderson & Co.
Atkins & Durbrow, Inc.

Hydro-Mixer

McClain Brothers Company

Insecticides and Fungicides

American Cyanamid and Chemical Corp.
Sherwin-Williams Company
Bayer-Semesan Company
Arthur Boggs & Co.
Mallinckrodt Chemical Works

Iron Pipe

McWane Cast Iron Pipe Co.

Lawn Mowers

Pennsylvania Lawn Mower Works
Toro Manufacturing Company
Worthington Mower Company
Ideal Power Lawn Mower Co.
The F. & N. Lawn Mower Co.
Jacobsen Manufacturing Company

Lawn Seed

Henry A. Dreer
O. M. Scott & Sons Co.
J. Oliver Johnson, Inc.
Stumpp & Walter Co.
A. N. Peckham
Peter Henderson & Co.
J. M. McCullough's Sons Co.
Illinois Grass Co.
Arthur D. Peterson
Henry A. Dreer
Philadelphia Seed Co.
Seaside Bent Company
Lyman Carrier Products

Lime Spreaders

International Harvester Co. of America

Marvel Turf Conditioner

Walter B. Helms, Inc.

Mower Blades

The Budd Mfg. Co.

Mowing Equipment

E. G. Staude Mak-A-Tractor Co.
Toro Mfg. Company
Pennsylvania Lawn Mower Works
Ideal Power Lawn Mower Co.
Worthington Mower Company
Arthur D. Peterson
International Harvester Co. of America
Roseman Tractor Mower Co.
The F. & N. Lawn Mower Co.
Jacobsen Mfg. Company
National Mower Company
Philadelphia Toro Company

Motor Trucks

International Harvester Co. of America

Mower Sharpeners

Fate-Root-Heath Company
Toro Manufacturing Company
Henry H. Doty
Palmer-Bee Company

Nitrophoska

Synthetic Nitrogen Products Corp.

Peat Moss

Atkins & Durbrow, Inc.
Richard Gertstell

Perforator

Philadelphia Toro Company
J. F. Buel

Poa Annua

J. M. McCullough's Sons Co.

Power Mowers

Cooper Mfg. Company
Toro Manufacturing Company
Worthington Mower Company
International Harvester Co. of America
Jacobsen Mfg. Company
Ideal Power Lawn Mower Company

Putting Cup Illuminators

Chilton Crocker Company

Putting Green Mowers

Toro Mfg. Company
Pennsylvania Lawn Mower Works
Worthington Mower Company
Cooper Mfg. Company
Ideal Power Lawn Mower Co.
Roseman Tractor Mower Co.
The F. & N. Lawn Mower Co.
Jacobsen Mfg. Company

Power Putting Green Mowers

Jacobsen Mfg. Company
Worthington Mower Company
Ideal Power Lawn Mower Co.

Rakes

Pennsylvania Lawn Mower Works

Rhode Island Bent Seed

A. N. Peckham

Rollers (Hand)

John H. Graham & Co., Inc.
Stumpp & Walter Company

Rollers (Fairway)

John H. Graham & Co., Inc.
Toro Mfg. Company
Worthington Mower Company

Rollers

Stumpp & Walter Company
Toro Mfg. Company
Worthington Mower Company

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Pennsylvania Lawn Mower Works
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Roseman Tractor Mower Co.
Jacobsen Mfg. Company
Philadelphia Toro Company
International Harvester Co. of America
Gravely Mower & Cultivator Co.

Seaside Bent

Seaside Bent Company
Lyman Carrier Products

Shower Nozzle

McClain Brothers Company

Signs

Standard Mfg. Company

Sod Cutters

J. Oliver Johnson, Inc.
Pacific Greenkeepers' Appliance Co.

Sprayers

Hardie Mfg. Company
Friend Mfg. Company

Sprinklers

L. R. Nelson Mfg. Company
Buckner Mfg. Company
Economy Irrigation Company
Campbell Irrigation Company
Double Rotary Sprinkler Co.
Perfection Sprinkler Co.

Spuds

Diamond-Calk Horseshoe Company

Stolons

O. M. Scott & Sons Co.
Hubbard Nurseries
Lyman Carrier Products

Sulphate of Ammonia

Synthetic Nitrogen Products Corp.

Tee Markers

Standard Mfg. Company

Tee Mowers

Toro Manufacturing Company
Pennsylvania Lawn Mower Works
Worthington Mower Co.
Ideal Power Lawn Mower Co.
Jacobsen Mfg. Company

Tee Stands

Worthington Mower Co.

Tillage Implements

International Harvester Co. of America

Market Place and Buyers' Guide---

Top Dressing

Hyper-Humus Company
The Ohio Humus Company
Atkins and Durbrow, Inc.

Tractors

E. G. Staude Mak-A-Tractor Co.
Toro Manufacturing Company
Worthington Mower Co.
International Harvester Co. of America
Ideal Power Lawn Mower Co.
Roseman Tractor Mower Co.
R. S. Horner
Gravely Mower & Cultivator Co.

Tractor Wheels and Spuds

R. S. Horner

Turf Fertilizers

Armour Fertilizer Works

Underground Hose Locker

McClain Brothers Company

Urea

Synthetic Nitrogen Products Corp.

Water Pipe

McWane Cast Iron Pipe Co.

Wood Charcoal

Wood Charcoal Research Bureau

Worm Eradicators

Peter Henderson & Co.
C. B. Dolge Company
Reade Mfg. Company

EMPLOYMENT DEPARTMENT

GREENKEEPER WANTED

I have a position open for an all-around man, experienced in upkeep of an 18-hole sand green course. Must be A-1 with mowing equipment and machinery. Only one who takes interest in his work and sees that the job is done will be considered. Address all inquiries to Box 10, The National Greenkeeper and Turf Culture, Caxton Building, Cleveland, Ohio.

POSITIONS WANTED

Experienced greenkeeper with splendid references desires position in the Chicago district. Understands thoroughly soil and climatic conditions. Good man for any club. Address inquiries to Box A, The National Greenkeeper and Turf Culture, Caxton Bldg., Cleveland, Ohio.

Nationally-known greenkeeper with many years' experience in the construction and maintenance of several well-known golf courses, such as Oakmont in Pittsburgh and Plum Hollow in Detroit. Has a son who will act as assistant and is an expert mechanic. This combination should appeal to any golf organization desiring efficient and economical management. The best of references will be furnished upon request. Address inquiries to Box B, The National Greenkeeper and Turf Culture, Caxton Bldg., Cleveland, Ohio.

Greenkeeper with best of recommendations and thorough experience in maintenance and construction. References furnished upon request. Address inquiries to Box D, The National Greenkeeper and Turf Culture, Caxton Bldg., Cleveland, Ohio.

Pro-greenkeeper with many years' experience, seeks position as professional, pro-greenkeeper or greenkeeper. Grand-nephew of the late "Old" Tom Morris of St. Andrews, Scotland. References, John Ball, eight times British Amateur champion, and Jimmie Johnson, ex-American Amateur champion. Previous connections, Town and Country Club, Saint Paul; Midlothian C. C., Chicago; Louisville C. C.; Country Club of Harrisburg, Pa. Address Tom Morris, 1548 E. 64th Street, Chicago, Illinois.

Park and Cemetery Turf

(Concluded from page 10)

all times, and located on soil that will not crumble away when the sod is lifted.

If a wild grass that makes good turf creeps into the lots, tame it and encourage it to grow. Turf is what is wanted and not a particular species of grass. Rhode Island bent and many bent species very often volunteer in turf. The use of acid-reacting fertilizers is much more likely to encourage desirable native grasses to grow than fertilizers that give an alkaline reaction.

Iron Sulphate

(Concluded from page 8)

dition which is often observed (in England) when sulphate of ammonia is used alone.

In conclusion, it should be remembered, that the results obtained in England from the use of iron sulphate, have been ob-

tained under cultural conditions that differ in many respects from those of the United States. It would be interesting to observe the results of similar experiments conducted under our cultural conditions.

Draining Polo Fields

By G. D. JONES, Agricultural Engineer

IN THE management of polo fields, golf courses, estates, cemeteries and aviation fields, unusual drainage problems of more than ordinary difficulty are frequently encountered. A typical case was that of the Hunting Valley polo field, located just outside of Cleveland, Ohio, in the Chagrin Valley.

This field had been under-drained with tile at the time it was made. Due, however, to constant rolling and hard use from regular play, the ground had become so compacted that surface water was unable to get through to the tile, and the latter, therefore, had lost its efficiency in maintaining good drainage. As a result, much loss from winter killing was experienced and the field was frequently unplayable at the time games were scheduled.

The problem was obviously the adoption of some method which would break through the top soil without injuring the turf or the playing qualities of the field, and at the same time would permit the surface water to drain through to the tile, where it could be carried away. The agricultural engineering department of the Cleveland Tractor company was consulted and a treatment recommended with results that have been unusually satisfactory.

In the fall of 1932 a Cletrac Model 25 crawler tractor was used to pull a No. 20 Killifer chisel over this field to a depth of approximately 20 inches. A special sweep-shaped tool was used at the bottom of the chisel to increase the fracture of the compacted soil at the bottom of the chisel cut. The cuts were run across the field at intervals of approximately 30 inches at right angles to the direction in which the tiles were laid. This treatment loosened the compacted top soil and permitted the easy passage of water to the lower levels, where it was carried away by the tile. No injury to the turf was experienced.

The effectiveness of the job was well illustrated one morning early in March, 1933. After a very heavy rain on this particular morning, all the fields in the



will keep new-cut Greens free of ant hills and worms and not injure turf. Trial order to make fifty gallons.

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