

The Effects of Poisons, Insecticides and Fungicides on Soil

BY JOHN QUAILL, Secretary
The National Association of Greenkeepers of America

IN THIS day and age of particular golfers who demand the best turf possible and sometimes impossible, the greenkeeper has his hands full keeping up his course and his reputation to say nothing of his religion at times.

Just about the time he thinks he has everything in good shape and is getting all set to take a little trip over into the next county to see how that new course is coming along, up jumps the devil and upsets all his plans. It is probably a dose of brown-patch that has stopped him from his pleasure this trip. Anyway we will say it is brown-patch.

Out comes the spray outfit, sprinkling cart or proportioner or whatever he uses and the greens receive a dose of mercury or bordeaux or some other chemical which was recommended

to cure all the diseases, insects and weed troubles ever discovered. The brown-patch is probably checked and maybe cured, but what effects did it have on the organisms which are necessary to plant life?

We all know that bichloride of mercury is one of the oldest known disinfectants and germicides. Doctors and surgeons use it to sterilize their instruments and kill the bacteria. If it will kill bacteria for them why won't it kill bacteria in the soil? It is absolutely necessary that we have bacteria in the soil to grow grass, and without it we would not have any grass or weeds or any plant life and probably life of any kind would cease to exist.

There are several kinds of bacteria which are of vital interest to the greenkeeper. Some of them are the nitrifying bacteria, the nitrogen fixing bacteria, the denitrifying bacteria and the

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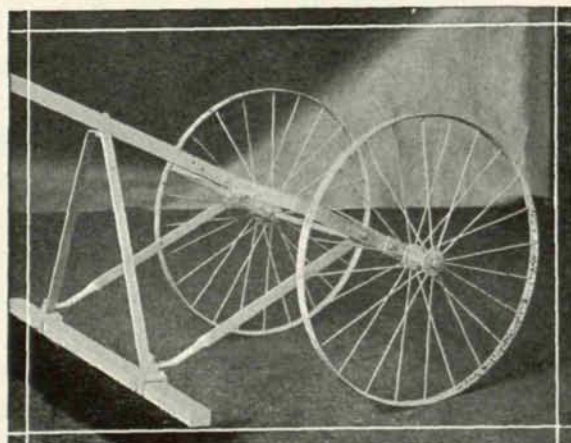
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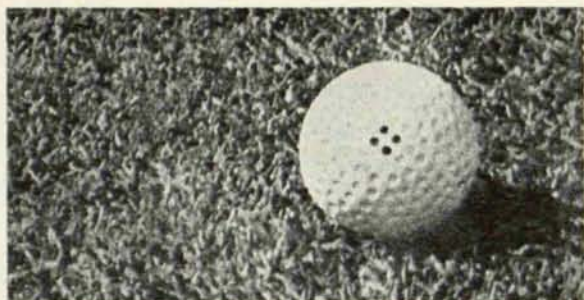
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fungi bacteria. The fungi bacteria, which causes brown-patch are the ones we are after when we use the mercury compounds. If it kills the fungi bacteria, why won't it kill the desirable bacteria also? It does and that is what makes the grass look so bad after we use it in very large doses.

Light doses do not affect the grass so much, but it does set it back some. Continued use of these fungicides will result in lowering the population of the desired bacteria so that heavier feeding of nitrogenous fertilizers will be necessary.

Now that brings us to another problem. If we use an acid reacting fertilizer such as ammonium sulphate to supply the nitrogen, we will get our soil so acid that we also reduce the desired bacteria. That means we will have to use more organic fertilizers to increase the bacteria. We will also probably have to use some lime to bring the soil back toward the neutral point to eliminate the excess acid in the soil.

Professor J. W. White of the Pennsylvania State College has experimented along these lines and has given us some very interesting

figures concerning the effect of poisons on the bacteria. These figures were given the students at the Greenkeepers' Conference at Penn State in February.

Bichloride of mercury reduced nitrification 24%.

Semesan reduced nitrification 18%.

Where lime was used on the same plots with the bichloride, nitrification was increased 6%.

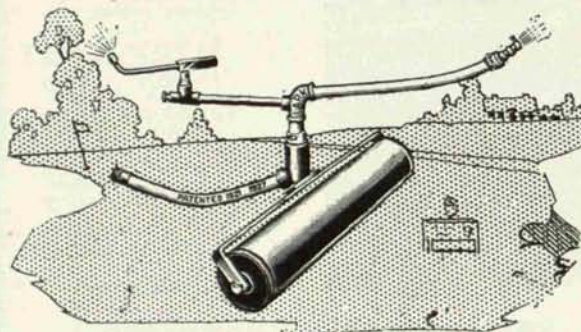
Lime on the Semesan plots increased nitrification 3%. From this we find that lime used where mercury has been used, we get a favorable result.

Prof. White also found that arsenate of lead increased nitrification about 8% and when lime was added to this plot, nitrification was further increased to about 15%.

Experiments with fungi bacteria were very interesting. He found that the fungi was more active in an acid soil than in a soil with an alkaline tendency. Following is the results of his tests.

| Soil reaction expressed in pH | | Bacteria per gram of earth |
|----------------------------------|---------|-------------------------------|
| pH 5.1 | no lime | 87,000 |
| pH 7.0 | limed | 16,000 |

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DR. AMOS F. HUBBARD, N. Kingsville, Ohio

Well prepared compost and humus are necessary for the life of the nitrifying bacteria. They only work in soils where a supply of organic matter is available. A well broken-down compost that is made under the proper conditions contains innumerable bacteria. These little life giving cells are what is necessary for the production of turf. Give the little fellows a home and they will work for you as long as you don't abuse them or feed them something that does not agree with them.

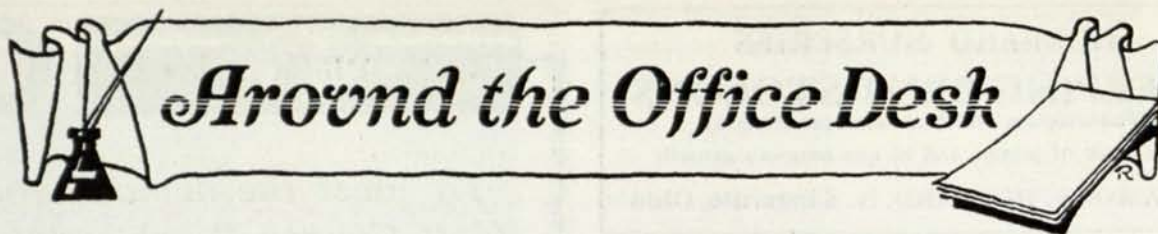
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Richmond, Virginia



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TOURNAMENT SCHEDULE

MAY

- 15-16 Walker Cup Matches, St. George's Course, Sandwich.
26 British Amateur, St. Andrews, Scotland.

JUNE

- 16 British Open, Holyoke, England.
18-21 St. Albans' Amateur Championship, St. Albans' Golf Club, St. Albans, L. I.
23-25 Ardsley Junior Championship, Ardsley-on-Hudson Club, New York.
23-28 Ohio State Amateur Championship, Toledo Country Club, Toledo, O.
24-25 Invitation Open Tournament for Shawnee Shield, Shawnee C. C., Shawnee-on-Delaware.

JULY

- 8-11 California Junior Championship, Del Monte, Calif.
10-11 Northern California Women's Golf Association Invitational Tournament, Del Monte, Calif.
10-12 National Open, Interlachen C. C., Minneapolis, Minn.
17-19 Fairview Open Championship, Fairview Country Club, Elmsford, N. Y.
31 Invitation Tournament for Buckwood Trophy, Shawnee C. C., Shawnee-on-Delaware, Pa.

AUGUST

- 1-3 Midsummer Tournament, Del Monte, Calif.
5-11 National Public Links Championship, Municipal Golf Course, Jacksonville, Fla.

SEPTEMBER

- 22-27 National Amateur Championship, Merion Cricket Club, Haverford, Philadelphia, Pa.
30-October 1 Arcola Senior Championship, Arcola Country Club, Arcola, N. J.

OCTOBER

- 13-18 Women's National Championship, Los Angeles Country Club, Los Angeles, Calif.

One Man Can't Run It

Fellow Greenkeepers:

It was during the year 1926 that the National Association of Greenkeepers was born. When in the embryo stage great care was given in outlining the aims and objects of our organization and deliberations on the destiny of the association were long and I believe wise.

It was then decided that no one individual would ever control the organization, because some time some individual might use the office for mercenary purposes. It is not the intention of the organization to take the voice of the membership out of the association. Justice, benevolence, and education is the foundation of the N. A. G. A. and one man is not big enough to give all of these.

The workings of our organization when the Convention is not in session, is left entirely in the hands

of the Executive committee. All matters of importance must be presented to this committee, and further, to prevent any radical move, any member who has a grievance must first present it before a special committee which must present its findings to the executive board.

There are seven special committees consisting of seven members, each selected and appointed by the President. Each committee is a necessary part of the organization. The duty of the President is to receive instructions and see that they are faithfully performed.

By John MacGregor,

First Vice President, The National Association of Greenkeepers of America.

Golf Business Is Good

We have heard a lot about hard times, poor business, etc., since the little party in Wall street last fall. But the golf business is good if purchases of equipment may be considered a fair barometer.

W. L. Austin, sales manager of the Ideal Power Lawn Mower Company has written us an interesting letter on this subject from which we quote as follows:

"First and most important is the fact that 1929 was the best year our company ever enjoyed and for the first three months of that year, January, February and March, the business was exceedingly satisfactory due to a certain extent that last year we had some very early warm weather, in fact, in some sections even in the north they were actually mowing the latter part of March last year.

"We had our doubts about this year being able to equal last year's sales record, but so far we have not only equaled last year's record but exceeded it to a very gratifying extent. The actual increase for the first three months of 1930 on the sale of our line of grass cutting equipment, including power mowers, fairway mowers, and putting green mowers, is 28%. The biggest percentage of this increase has been due to the extra good business that we have enjoyed so far this year from sale of fairway mowers and put-

Send dues and official communications to 1101 Farmers Bank Bldg., Pittsburgh, Pa.

Any correspondence requiring the Secretary's personal attention may be sent to either 1101 Farmers Bank Bldg., Pittsburgh, Pa., or to—

JOHN QUAILL, Secretary
426 Highland Avenue
West View, Pittsburgh, Penna.

Address all communications relating to the Golf Show at Columbus, Ohio in 1931 to—

FRED A. BURKHARDT
Chairman, Show Committee
405 Caxton Bldg., Cleveland, Ohio

Seed that lives up to your Expectations



Mr. H. G. Peterson, who has the worries of the Corey Creek Golf Course at Mansfield, Pa., on his shoulders, writes:

"We seeded our greens with a 50-50 mixture of R. I. Bent and German Bent. In six weeks we had a wonderful stand of grass. I have never seen a more uniform seeding. The grass came up thick as could be and we used about five pounds per one thousand square feet. The writer personally supervised the building of the greens and you may refer to me any time you please."

There is a vast difference in seed. Most authorities will agree that the purest seed is not only the best to sow, but the cheapest in the long run. We invite a comparison of Scott's Seed with any on the market. Write or wire for quotation.

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ting green mowers to golf clubs, as well as the Ideal Triplex power mower to large park systems, golf courses, etc.

"As a matter of fact our golf business has never been so satisfactory as it is this year. Not only have we stepped up sales of fairway mowers but the putting green mower that we first introduced last year is having a splendid sale this spring and we have also had a very fine business on the new Bulldog rough units that we just put on the market for the first time in 1930."

Dickinson Praises Association

Massachusetts Agricultural College

Amherst, March 22, 1930

Col. John Morley, President
National Association of Greenkeepers of America
2248 Selma Avenue
Youngstown, Ohio

Dear Col. Morley:

I accept the honorary membership to the National Association of Greenkeepers, and deeply appreciate the sentiment expressed in your cordial letter which accompanied the certificate of membership. I feel much pleased and highly honored.

Please accept my felicitations to you and your Association for the unselfish efforts to raise the profession of greenkeeping to a standard commensurate with the requirements for service to the club and success for the greenkeeper.

With my very best wishes, I am,

Cordially yours,

Lawrence S. Dickinson
Assistant Professor
of Horticulture

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Statement of the Ownership, Management, Circulation, etc., required by the Act of Congress of August 24, 1912, of THE NATIONAL GREENKEEPER, published monthly at Cleveland, Ohio, for April 1930. State of Ohio, County of Cuyahoga, ss.

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared Robt. E. Power, who, having been duly sworn according to law, deposes and says that he is the Editor of the National Greenkeeper and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, The National Greenkeeper, Inc., Cleveland, Ohio; Editor, Managing Editor and Business Manager Robt. E. Power, Cleveland, Ohio.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

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3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

ROBERT E. POWER, Editor

Sworn to and subscribed before me this 3rd day of April, 1930.

H. W. Slack

My commission expires Jan. 8, 1932

TRACTOR WHEEL SPUDS

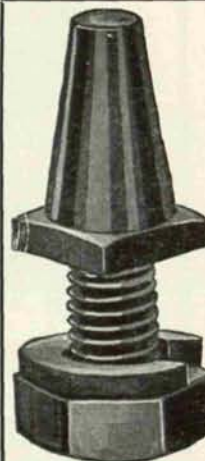
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Where reputable manufacturers and dealers list and describe their products. Greenkeepers are requested to write the Market Place for any special information they desire about supplies or equipment

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Wendell P. Miller and Associates

Ball Washers

J. Oliver Johnson, Inc.
Worthington Mower Company

Ball Locators

Worthington Mower Company

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Lyman Carrier, Inc.
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J. M. McCullough's Sons Co.

Bent Stolons

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O. M. Scott & Sons Co.
Stumpp & Walter Co.
Ohio Humus Products Co.
Illinois Grass Co.

Bridge Floors

Armco Culvert Mfrs. Association

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J. Oliver Johnson, Inc.
American Seed Co.
Reade Mfg. Co.
Golf Course Supply Co.

Catchbasins, Corrugated Iron

Armco Culvert Mfrs. Association

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Fairway Rollers

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John Bean Mfg. Co.

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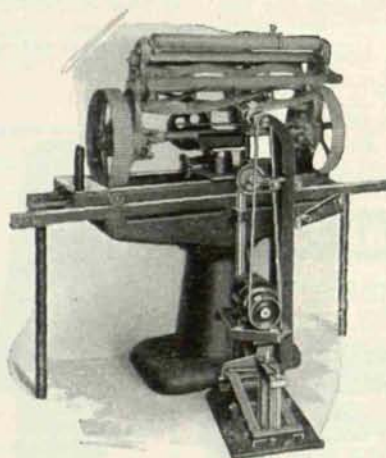
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Peter Henderson & Co.



Give you four times the service of present mower blades. Cleaner, quicker cutting job because they cut on an angle. Never any sharpening or grinding—merely switch to new edge. Holder, once attached, can be forgotten; blade, good for two seasons, changed as easily as a razor blade.

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Budd Blades end "layoffs" and costly reel truing. Fit any make or model mower. Don't delay having this better-work-at-a-saving on your present equipment; demand Budd Blades on any new mowers you buy. It pays YOU! "Circular N" brings you the full story and our FREE trial offer. Write for "Circular N" today. No obligation.

THE BUDD MANUFACTURING CO., Ravenna, Ohio

In fact the Peterson line is probably as complete and diversified and as carefully selected as any in the country. This company is very cautious to handle only tested articles and they have been so many years in the business that their judgment is to be relied upon.

The Peterson company also handles a complete line of seeds, fertilizers and chemicals, and makes a specialty of Nu-Green and Semesan, both of which are thoroughly well known as brown patch remedies.

A new fertilizer just introduced is known as "Feedgreen," which is an 8-5-3 product that has been on

NEW CATALOGS

Worthington Mowers

A very handsome new catalog has just been issued by the Worthington Mower Co., Stroudsburg, Pa., manufacturers of well known Worthington mowers, tractors and mowing equipment. It is handsomely illustrated with photographs of well known golf courses throughout the country where Worthington equipment is used, also athletic fields and airports that rely on Worthington equipment for their upkeep.

The Worthington slogan, "The Spring's the Thing" refers to the spring which holds the cutters firmly in place either down to the ground or at any prescribed distance from it, thus producing a close smooth lawn or an even uniform length of rough. This is said to be an exclusive feature.

A part of the catalog is devoted to the new model Overgreen which is a power putting green mower with

three units giving great flexibility and uniform cutting on uneven surfaces.

A final chapter on "Taking Care of Mowing Machinery" gives some very practical advice to those who have charge of this important equipment. A copy of this splendid catalog will be mailed to any greenkeeper who will write for it and there will be no charge.

Golf Course Supplies

The new 1930 catalog of Arthur D. Peterson, Inc., 11 East 44th Street, New York City, is a splendid piece of work. It covers the extensive line of golf course supplies and equipment which this company handles and which includes such well known products as Worthington mowers, Royer Compost mixers, Pennsylvania and Ideal putting green mowers, Boss rollers, Meeker harrows and discers, Peerless grinders, and a host of other items.

NOW WE HAVE IT

The Soil Tonic every Greenkeeper Wants

Driconure contains just two ingredients—cow manure from high protein fed cows, and peat moss, so treated as to be free of weed seeds and odorless.

It possesses fertilization and humus forming elements which recommend it to every greenkeeper. All the soil improving qualities of cow manure are held available to the plants over a longer period of time by the absorption powers of the peat moss.

50 lb. bags \$2.50 F. O. B. factory at Juliustown, N. J.

Per Ton \$75.00 F. O. B. factory at Juliustown, N. J.



Atkins & Durbrow, Inc.
27-G Burling Slip New York, N. Y.

OUTSTANDING
ACHIEVEMENTS
IN THE
PRODUCTION OF
FINE TURF

PRINCE EDWARD ISLAND
BENT SEED

BUCKEYE BRAND SEA-
SIDE BENT SEED

NEW BRUNSWICK
CREEPING BENT SEED

VELVET BENT SEED

All Government Inspected, Sealed
and Certified

Our booklet,
"The Fine Bent Grasses,"
free on request

THE J. M. McCULLOUGH'S
SONS CO.

316 Walnut Street Cincinnati, O.

the market in a small way since 1925. During the past four years it has been used in the vicinity of New York and the results are said to have been very satisfactory.

The Peterson catalog gives prices of all pieces of equipment and is an invaluable directory for the greenkeeper. It will be sent free upon request.

Hand Versus Power for Mowing Greens

Pennsylvania Lawn Mower Works, 1645 North 23rd St., Philadelphia, Pa., has just issued a new two-color folder setting forth decisively their opinion that for fine greens mowing there is still no substitute for a properly designed hand operated machine.

This company sent out a questionnaire to greenkeepers and claim that the replies confirm their opinion and in this new circular they set forth the reasons why they have never added a power greens mower to their line of equipment.

Space will not permit complete discussion of the subject at this time, but those who are interested may receive a copy of this circular free of charge by writing the company at the above address.

Milorganite for Turf

Milorganite, and its special use as a carrier for applying lead arsenate in the control and elimination of grubs, is covered in a new circular just issued by the Milwaukee Sewerage Commission, Milwaukee,

Wisconsin. The rate of application is 5 pounds lead arsenate and 25 pounds of Milorganite for 1000 square feet of turf or 200 pounds of lead arsenate and 800 pounds Milorganite to the acre.

Complete instructions are given for applying this combination mixture and the effect is to carry the lead where it will do the most good and also furnish a fertilizer that stimulates and strengthens the turf, so that it can resist the ravages of disease.

Photographs are given showing actual close-up conditions where grubs are working with the dead turf rolled back and the grubs exposed.

A copy of this exceedingly interesting circular will be sent without charge to any chairman or greenkeeper who may write for it.

Universal Appoints Agents

The Universal Sand Equipment Co., of Cleveland, Ohio announce the appointment of the following golf equipment dealers to handle the Universal Compost Mixer:

Rice Lewis & Son, Ltd., Toronto, Canada; Geo. Davis, Inc., Chicago; E. L. Winn, Inc., Elizabeth, N. J.; Arthur B. Porter, Inc., Salem, Mass.; Whitney Goit & Co., Kansas City, Mo.; Dick Ryerson, Milwaukee; T. W. Wood & Son, Richmond, Va.; John C. Russell, Montreal, Canada; John A. Guendling, State Tower Bldg., Syracuse, N. Y.; American Seed Co., Detroit.



Hofman Plant Food Distributor

The Salem Tool Co., Salem, Ohio, is putting out a plant food distributor which is operated by hand and is one of the handiest pieces of equipment that any greenkeeper can ask for. The hopper is 30 inches long and holds approximately 60 pounds of lime, fertilizer, seed or other similar material.

New and Better Golf Hole Rim

MOST economical hole rim you can get because it outlasts any other. Stays perfectly round always. . . . Self-draining. True to size. Easy to move; won't corrode; cast of rust-proof, solid one-piece aluminum.



Shipped on Free Trial

Write for full description, prices and details of offer to ship hole rims and other Standard Golf Course Equipment anywhere on open account subject to 10 Days Free Trial. Write now.

Standard Manufacturing Co.
Cedar Falls, Iowa



"The Hofman Jr." as the machine is called, is adapted to the following uses: fertilizing, sanding and preparing greens on golf courses. Distributing prepared plant foods, lime, manure, salt and chemicals on lawns, gardens, early and late vegetable beds, and flower gardens. Broadcasting special plant foods on growing vegetables and flowers, such as topdressing of strawberries and the dusting of flowers with insecticide. Spreading salt to kill weeds in driveways or to avert accidents on icy sidewalks.

"Centepede" Grass

This remarkable grass, new to this country, at least so far as general propagation is concerned, is being put on the market by the Stumpp & Walter Co., 30-32 Barclay Street, New York City. This concern considers it the best grass for not only Florida, but any location south of Virginia and west to California, under similar climatic conditions.

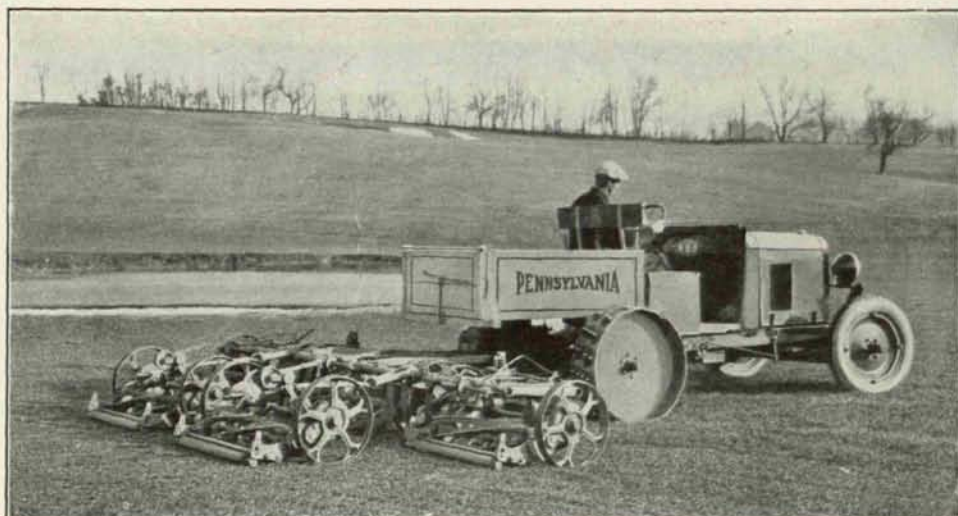
Quoting from this new circular the Stumpp & Walter Company says:

"'Centepede' is a dwarf-growing grass that spreads rapidly giving a luxurious turf that will withstand more abuse and hard usage than any other grass we know of.

"'Centepede' is also very desirable for grazing lands, making an ideal pasture grass on poor lands subject to erosion, and where Carpet and Bermuda Grass do not do well."

PENNSYLVANIA

the first
six-cylinder
golf tractor



THIS sturdy new PENNSYLVANIA Tractor was designed especially for general use on the golf course. Its powerful Chevrolet engine will take the hills smoothly and with absolutely no vibration. It is economical in operation and, like all PENNSYLVANIA golf equipment, extremely simple in design.

Wheel base, 87 inches; turning radius, $8\frac{1}{2}$ ft. Maximum speed, 18 miles per hour in high. Strong rear axle to pull the heaviest load. Fully equipped with electric lights, self-

starter and other standard Chevrolet equipment. Detachable steel dump body with capacity of one cubic yard.

Use this PENNSYLVANIA Tractor with PENNSYLVANIA Fairway Mowers for efficient, economical operation.

Write for further details and for catalog describing "New" Fairway Quint or Trio, the Super Roller and New Aristocrat green mowers and the new PENNSYLVANIA "Tee" Mower for trimming tees and approaches.

PENNSYLVANIA LAWN MOWER WORKS
1645 NORTH 23rd STREET
PHILADELPHIA, PA.

There is No Reason Why You Should Have Hard Surfaced Greens at Any Season of the Year

THIRTY TONS OF "WINDRIFT HARDWOOD" HUMUS COSTING \$202.50 F.O.B. CAREY, OHIO—WHEN USED WITH THE OHIO GREENS CULTIVATOR—WILL GIVE YOU SOFT SURFACED GREENS AND GREATLY IMPROVE THE QUALITY OF YOUR TURF. GREENS SO CULTIVATED SHOULD REMAIN PERMANENTLY IN FINE CONDITION.

With each shipment of thirty tons of "Windrift Hardwood" humus we will loan an Ohio Greens Cultivator for thirty days so you may immediately disc and topdress your greens for the season.

To certain localities it is possible to make a shipment of a minimum car of twenty tons at a cost of \$135.00 f. o. b. Carey, Ohio including Cultivator. Loaned for 30 days.

With each purchase of one Ohio Greens Cultivator sufficient "Windrift Hardwood" humus is furnished free of charge to prove its value.

The Ohio Humus Products Company

JAMES A. SMITH, Pres. Box 95 LONDON, OHIO



The
Ohio
Greens
Cultivator
Price \$60.00
f. o. b. LONDON, O.