

Fairway Watering

By FRED HOLMES, *Green Committee Chairman*

Lafayette Country Club, Lafayette, Indiana

THE long, dry spell recently ended has emphasized the need for a fairway watering system if we are to have reasonably good lies for our second and approach shots. The Grounds committee has kept this problem in mind for the past seven years and whatever pipe has been installed during that time has been laid with a future fairway watering system in mind. The watering of greens and tees is a separate problem and will not be discussed in this article.

The earliest fairway watering system known to your committee is that which I saw at the Los Angeles Country Club in 1919. Regular lawn type sprinklers with hose were employed and were permitted to run through the day. The grass was kept in splendid condition, but there was a great deal of interference with play.

An improvement in this is the system developed at the Minikada Country Club at Minneapolis and first seen by us about 1922. This is known as the "Sea Serpent" method and our club purchased one of these Sea Serpents about 1924. This sprinkler is in reality four sprinklers on a chassis of pipe and guy rods mounted on wheels so that it can be pulled about the fairway. This unit proved of great value when No. 7 fairway was re-seeded and has been used to some extent on Nos. 1 and 7 fairways.

We soon discovered, however, that it was very difficult to move this unit from place to place, especially with our deep gulleys and steep hills. Moreover, it was frequently molested when left on No. 1 fairway. For these reasons, a second unit has never been purchased. For clubs without deep gulleys or steep hills and where club property may safely be left out at night, this method is giving satisfaction and is being employed now at Meridian Hills with reasonably good success.

Another system is reported in use at the Highland Country Club, at Jackson, Mich., and on several other courses. Its watering unit consists of a sprinkler mounted at the end of a pipe about 25 feet long. This pipe swings around in a circle with the opposite end as the center of the circle. This gives the

sprinkler a coverage of a circle 100 feet in diameter. The units are not very heavy so that they can be moved from position to position with reasonable ease, but they are rather too bulky and heavy to take inside at night.

As a rule, only the principal playing areas are watered. The first 150 yards is seldom irrigated.

WHAT IS THE COST OF INSTALLATION?

THE question naturally arises as to what is the cost of installation of a fairway watering system. Some clubs have had to spend more than \$60,000 for an 18-hole installation. The lowest cost for 18 holes with which we are familiar is that at the Highland Country Club which we have been told cost approximately \$16,000.

At Highland, they have a source of water easily available as well as a source of cheap power and it is probably that they did not have to build a special pump house. In the case of the more costly developments, a large part of the money has been spent for reservoirs, wells, pump houses, power supply, pumps, etc.

In our case, we are fortunate in having a city water supply and in having planned for the past several years for fairway watering. The mains are already laid for Nos. 1, 6, 7 and 8. The watering system for No. 1 fairway, including the sprinklers, was installed at a cost of less than \$200. Other fairways, however, will cost more due to the fact that the piping was already laid on No. 1 with the exception of the short laterals, and the area watered is rather small.

"TRAVELER" TYPE HAS MANY ADVANTAGES

IT is the present opinion of the committee which, however, expects to study the matter in greater detail before reaching a final decision, that Nos. 5, 7 and 8 fairways could best be taken care of by sprinklers of the Economy Irrigation Co. "Traveler" type. Most of the pipe for this use is already installed so that it would only require a small amount of pipe, a sufficient number of hose bibbs

and three "Travelers" together with the necessary hose. Nos. 2 and 9 fairways are so short as not to require watering.

It is now believed that the same system which was installed on No. 1 would best meet our requirements on fairways 3, 4 and 6. This system would cost slightly more than one using the "Travelers," but it has the advantage that the sprinklers can be put under lock and key when not in use and experience has shown that on the upper 6, when equipment is left outside, it is likely to be damaged. It is regrettable that this is so, but on several occasions in the past equipment left out at night was found damaged in the morning.

Another advantage of this system is that it requires no hose and there is nothing left in the rough to interfere with play. On Nos. 5, 7 and 8 it should be possible to remove the "Travelers" to spots where play will almost never occur, but on Nos. 3, 4 and 6 this would be difficult and costly. The "Traveler" on No. 5 could be placed in the tool shed when not in use.

The committee believes that where sprinklers can be allowed to run all night and then left in the rough or a nearby shed all day, the "Traveler" type of sprinkler is the cheaper but where sprinklers must be transported a considerable distance and used in early morning only, the Buckner system is the cheaper in first cost in operation.

The use of "Travelers" on Nos. 5, 7 and 8 and the Buckner Snap Valve and slow motion sprinkler system on Nos. 1, 3, 4 and 6 would give a total overall cost of less than \$3,000, a cost which is exceedingly low in comparison with that of other clubs. The installation need not be made all in one year but could be spread over two years. For instance, we could supply a "Traveler" for No. 8 and a snap valve system for Nos. 3 and 4 for a modest sum.

Trade News About Turf Culture

CHESTERTON, IND.

A public park for Porter along the banks of the Little Calumet river, west of Waverly road, is in prospect. The tract will comprise from 13 to 25 acres and is held by five property owners, all of whom have accepted tentative proposals to combine their holdings into one tract.

Alec Carlson, Chester Simmons, and Walter Sexton have been appointed as a park committee by the Porter Chamber of Commerce and are working out the details.

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SWEETWATER, TEXAS

This city has been asked for the services of 200 members of the Civilian Conservation Corps for the purpose of making a park of 500 acres on the shore of Lake Sweetwater.

Worthington Builds New Mower



EDW. H. WORTHINGTON

EDWARD H. WORTHINGTON, formerly vice-president of the Worthington Mower Company has resigned and taken up active work with a new firm to be known as the Crown Mower Co., with temporary offices at 168 East 74th Street, New York City. As its president and consulting engineer, Mr. Worthington believes that many of the difficulties which greenkeepers, superintendents, etc., of golf

fairways and lawns have encountered in the past can be largely, if not entirely eliminated. Mr. Worthington has had 17 years' experience in the gang and power mower field and says he feels justified in making the assertion that the advent of the "Crown Unit" for fairways and lawns will create a considerable sensation.

Among its features will be the non-restriction of the use of the Crown Unit to its own multiple gang frame. The units which are 30 inches in cutting swath may be used in frames of Toro, Worthington or Pennsylvania types.

A simple design for removing the fly knife reel I know will be hailed as a great convenience to the maintenance problem. (Patent pending.)

A single hand adjustment which is positive in its action causing constant parallel and rigid bed knife action is a feature well worth investigation in itself. (Patent pending.) A reversible special alloy double edge bed knife steel is used.

The large steel roller revolving on high grade bearings is regulated by hand adjustment. The adjustments are graduated positively from 1/2 inch to less than 1/16 inch and yet by shifting the roller brackets, the height of cut is gauged from 1/4 inch to 6 inches. This will enable the operator to adjust at will to any height of cut required.

It is lighter than any 30-inch unit on the market of comparable design and yet its box construction eliminates entirely weaving of the side frames, a fault quite common and detrimental in many standard units in the field.

The machine requires no oil or grease! It is packed with a Crown lubricant and guaranteed for one year.

Sturdily constructed throughout, the maker believes it is the finest product ever presented on the market.

Descriptive catalogues and prices will be available shortly.

Questions and Answers

Devoted to the discussion of intimate problems on turf culture and plant growth. We are an international authority on these subjects. Send in your contributions—\$1.00 will be paid for each one.

QUESTION:—Can you send me, or publish in your magazine some reliable data and information as to the use of iron sulphate in eliminating clover, chickweed, etc., from golf greens, also as to its use in solution in powdered form, as an ingredient in compost or fertilizer mixtures, rate of application, etc. Also what is its effect on the soil in retarding growth of grass?—V. C. Doerschuk, Massena, New York.

*ANSWER:—*The principal use of iron sulphate in America today is to eradicate weeds in turf, particularly dandelions. Experiments have been conducted by many of the State Experimental stations in the use of iron sulphate as a weed spray, and they have met with success with certain weeds.

The spraying method is preferred and it is customary to use 50 gallons of 20% solution of iron sulphate per acre.

Iron sulphate has been found to kill chickweed and purslane after repeated sprayings. Heal-all, gill-over-the-ground, broad and narrow leaved plantain, have either been killed or badly injured by the spray. The iron sulphate will not kill crab grass and other weed grasses. It must also be remembered that it is injurious to white clover.

Iron is an element of vital importance to the growth of green plants. A certain amount of iron seems necessary as one of the factors in the normal development of chlorophyll (leaf green), although it is not regarded as a constituent of the organic bodies which make up this substance.

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QUESTION:—Should a lawn be planted in the fall or in the spring?

*ANSWER:—*Both. Make one-half your planting not later than early October and sow the balance of your seed in March when the ground has "heaved" from freezing. As soon as possible after seeding, ground should be rolled when dry. Fertilization will be much more effective if put on in the late winter while the ground is in this heaved condition. (Ohio)

QUESTION:—Fertilizers are sold to us, guaranteeing certain percentages of nitrogen, phosphoric acid and potash. Isn't one 8-6-2 fertilizer just as good as another made in the same proportions?

*ANSWER:—*No. It is not. The 8-6-2 percentages will be the same possibly, but the character of filler used will make the difference in the value. At least one-third of any complete fertilizer you buy, will be filler, in order to bring the finished product up to the proper proportions. If your filler happens to be some clean organic product which is or will early become a humus, the chemicals which provide the greater part of the 8-6-2 will become more rapidly available for plant food. If the filler used is lime, garbage tankage or similar inferior products, the action of the fertilizer will be delayed, especially if your soil is deficient in organic matter. (Penn.)

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QUESTION:—Why does a clay soil produce so much better bloom than other soils, and better looking?

*ANSWER:—*When the leaves of a plant begin to mature, it begins to bloom. If it is planted in a too rich soil and the tendency is to continually grow tender foliage, the start of maturity will be delayed and there will be but small imperfect bloom. If plants are grown in a soil which will hasten maturity, such as a good vegetable garden, the plant will be matured so early that but a normal bloom will result. A clay soil will start an early maturity in the leaf but there is a longer period before the termination of maturity and a much larger and better bloom is the result. (Ohio)

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QUESTION:—Should sulphate of ammonia be used in preference to nitrate of soda for an early spring fertilizer or is cottonseed meal or soya bean meal a better source of nitrogen if mixed with early topdressings?

*ANSWER:—*Ammonium sulphate and nitrate of soda are both very quick acting fertilizers. Sodium nitrate is detrimental in many ways and

should not be considered as replacing ammonium sulphate.

Our soil bacteria work, live and act better if given something to do even if it be but to make the ammonium sulphate into a nitrate form. Cottonseed meal and soya bean meal, mixed with topdressing, if only a nitrate feeding is needed for rapid growth, employ our soil bacteria to better advantage than do chemical fertilizers. It will leave a more lasting feeding and will leave eventually, a humus addition to the soil. (Ohio)

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QUESTION:—The backs and high spots on our greens are mown carefully but we have trouble to

keep these parts in good turf. What would be a reasonable cause?

ANSWER:—Close mowing would effect these areas but the most reasonable cause for trouble would be the "run off" of water without penetration to a sufficient depth. Slow, long sprinkling over these areas, can be the only relief. (New York).

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QUESTION:—We expect to fertilize our fairways. What is the best time of year to do this?

ANSWER:—Late in the winter while the soil is porous from freezing. Heavy rolling at this time can cause no damage if the ground is sufficiently dry and it may save some fertilizer loss from wash. (Illinois)

(Illinois)

Trade News About Turf Culture

KENILWORTH, ILL.

With the appointment recently of Jens Jensen, landscape artist, to direct the proposed park project for the village of Kenilworth, first steps were taken in the development of the old Mahoney farm in the suburb into a natural park.

The farm, on Sheridan road in the south limits of the village, was devised to the town by Mary Mahoney two years ago. She provided that it be transformed into a bird sanctuary and wild flower preserve so the natural park may serve as an outdoor classroom for nature studies by school children and garden enthusiasts.

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BOWLING GREEN, KY.

Among the number of progressive and important steps taken by the city administration, is that which will have for its ultimate aim the establishment of a municipal park and playground that will place Bowling Green in line with all the progressive cities of the country.

Bowling Green will never spend money more wisely than when the city has finally established and put into full operation a park of this nature, fully equipped with swimming pools, tennis courts, bridle paths, and golf courses, all of which should be free for the use of the masses.

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MOLINE, ILL.

Moline city council at a committee of the whole session voted unanimously to authorize the city attorney to prepare an ordinance calling for a \$60,000 bond election to provide funds for the purchase of ground on which Moline airport is situated.

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Application to the federal government for funds amounting to between \$100,000 and \$150,000 to develop the George Rogers Clark Memorial Park, west of Springfield, will be made within the next two weeks.

DES MOINES, IOWA

Reclassification of Iowa State Parks, return of some to local support, and acquisition of other property for state parks, preserves and sanctuaries is proposed in the recently submitted Iowa conservation plan.

The proposals are part of the program prepared by Jacob L. Crane, Jr., for long-time development of Iowa's outdoor recreation and nature resources.

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ESCANABA, MICH.

Various improvements are now being made at the Delta county parks. R. P. Mason, county road engineer, is in charge.

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DES MOINES, IOWA

A group of Kansas City, Mo., men has rented a tract adjoining highway 7, one mile west of Johnston, Ia., for a flying field.

Ernest Nolze, business manager, said they would operate a plane for sightseeing trips now.

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COLOMA, MICH.

At a meeting of the board of directors of the Newton Woods Association held in Cassopolis at the office of County School Commissioner Frank Flagg, definite plans were made to raise funds with which to purchase Newton Woods for a state park, and a meeting of the preliminary finance committee was held recently. An extensive campaign will be put on in an effort to raise money to purchase the woods, which is one of the largest and finest timber tracts in the state. The tract is located near Decatur.

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WAITSBURG, WASH.

State Engineer Nelson, together with Louis Dyar, Earl Butler and Zo Atkinson, visited the site of the proposed state park at Shiloh. Nelson has started surveying the land and work of putting it in shape will be started soon. Waitsburg has raised its quota of money to buy the land and turn it over to the state.

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.

Names and Addresses of Leading Manufacturers and Dealers

- Royal Products Company**, 214-216 S. Charles St., Baltimore, Maryland.
- Cleveland Charcoal Supply Co.**, 3905 Jennings Road, Cleveland, Ohio.
- Nitrate Agencies Company**, 104 Pearl Street, New York City, New York.
- J. Oliver Johnson, Inc.**, Morgan-Huron-Superior Streets, Chicago, Illinois.
- Wood Charcoal Research Bureau**, P. O. Box 356, Jacksonville, Florida.
- Atkins & Durbrow, Inc.**, 165 John Street, New York City, New York.
- Worthington Mower Company**, Stroudsburg, Pennsylvania.
- Royer Foundry & Machine Company**, 158 Pringle Street, Kingston Station, Wilkes-Barre, Pennsylvania.
- Bayer-Semesan Company**, Wilmington, Delaware.
- Ideal Power Lawn Mower Company**, Lansing, Michigan.
- Kemp Mfg. Company**, Erie, Pennsylvania.
- Standard Mfg. Company**, Cedar Falls, Iowa.
- Toro Manufacturing Company**, Minneapolis, Minnesota.
- John H. Graham & Co., Inc.**, 113 N. Chambers Street, New York City, New York.
- Sherwin-Williams Company**, 601 Canal Road, N. W., Cleveland, Ohio.
- G. B. Lewis Company**, Watertown, Wisconsin.
- Synthetic Nitrogen Products Corp.**, 285 Madison Avenue, New York City, New York.
- T. W. Wood & Sons**, 11 South 14th Street, Richmond, Virginia.
- J. M. McCullough's Sons Company**, 316 Walnut Street, Cincinnati, Ohio.
- Armour Fertilizer Works**, Atlanta, Georgia.
- Perfection Sprinkler Company**, Plymouth, Michigan.
- Seaside Bent Company**, 115 Broad Street, New York City, New York.
- Buckner Mfg. Company**, Fresno, California.
- Roseman Tractor Mower Company**, 810 Church Street, Evanston, Illinois.
- Stumpp & Walter Company**, 132-138 Church Street (at Warren St.), New York City, New York.
- Campbell Irrigation Company**, Woodbury, New Jersey.
- Hyper-Humus Company**, Newton, New Jersey.
- Peter Henderson & Company**, 35 Cortlandt Street, New York City, New York.
- Economy Irrigation Company**, Seattle, Washington.
- Jacobsen Mfg. Company**, Racine, Wisconsin.
- O. M. Scott & Sons Company**, Marysville, Ohio.
- L. R. Nelson Mfg. Company**, Peoria, Illinois.
- Henry A. Dreer**, 1306 Spring Garden Street, Philadelphia, Pennsylvania.
- Ohio Humus Products Company**, London, Ohio.
- The Budd Mfg. Company**, Ravenna, Ohio.
- A. N. Peckham**, Kingston, Rhode Island.
- Illinois Grass Company**, 75 E. Wacker Drive, Chicago, Illinois.
- Double Rotary Sprinkler Company**, 109 Coca Cola Bldg., Kansas City, Missouri.
- Philadelphia Seed Company**, 103-105 Arch Street, Philadelphia, Pennsylvania.
- Lyman Carrier Products**, Granger, Indiana.
- Pennsylvania Lawn Mower Works**, Primos, Delaware County, Pennsylvania.
- Fate-Root-Heath Company**, 833-869 Bell Street, Plymouth, Ohio.
- J. G. Peppard Seed Company**, Kansas City, Missouri.
- E. G. Staude Mak-A-Tractor Company**, 2630 University Avenue, St. Paul, Minnesota.
- Walter B. Helms, Inc.**, 237 South Jackson Street, Lima, Ohio.
- American Cyanamid Sales Company**, 535 Fifth Avenue, New York City, New York.
- The F. & N. Lawn Mower Company**, Richmond, Indiana.
- J. F. Buel**, Woburn, Massachusetts.
- C. B. Dolge Company**, Westport, Connecticut.
- National Mower Company**, 839 Cromwell, St. Paul, Minnesota.
- Hardie Mfg. Company**, Hudson, Michigan.
- McClain Bros. Company**, Canton, Ohio.
- International Harvester Co. of America**, 606 South Michigan Avenue, Chicago, Illinois.
- Friend Mfg. Company**, Gasport, New York.
- Arthur Boggs & Company**, Willoughby, Ohio.
- Milwaukee Sewerage Commission**, P. O. Box 2079, Milwaukee, Wisconsin.
- Diamond-Calk Horseshoe Company**, Duluth, Minnesota.
- R. S. Horner**, 61 Eagle Street, Geneva, Ohio.
- Mallinckrodt Chemical Works**, 2nd and Mallinckrodt Streets, Saint Louis, Missouri.
- Reade Mfg. Company**, Jersey City, New Jersey.

Market Place *and* Buyers' Guide

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.
Hyper-Humus Co.

Bent Seed—Prince Edward Island

J. M. McCullough's Sons Co.

Bent Stolons

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

Bluegrass—Seed

J. G. Peppard Seed Company

Brown Patch Control

Stumpp & Walter Co.
J. Oliver Johnson, Inc.
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

Cocoos

Lyman Carrier Products

Compost Distributors

Toro Mfg. Company

Compost Mixers

Toro Mfg. Company
Royer Foundry & Machine Co.
Kemp Mfg. Company

Cultivators (Disc)

John H. Graham & Co., Inc.

Cultivators (Spike)

John H. Graham & Co., Inc.

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

Pennsylvania Lawn Mower Works
Toro Mfg. Company
E. G. Staude Mak-A-Tractor Co.
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

Milwaukee Sewerage Commission
J. Oliver Johnson, Inc.
Peter Henderson & Co.
Nitrate Agencies Co.
Atkins & Durbrow, Inc.
American Cyanamid and Chemical Corp.
Lyman Carrier Company
Bayer-Semesan Company
Synthetic Nitrogen Products
Armour Fertilizer Works

Fertilizer Distributors

International Harvester Co. of America
Synthetic Nitrogen Products Corp.

Flag Poles

Ideal Power Lawn Mower Company
Standard Mfg. Company

Flexible Steel Mats

J. Oliver Johnson, Inc.

Fungicides

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

Fairway Rollers

Toro Mfg. Company
Worthington Mower Company

Golf Course Construction

Ohio Humus Products Co.

Golf Equipment

Stumpp & Walter Co.
Peter Henderson & Co.
Ideal Power Lawn Mower Company
T. W. Wood and Sons
Worthington Mower Company

Golf Flags

Ideal Power Lawn Mower Company
Stumpp & Walter Company
Peter Henderson & 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
Standard Mfg. Company

Hole Rims

Ideal Power Lawn Mower Co.

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.

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

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.
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
International Harvester Co. of America
Roseman Tractor Mower Co.
The F. & N. Lawn Mower Co.
Jacobsen Mfg. Company
National Mower Company

Motor Trucks

International Harvester Co. of America

Mower Sharpeners

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

Nitrophoska

Synthetic Nitrogen Products Corp.

Peat Moss

Atkins & Durbrow, Inc.

Perforator

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 Green Mowers

Toro Mfg. Company
Pennsylvania Lawn Mower Works
Worthington Mower 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

Rough Mowers

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

Seaside Bent

Seaside Bent Company
Lyman Carrier Products

Shower Nozzle

McClain Brothers Company

Signs

Standard Mfg. Company

Spike Disc

John H. Graham & Co., Inc.

Sod Cutters

J. Oliver Johnson, Inc.

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.
Lyman Carrier Products

Sulphate of Ammonia

Synthetic Nitrogen Products Corp.

Tee Markers

Standard Mfg. Company
G. B. Lewis 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.
G. B. Lewis Company

Tillage Implements

International Harvester Co. of America

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

Tractor Wheels and Spuds

R. S. Horner

Turf Fertilizers

Armour Fertilizer Works

Underground Hose Locker

McClain Brothers Company

Urea

Synthetic Nitrogen Products Corp.

Wood Charcoal

Wood Charcoal Research Bureau

Worm Eradicators

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

EMPLOYMENT DEPARTMENT

Insertions of advertisements in this section will be inserted on receipt of copy and 50 cents in stamps.

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.

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.

Well-known greenkeeper with best of recommendations and thorough experience in maintenance and construction at low cost is open for position at prominent club at moderate salary. For full details address Box D, The National Greenkeeper and Turf Culture, Caxton Bldg., Cleveland, Ohio.

Agronomist with several years' experience wants connection with golf maintenance work, consulting, managing or research. Thorough knowledge of chemistry, soils, fertilizers, grasses and how to buy the various things for golf courses. Address inquiries to Box 5, The National Greenkeeper and Turf Culture, Caxton Bldg., Cleveland, Ohio.

Well-known turf culture and agricultural expert seeks a position. Has had field and sales experience and knows every problem on the proper and economical growing of fine turf, flowers, shrubs and vegetables. An extremely valuable man for any company which desires to cash in on practical experience. Address inquiries to Box 7, The National Greenkeeper and Turf Culture, Caxton Building, Cleveland, Ohio.

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Lawn equipment for golf courses, private estates, schools.
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Fine Crop of Rhode Island Bent

A wonderful crop of the famous Rhode Island Bent is being harvested this fall in the salt-sprayed fields in the extreme southern portion of the little state for which it is named.

A. N. Peckham, whose home is at Kingston, R. I., has been and still is the

pioneer in the production of this fine, vigorous seed. In fact he has the only commercial bent fields in the Eastern part of the United States and well deserves the greatest praise from all growers of fine turf for his perseverance in perfecting his strain and placing it within their reach.

True, Nature has helped a lot and the rich virgin soil adjacent to Narragansett Bay seems ideally adapted for this rare and costly grass. Perhaps a little later we can publish a story written by Mr. Peckham on how Rhode Island Bent is grown, harvested and cleaned, ready for the market.

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Hyper-Humus Co. of Newton, N. J.
Main Office, Morris Bldg., Philadelphia, Pa.

Humus Analysis

An interesting analysis of hardwood humus based upon exhaustive laboratory tests has been sent us by James A. Smith of London, Ohio. Mr. Smith is a notable soil chemist and his investigations are based upon years of experience. Here it is—take it away.

Ten tons fresh manure will make 3600 pounds of humus if properly stored.

Ten tons fresh manure will make 2100 pounds of humus if improperly stored. Lipman, "Bacteria in Relation to Country Life." Page 309.

Ten tons of fresh manure equals approximately 1.05 tons of humus (2100 pounds). Requires at least one year for ripening. (As commonly cared for.) Produces a soft wood humus from straw, the softest and poorest source of humus.

November, 1932, Bulletin, U. S. G. A., page 207, says: "We compare fertilizers for turf work chiefly on the basis of the nitrogen content since this is the element which is most costly and of most value for growing turf."

The latest report from laboratory on Windrift Hardwood Humus:

CERTIFICATE OF ANALYSIS

	Phosphoric		
	Nitrogen (N)	Acid (P ₂ O ₅)	Potash (K ₂ O)
Total -----	2.42	0.37	0.29
Available --	1.47	0.25	0.05

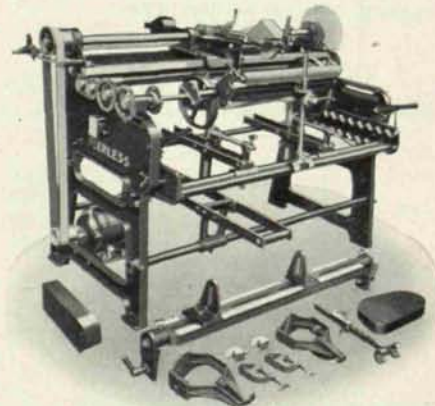
Report on Ripened Manures:

CERTIFICATE OF ANALYSIS

	Phosphoric		
	Nitrogen (N)	Acid (P ₂ O ₅)	Potash (K ₂ O)
Total (No Report)			
Available --	0.49	0.23	0.56

Available nitrogen in Windrift hardwood humus exactly three times the amount present in the average ripened manure.

If greenkeepers are compelled to buy fresh manures and care for them until ripened the comparison in values between a ripened manure as humus and Windrift hardwood humus are worth taking into consideration.



The time is fast approaching when groundkeepers will overhaul their machinery and sharpen their mowers for next season. The Peerless Mower Sharpener illustrated above should be in every tool house.

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when you NEED them*

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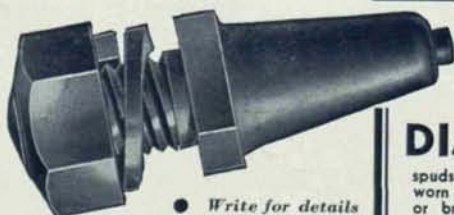
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spuds last until completely worn away. Will not chip or break. Do not harm turf—easy to attach or change.

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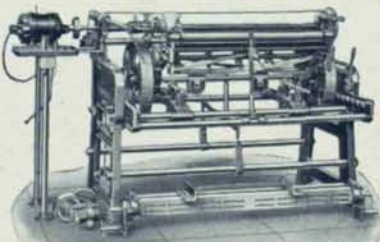
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