ly fertilization and careful watering are very effective on lawns.

Chickweed—Dust plants with ammonium sulphate or ammo-phos, water thoroughly as soon as weeds turn brown, remove dead plants, and reseed.

White Clover—Stimulated by potash and phosphorus fertilizers. Undesirable only on fine turf. Largely controlled by careful nitrogen fertilization of the grass, and the use of aggressive strains of grass. It may be controlled temporarily by burning, as for chickweed.

Silver Crab Grass (Goose grass)—Warm season annual, spreads by seed only. Hand weeding in June and July. Same treatment as for crab grass.

Poa Annua—Very difficult to control. Keep soil moderately dry and well drained, and maintain vigor of the turf by proper treatment. Use lead arsenate in topdressing. Hand weeding is the only method practicable for complete control and this is very expensive. Add new seed of desirable grasses in August or September, to compete with seedlings of Poa Annua.

Foxtail Grass—Warm season annual, spreads by seed. Hand weed fine turf in June and July. Prevent seed formation on lawns and fairways by close mowing wherever seed heads are formed. Follow same treatment as that recommended for crab grass.

Stink Grass—Same as for crab grass. Yarrow—Perennials spreading by root stocks. When closely mowed, sometimes makes fine turf. To control, remove all turf and soil to a depth of 3 inches, fill in with clean soil, and sod or replant. Complete sterilization of soil with chlorate weed killers is also effective.

Plantain—Perennials without creeping stems. Hand weed or poison each individual plant with sulphuric acid or kerosene. If very abundant try spraying with iron sulphate solution (2 lbs. per gal.) after bruising leaves with suitable implement.

Dandelion—Same as for plantain. Spray with iron sulphate solution after mowing and bruising leaves with some suitable implement.

Poison Ivy—Perennial with creeping stems. Poison with sulphuric acid or spray with calcium chlorate, or grub out roots and rootstocks. Caution: Calcium chlorate applied as spray may destroy all other vegetation in the same area. However, the soil is not permanently poisoned and may be reseeded after several heavy rains. Fine spray applied to leaves only, or dust



"always superior"

-says Tom Dawson, of Tamarack

Many well-known clubs use Agrico Country Club Fertilizers exclusively. Let Tom Dawson, of Tamarack Country Club, Portchester, N. Y., tell you why:

"We have used 'Country Club' Fertilizers exclusively for the past B years, both on fairways and putting greens, and the condition of the turf fully justifies our belief in these products. I have made comparative tests with other fertilizers—but 'Country Club' always proves superior. Its gradual, long-lasting effects are particularly noticeable."

A statement like that means something. It is convincing proof of better results with this Special-Purpose fertilizer. Three grades—specially formulated for Fairways, for Putting Greens, and for Lawns and Fairways—each with exactly the right amounts of Nitrogen, Phosphorus and Potash—carefully balanced between organic and inorganic Nitrogen—and extra plant foods needed to maintain healthy, vigorous growth. Agrico is sold in Metropolitan New York area by Arthur D, Peterson Co., Inc., 420 Lexington Ave., New York, Also sold by this Company's sales offices in principal cities.





GOLFDOM



Answer above ad with QUICKMAIL No. 5



EVEN the biggest budget will stretch only so far. But you

can get more out of your budget by ordering pest destroyers during the off season, for spring or summer shipment. Raw material prices usually go up in the spring—rebates are often possible in the winter. How about dropping us a line about your spring needs? If you act promptly, you will save some money.

> 1937 Ground Maintenance Manual now in work — reserve a copy



applied to leaves only, may be used to kill plants without injury to neighboring vegetation, if used with care.

Lawn Pennyworth—If deep rooted, same treatment as for Yarrow. If shallow rooted, dust with fertilizer as for chickweed.

WHAT HAPPENS INSIDE A GRASS BLADE By E. KLAUCKE

The main difference between the nutritional processes of plants and animals is that plants manufacture their own foods from raw materials, whereas animals cannot. All living cells, whether plant or animal, require starch and sugars (carbohydrates), proteins and fats.

It is in the grass blade that photosynthesis, the process of starch and sugar manufacture, takes place. This process consists essentially of the following: carbon dioxide and water are synthesized to sugar and starch under the influence of the green coloring matter of the leaf (chlorophyl) and light. Oxygen is given off as a waste product.

Although photosynthesis is the most important blade function, the synthesis of fats takes place largely in the leaves as does a considerable quantity of the proteins utilized by the plant cells.

Transpiration or the loss of water vapor from the plant through the numerous small "pores" of the leaf is another very important blade function. The amount of water vapor passing from the leaves by transpiration is extremely large.

All living cells respire or breathe all the time. Thus, respiration is another process going on in the grass blade. Oxygen is taken into the cells and carbon dioxide and water are given off as waste products — the very reverse, it will be noticed, from photosynthesis. Photosynthesis and respiration go on simultaneously during the daytime, but only respiration goes on at night.

Certain conclusions are to be drawn from the above:

Mowing, particularly the close clipping of putting green areas, tampers in no small degree with the natural processes of a grass plant.

Dust collecting on the surface of leaves clogs the "pores" on the leaf surface, thus reducing photosynthesis.

Because turf grass is kept under unnatural conditions, the turfman should supply raw materials in the form of fertilizers according to a definite program to fit the

requirements of his grass. Whenever, possible, the clippings should be left on the area to decay.

The grass should be cut less often and the height of cut of the mower should be raised during very dry periods in the summer.

The grass should not be clipped late in the fall in order that the blades may make as much reserve food material as possible for the following early spring growth.

ARTIFICIAL WATERING OF TURF GRASSES By L. S. DICKINSON

I. Artificial watering should be considered only as a supplement to a deficiency in normal rainfall.

Unless water supply contains an excessive amount of any element, artificial watering affects soil similarly to rainfall, i. e.:

1. Makes plant food available; 2. Washes out plant food; 3. Increases acidity of the soil; 4. Puddles clay soils; 5. Starts erosion; 6. Accumulates in low areas; 7. Runs off to slopes, etc.

- II. Three periods in development of turf grasses:
 - 1. Seed and seedling. Water requirement high.
 - Development or root training. Placing of water supply important.
 - 3. Mature stage. Both placing and amount of water important.

Considering mature turf:

III.

- Why water? 60% for color effect, 40% for health of grass.
- When is water needed? Not until after wilting has started and soil supply of capillary water exhausted as determined by examination of soil.
- IV. Fundamental factors determining methods of applying water:
 - Is the soil condition practically uniform in all ways?
 - If yes, large coverage sprinklers permissible.
 - If no, small coverage sprinklers desirable.
- V. Quantity of water desirable and rate:

Enough to wet to a depth of 4 to 6 in.



could save the club money by using ALL of the raw materials when making his compost;

could overcome weather delays by making his compost from sod or lumps—wet or dry;

could save in time and labor by making compost faster and more uniform —and easier to handle—

> wouldn't you want to talk the matter over with him? Well — ask him about the



ROYERS are doing the compost making job on hundreds of the best kept courses in the country simply because they make the highest possible grade of compost at the lowest possible overall cost per yard.

Think it over . . . if you want your greenkeeper to show what he can do in improving your course and cutting maintenance cost-get him a ROYER.

A better season is beginning—now's the time to attract bigger play and a well conditioned course will do it.

Complete details of the ROYER will be supplied by leading supply house nearest you.



63



GOLF CLUB favorites

FROM COAST TO COAST!

 When planning to increase or improve locker accommodations . . . investigate these outstanding Lyon advantages: Long life under hard service .. Low maintenance cost ... Easy operation of doors . . . No irritating rattles . . . Maximum ventilation. Refinements available that will satisfy the most exacting club member ... Private compartments ... Mirror . . . Comb tray . . . Golf ball tray . . . Towel rod ... Card holder ... Get catalog and full information on many styles and kinds. Be ready for 1937 business with modern locker accommodations.

LYON METAL PRODUCTS, Inc.



LYON LOCKERS Apply as rapidly as soil will absorb the water.

- Ohio State College Experiments show during 3 summer months 1½ times normal rainfall ample amount.
- At Amherst that means 18.16 in. or a 75 ft. diameter range sprinkler throwing 15 g.p.m. on 4,000 sq. ft. must operate a total of 50 hours during the season. This amount is probably excessive for New England.
- VI. Late spring and early fall watering sometimes needed.
- VII. Incorrect watering has cumulative bad influences which may not become prominent for three or more years.

Kentucky bluegrass becomes very thin from excessive watering.

VIII. Conclusion: Artificial watering of fine turf grasses is very beneficial if correctly done; otherwise, it may be very harmful.

More water requires more fertilizer and more frequent clipping, resulting in costs that are constant and seldom considered when planning a water system.

CHANGING THE SOIL STRUCTURE By HOWARD B. SPRAGUE

Desirable soil structure is highly essential on turfed areas, from the standpoint of drainage and aeration, and of waterholding capacity. Soils naturally differ greatly in soil structure and subsequent treatments are responsible for further changes. Three vital factors affecting soil structure are the texture, lime content, and humus supply.

The natural differences in soil structure may be indicated by the water-holding capacity of 12 soils of three geographic provinces in New Jersey. These soils ranged from a capacity of 594 gal. of available water for a sandy soil to a depth of 62/3 in. over a surface of 1,000 sq. ft., to 1787 gal. for a silt loam soil. Not only did these soils differ in capacity to store water, but they also differed greatly in their ability to permit ready entrance of rainfall. Thus, Merrimac sandy loam allowed water to enter 7 times as rapidly as Wethersfield gravelly loam, under equal conditions. Obviously, the Wethersfield soil is a very inefficient soil, even though it has equal water holding capacity, as a

result of its failure to absorb rainfall readily.

The structure of soils may be considerably changed by treatment. In general, continuous cultivation has greatly exhausted the humus supply of our soils, and caused a breakdown in their granular structure. In many cases, lime has also been lost extensively and this has still further deflocculated the soil. Grass will gradually restore soil structure, to the depth of root penetration, provided the proper treatment is given. Improper management may be responsible for still further deterioration in structure even though the area is continuously in sod.

In a series of tests conducted at New Jersey on the same soil type, the continuous use of acid-forming fertilizers without the use of lime has had the following effect: (1) increased soil acidity and broken down soil granules, (2) caused a tremendous accumulation of roots, producing a sod-bound condition, (3) greatly reduced the capacity of the soil to permit entrance of water, and (4) seriously injured the turf in spite of continued watering.

By contrast, the use of a properly balanced fertilizer together with lime has produced a sod that is durable, strongly drought resistant, and capable of sturdy growth in both cool and warm weather.

Discing or spiking is a great aid in renovating soils with poor structure. It speeds up the penetration of lime applications and hastens the entrance of water. Without such treatment lime may lie stranded on the matted surface layer of grass crowns for a considerable period (several months or years) before actually reaching the soil and exerting a beneficial effect. Lime applied in late summer or early fall will be more effective than spring applications, since autumn rainfall is more likely to be favorable for washing the lime into the soil. Lime is slow in its action and at least 1 or 2 years will be required to exert a significant effect, when applied as a topdressing on established sod.

Organic matter additions are effective in changing soil structure only when incorporated in the soil itself. Topdressings of organic matter on established sod will not penetrate the soil to improve its structure or water-holding capacity. When incorporated with soil, organic matter is extremely effective in improving the structure of all classes of soil.



CANTON, OHIO

PRICE-CUTTING appears to be a serious problem in England, judging by the interest British golf editors have shown recently in the policy of those American steel shaft manufacturers who limit their supply to firms producing highgrade merchandise. The British writers express hope that a similar step can be taken in England as a means of combating price-cutting.

GOLF'S MARKET PLACE

There are two reasons why pros will study the Hagen 1937 catalog with keen interest. There's a briskly saleable new line of clubs, balls, bags and accessories described in detail and there are views and data on holes at Oakland Hills where the 1937 Open will be played.

The new 2-Ball Washer, invented and patented by Thos. J. Hecklin, former golf official and for the past five years a club manager, is being introduced this spring to the golf market by the Allied Golf Corp., 4538 Fullerton Ave., Chicago. Device consists of two rotary brushes, revolving in opposite directions at different speeds, which are encased in a splash-proof, rust-proof cast aluminum body 7x7x5 in. Total weight is 6 lbs. Either one or two balls may be cleaned at a time.

The brushes, of selected palmetto fiber anchored in 5-ply laminated mountings, are warp-proof and will not remove paint from balls, in spite of the positive cleaning action obtained. Unusually long life and low original costs are claimed for the device.

The Old Faithful Heater Co. Inc., 1220 S. Michigan Ave., Chicago, makers of hot water heating equipment are expanding into the golf club field. Savings of from 25 to 75% over the present method of heating water, regardless of the fuel now being used, are guaranteed by the company. The equipment is fully automatic in operation and burns oil for fuel.

The Old Faithful company has hundreds of installations in large apartment buildings, hotels, laundries, etc., and guarantees a definite cost of operation before the installation of the equipment is made. Full particulars on the line of equipment will be sent on request.

American Chain & Cable Co. Inc. is the new name of an old company, known previously as American Chain Co., Inc. As the world's largest manufacturer of chains for all purposes, the company has since



1924 become a leader in the production of wire rope or cable. It was this fact which caused the directors of the corporation to enlarge the name to American Chain & Cable Company, Inc.

Cable Company, Inc. In addition to chain and wire rope, many other essential products are manufactured by the divisions and associates of the Company, including Page fence.

Managers and house committee chairmen will find it worthwhile to write Lyon Metal Products, Inc., Aurora, Ill., for its new steel locker catalog and also for literature describing the company's line of metal folding furniture. The folding tables and chairs, according to L. B. Rhodes, advertising and sales promotion manager of Lyon, make wonderful trophies, and, as such, have been sold to many clubs in the past. While relatively inexpensive, this folding furniture is rigid, durable, gracefully proportioned and attractively finished.

Broil Wagon, an attractive and highly serviceable device for preparing and serving foods hot at tables, is described in a folder issued by **The Broil Wagon Co.**, Western Turnpike at City Line, Albany, N. Y. Henry Dutton, manager of the Albany CC and prominent in club manager circles, is inventor of the device, which uses glowing charcoal. The Broil Wagon has been adopted by

The Broil Wagon has been adopted by a number of the famous hotels and restaurants as well as by exclusive clubs where the last word in food service is featured.

The golf business is growing so fast in Chicago that Burke Golf Co. has found its space in the Lytton building too small for the large stock carried there for mid-Western customers. Accordingly, Burke is moving, effective Feb. 1, into new quarters in the same building and on the same floor, but with double the floor area of the old layout.

N. W. Cook, Pete Bullis and H. D. Jones invite mid-Western pro friends to drop around and inspect the new quarters and (incidentally, of course) the new and complete Burke line for 1937.

A terrible mistake was made in Minnesota this winter when Toro Manufacturing Corp. failed to bring out a 1937 edition of its justly popular cartoon calendars. Charles W. Parker, supt., Wianno GC, Osterville, Mass., felt so bad about not getting a calendar that he sent Toro a 12-verse poem of lament and Ken Goit, Toro's sales manager, felt so bad because Parker and others felt bad, that he has recently sent to the entire Toro mailling list a very good and chuckle-filled folder of apology in which the Toro



A POPULAR SWIM POOL

contains water that is actually "pure enough to drink"—water that is crystal-clear and kept in circulation by continuous passing through a purifying unit. Graver Units have given dependable service for many years in some of the country's outstanding pools. They are easy and economical to operate, long lived.

If you are planning a pool, get the informative Graver book on Design, Construction and Operation of Modern Pools, sent free on request.

GRAVER TANK & MFG. CO.. Inc. New York, N. Y. Chicago, Ill. East Chicago, Ind. Catasauqua, Pa.



"Put your club in the swim" Increase your patronage and your profits with...

A "GUNITE" POOL

Certainly, abundant evidence is available from other clubs to convince the most critical officials and committees that the installation of a swimming pool means a substantial entry, annually, on the right side of the ledger. Then the question—"What type of pool will be best for us?"

Here again, ample information is available to convince you.

A "GUNITE" pool will satisfy you in every particular of design, construction and operation. Low first cost; maintenance cost minimized by the water-resistant character of "GUNITE."

Write for complete information on this modern method of modernizing golf clubs.



HOW MUCH DOES YOUR HOT WATER COST? Regardless of how the hot water in your clubhouse is now being heated, an Old Faithful water heater will cut the cost 25 to 75 percent. Give your members plenty of hot water and still save money. We GUARANTEE 1,000 gallons-40 cents. For full details write Dept. G. OLD FAITHFUL HEATER CO., Inc. 1220 SOUTH MICHIGAN AVENUE CHICAGO, ILLINOIS - 2 -

• Use QUICKMAIL coupon No. 11 to answer this ad •

calendars of other years are reproduced, as well as Parker's poetic lament and Goit's prose answer thereto.

Repeated evidence from pro observation that the livelier the competitive program at a club the better the pro-shop business provides the keynote for the United States Rubber Co. pro merchandising service this year.

Study of countless club programs by E. C. Conlin, sales manager of the golf ball dept., United States Rubber Products, Inc., and his top sergeant, John Sproul, checked by several months' tour among pros, confirmed the U. S. hunch that helping pros to get more entries and more interest in their club competitive programs would help pros increase shop sales.

The plan also serves to strengthen the relations between the pro and the heads of his men's and women's golf committees, who depend on the pro to contribute much toward the life of the club's competitive calendar. The majority of pros are beseeched by their committee heads to give them a hand on the program for the



season, so the U. S. plan for 1937 is to provide pros with an interesting and valuable kit for determining and conducting a splendid schedule of events.

The U. S. Royal Golf Kit includes complete equipment for staging 43 golf events. These events will cover the spring, summer and fall golfing seasons.

"We all know that the pro's main job is to provide interesting and enjoyable activities at his club," Conlin says. "If he puts on unusually good series of activities, he will get more people to play at his club. This means that he will sell more lessons and more golf equipment. And the final result is that he will make more dollars.

"Therefore, we have carefully worked out more than two score kinds of surefire tournaments and contests for the pro. Complete equipment for staging each event is included in the Golf Kit. This already prepared material will save the pro much time and trouble. If he will use it, he is bound to arouse new interest in his club, bring out more players, sell more goods, and end the season with bigger profits.

"The U. S. Royal special merchandising plan, of course, is only one feature of a comprehensive marketing program. Other factors are a large national advertising campaign, a novel golf ball game to be

GOLF GRASS Headquarters for Grass Seed of Proven Quality and Course maintenance supplies of every description ... Send for prices and our Catalog "Sports Turf"

PETER HENDERSON & CO., 35 Cortland St., New York City

A. N. PECKHAM KINGSTON RHODE ISLAND

for 17 years has produced and furnished direct to golf clubs, parks, etc., different varieties of

Bent Grass Seed

This seed grown under the rigid climatic conditions of New England produces grass that has built up RESISTANCE to the various fungus diseases prevailing in our northern States.

It is, of necessity, WINTER HARDY and makes a fine bladed, permanent, desirable turf for your greens, lawns, etc.

We also furnish a FAIRWAY MIXTURE composed of 5 different varieties of fine turf grass seed which produces a BALANCED closely woven turf on lawns, tees, tennis courts, fairways, etc.

Purchase your	seed	direct	from	the i	farms	where it is
grown and thu	s not	only sa	ve for	your	club,	but KNOW
your source of	supp	ly.				

played in the pro-shop, clever display material which also serves utility purposes, the same U. S. golf ball sales policies, an effective letter campaign from pros to members, and the famous 'U.S.' business reply cards."

Eversharp Mower Mfg. Co., 409 S. E. Clay St., Portland, Ore., are introducing a radically new mower built in hand models only, but with a power model on the way. Instead of four or more long blades, the cutting reel carries 24 blades, six to the



arm. This multiplicity of blades, coupled with the spring or flexibility of the assembly, insures that all the cutting edges come into contact uniformly at all times, which means efficiency of operation, according



to maker's claims. Construction is topgrade throughout.

Use Ouickmail Coupon No. 19 for further information.

As to performance, it is claimed that the machine will cut grass, weed stems, dandelion stems, etc., up to 10 inches high the first time over. Wet grass will not clog it. At the same time, it will cut tender, new grass without injury from uprooting.

P. Goldsmith Sons Co., Cincinnati, Ohio, is presenting a new idea in golf club mer-chandising in the form of a special pro catalogue comprising a 48-page attrac-tively illustrated booklet in which are fully described the Flight Master, Exclusive Pro, and Padgham and Compston clubs. In addition, golf bags, balls and accessories are listed. This catalog, 31/2x6 in., is to be used by the pro as an enclosure in one of the club's regular mailings to the members.

Goldsmith states that complete information on this idea is available upon request.

A very interesting and complete catalog of International Harvester 1937 equipment for golf courses and parks, available to green-chairmen and greenkeepers. Products illustrated and described include the International "Fairway 12" tractor, the McCormick-Deering fairway mower at-



69

GOLFDOM





Heavy canvas headings—brass washer grommets and tie-tapes, lock stitched at the corners and carefully constructed in every detail to produce the greatest wear, this construction being developed by us for, and is now widely used by, the major railroad systems. These flags are made of the best quality heavy bunting with fast colors, exceeding U. S. Government specifications.

Our flags are used from coast to coast. Ask your neighboring club about them, or write us for complete information on Golf Flags, Special Club Flags, American Flags, or anything in flags or bunting.

Sherritt Flag Company, Inc. FLAG MANUFACTURERS

1900 W. Broad St. -:- Richmond, Va.



tachment and the International station wagon, stationary power units, trailers and hammer-mills for composting. The Mc-Cormick-Deering fertilizer distributor, lime-spreader and other items in this maintenance line are also covered in the catalog.

For copies, write International Harvester Co., 606 S. Michigan Ave., Chicago.

Crawford, McGregor & Canby Co. announce for 1937 a Silver Scot 75 cent ball with "Vultex" cover that will be sold through pros only. There is a thin cover tourney ball and a tough cover ball in the line. Each ball is wrapped in silver foil, making the display packages a bright, striking spot in the ball case.

Scheiwer Master Coupler Co., 15 W. 11th St., Erie, Pa., is introducing the new Snap-Tite coupler to the golf field. This coupler, which is designed for air lines, water lines, gas lines—in fact any kind of hose connection—is simple to operate, giving practically instantaneous coupling with a simple motion.

For further information, send a postcard to the makers at the above address.

News from A. G. Spalding & Bros.' pro shop in Miami, Fla., indicates that the 1937 Bobby Jones clubs with new refinements in the irons and a "percussion-sole" feature in the woods, along with the new line of Jimmy Thomson woods, are meeting with great success in the South. In fact, the folks at Spalding's say this is the best year ever down there.

"All these indications point to a banner year in the North," says Walter Roberts of Spalding's wholesale golf department. "And it will be a record-breaker for the pro who is prepared with a complete stock when the "37 season starts."

Standard Manufacturing Co., Cedar Falls, Iowa, prepares for the big season ahead by adding a number of new maintenance items to its list of products, including three different ferrules; two new wood flag poles; a newly designed "Six Ball" washer; "Ball-Brite," a non-acid non-caustic compound for cleaning balls; a golf ball retriever; a ball rack, and a cup setter.

Added to the above is a new type onepiece aluminum putting cup, accurately made and beautifully finished. The Standard hole-cutters now have saw-tooth and plain cutting edges available as well as the former scallop-edge model.

Literature describing all of the additions to the Standard line will be sent on request to the manufacturers.