chilling. Within limits, the greater the chilling, the greater will be the later production of flowering shoots. Also to some extent, the deeper the cold, the shorter will be the required length of

exposure time to the cold.

People in the bentgrass stolon production business might use vernalization knowledge to reduce production costs. By locating stolon production fields in areas of mild winters, the labor of seed stalk removal to prevent variety contamination might be greatly reduced, since fewer inflorescences will be produced.

Sunlight Factor

Sunlight is another feature of environment which we accept with very little thought even though it is absolutely necessary for the existence of any form of life. Two aspects of light in relation to plant growth and development will be discussed here. These are light intensity or the quantity of light at any given time, and duration or the length of the light period.

A measure of light intensity commonly used is the foot-candle. In these terms, full sunlight will range from 10,000 to 12,000 foot candles. Light is the source of energy for photosynthesis, the chemical process by which plants produce carbohydrates from water and air. Most plants have evolved leaf arrangements which can efficiently catch the available sunlight. Individual leaves may use only about 25 per cent of available sunlight but because one leaf will shade another, quite high light intensities may be required for maximum photosynthesis by the whole plant.

Need High Intensity Light

Grasses in general require high intensity light for maximum growth. Some of our turfgrasses, such as the so-called shade grasses, will produce satisfactory turf at lower light intensities than others.

From many observations we can estimate the minimum light requirements for satisfactory, if not good, turf as follows: Zoysia, red fescue and St. Augustine, 1500 f.c.; Bentgrasses and tall fescue, 2000 f.c; Kentucky bluegrass, 2000-2500 f.c. and Bermuda, 2500 or more f.c. These intensities will be adequate only at optimum growing temperatures. At higher temperatures the light requirement will be correspondingly higher. These grasses will grow at much lower

ON THE GOLF COURSE



CYCLONE POWER SEEDERS

CYCLONE MODEL S-3 POWER SEEDER (left, above). Does a fast, accurate job, whether used for seeding or applying fertilizers. Spreads up to a 30-foot swath, depending on material being spread. Operates from heavy duty, flexible drive shaft which fits tractor PTO. Double agitator, easy setting rate gauge, and positive shut-off. 1, 21/2, 3 and 5 bushel sizes.

CYCLONE ELECTRIC MODEL M-1 (shown on garden tractor at right, above). Mounts on garden tractor or front or rear of large tractor, truck or jeep. Powered by a self-contained electric motor which operates from the electric system of the vehicle upon which it is mounted. Does a fast, accurate job of seeding or applying nitrogen and other pelleted and granular fertilizers. Resistor available for control of spread width. I, $2V_2$, 3 and 5 bushel sizes.



CYCLONE HAND SEED SOWER. Ac-curately and quickly distributes grass seed . . . also pel-leted fertilizer. Exclusive double-oscil-lating feed. Instant shut-off. 7- to 28-foot spread.



CYCLONE LAWN SPREADER. Famous for speed, freedom from streaks, accuracy. Covers a 6-to 8-foot swath. Ideal for fast, precision spreading of pelleted and granular fertilizers, herbicides, insecticides, seed, ice melters, etc.

See your distributor or write for information

THE CYCLONE SEEDER CO., INC. URBANA 60, INDIANA

Make Top-Soil Out of Sub-Soil

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SURFACE COMPOSTED PEAT

The Organic Soil Improver

You can have velvet greens in spite of soil handicaps. Let us show you how raw sub-soil can be transformed into fertile top-soil for less than the cost of hauled-in top-soil.

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22366 Grand River Ave., Detroit 19, Mich. A Reliable Source of Supply Since 1920 light intensities but won't have the density required for turf.

Daylength or photoperiod, the duration of the light period, produces a number of highly important responses in many plants. One of the most important and intensively studied is that of flowering. Some species of plants flower only when the length of day is greater than a certain number of hours. These are called long-day plants. Others will flower only when the length of day is less than a certain critical number of hours. These are the short-day plants. Chrysanthemums and poinsettias are well known shortday plants. Petunias, clovers and potatoes are long-day plants. Some plants are day neutral. They will flower at any day length. The tomato is a good example of this group.

While we refer to this as a response to length of day, it has been shown experimentally that it is actually the length of night, the dark period, that triggers the flowering response. But this is not important and the term day length is

in common use.

Most of our common turfgrasses are long-day plants — bluegrasses, fescues, bentgrasses and ryegrass, for example. At least one group, the zoysias, are short-day plants,

How Ruffner Makes Two-Way Sales Bid

(Continued from page 62)

"Each year, more and more, famous name and quality brands are becoming available to pro shops. I can remember when you could buy only two or three brands. Now more and more companys are willing to sell to the pro. Several shoe manufacturers are trying to get into pro shops. One famous brand has turned over one complete line to pro shops on an exclusive basis."

Narrows Brand Choice

Ruffner has decided you can't have all the brands available, so it's advantageous for the pro to make up his mind on two or three of the best brands for the price, stick with them and forget the rest.

Another Ruffner belief, which has been profitable, is sticking close to the club

in the winter.

"A pro who is around his club" he says, "only has to work an extra two months to pay for a three-month vacation.

"December has been my biggest month, merchandise-wise, every year since I've been in Decatur," says Ruffner. "Professionals who pass up Christmas business with their membership have, in my opin-ion, good size holes in their heads. They get a good volume of business and don't come back in the spring and look at a lot of golf bags, clubs and clothes bought elsewhere during the winter.'

Ruffner had a shop in downtown Decatur for four years but last winter remained at the club in his new shop. It turned out to be his best year. He figures the downtown walk-in business he lost was more than compensated for by not having to move all his merchandise twice and having stock available that members wanted.

Concentrates on Women

"Holiday selling is personal contact by telephone almost exclusively," says Ruffner, "plus mailing out Golfdom's 'Christmas Shopping' catalog. I try to call every member and am somewhat inclined to call more women than men. I don't want to bother the men. Anyway, soft goods sell best at Christmas and women do most of the Christmas buying."

One other item enters into Ruffner's highly successful pro shop operation. "It's organization," he says. "And, in that I'm lucky in the personnel I have. As a matter of fact, I'm probably the only golf pro in the world who has three teachers with master's degrees working for him in the summer."

The assistant pro is Ken Darner, who has a master's degree in languages and shares the golf teaching duties with Ruffner. He teaches school in Blue Island,

Employes School Teachers

Hugh Phipps, Decatur MacArthur High instructor who has a master's in English, also is a master in draping models and setting up wearing apparel displays. He knows clothes and how to show them off and is indispensable in the pro shop.

The caddiemaster is Harold Petty. a Decatur Lakeview High teacher with a master's in mathematics. He teaches many of the students who caddie at the CC of Decatur in the summer and his knowledge of their background and his skill in handling them make Ruffner's job a little easier.

Petty has taken over the old pro shop in lieu of a new building for the caddies. It is hooked in on an intra-club telephone system, so it's a simple matter for the proshop to ring up the caddie shop and order the number of caddies needed.



WHOLE SEASON CONTROL WITH ONE SPRAYING

One part of Solexto in 400 parts of water sprayed on two to four acres gives season-long control of beetle grubs, ants, crickets, chinchbugs, cut worms, rose chafers, chiggers, fleas, ticks, mosquitoes and many other pests.

GRUB-PROOFS FOR TEN YEARS

One application of Solexto, two gallons to the acre (1-to-200 solution), grub-proofs the turf for at least ten years. Thus moles are also kept out by eliminating their food source.

ECONOMICAL COVERAGE

Because such high dilutions are possible, extensive coverage is very economical. Labor can also be saved by using EWT Weed Killer* in the same solution for general spraying of the grounds.

Widely used selective weed killer manufactured by Dolge.

Write to the C. B. Dolge Company, Westport, Connecticut for information about other insecticides; also inquire about weed killers, golf ball cleaners, mole and gopher killers.



April, 1963

HINRY

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Used On Leading Golf Courses Throughout The World
You get more ball washer for the money with The
Henry. It costs less initially. Course Supts. will find it
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world have found that The Henry, with its rubber
squeegee and gasket, cleans their balls faster and
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APPROXIMATELY 1/2" THICK 24" x 24" SOUARES

BEVELLED EDGING (INTERLOCKING) AVAILABLE

CHOICE OF BEAUTIFUL MARBELIZED COLORS

EASY TO MAINTAIN-EASY TO INSTALL NO CEMENT OR MASTIC REQUIRED— INTERLOCKING FEATURE HOLDS FLOORING SECURELY

Also available in runners, 28" & 36" wide. Send drawing or blueprint for free estimate.

MITCHELL RUBBER PRODUCTS, INC.

2114 San Fernando Road, Dept. G-Ap Los Angeles 65, California

Wittek Washer Saves on Ball Wear and Tear

The new, improved 1963 model of the Wittek Golf Ball Washer features all-aluminum con-

truction for long wear and easy maintenance. Patented live molded rubber washing surfaces do a thorough cleaning job while saving wear and tear on ball covers and paint. The manufacturer says the unit will clean approximately 30,000 balls per hour, automatically, requiring only a standard 110 volt electrical out-



let. The washing drum holds 30 gals, of wash water which is changed only when necessary. The drum cover is hinged for easy access. The washer is made by Wittek Golf Range Supply Company, 5122 W. North Avenue, Chicago, Ill.

Joe Wasson, formerly the supt. at Santa Rosa (Calif.) G & CC, is now with the Leslie-Agriform Corp., PO Box 275, Newark, Calif. Wasson is coordinating sales and shipments for the fertilizer supply firm.

Vern Cashman has been named marketing manager of Goodwin Manufacturing Co., Manteca, Calif. This firm makes the Rake-o-Vac sweeper and is setting up national distribution.

PGA OFFICIAL GOLF BAG TAGS INSTALL PEG BOARD NOW! IRV SCHLOSS CLUB MEMBERSHIP TAGS USE MILLER SPECIAL FIXTURES #M100R, or NEW IMPROVED #M100L PLASTIC 1/4 INCH #M101 HEAT EMBOSSED \$2.00 PER SET WITH METALIC FOIL Shipped Prepaid SEND FOR SAMPLES 12 Sets \$21.00 CHOICE OF MILLERG PRINTING Send For Catalog 7 COLORS ND SUPPLY Furnished with Hearf Plated "S" Hooks BEAD CHAINS \$1.50 per 100 EXT SPECIAL CLUB EMBLEMS BEAD CHAINS \$1.50 per 100 EXTRA LEATHER STRAPS \$5.00 per 100 EXTRA 2053 Harvard Avenue Dunedin, Florida ON BACK TO ORDER

U. S. Royal Adds Carry-All to Golf Equipment Line

A new addition to the U.S. Royal golf equipment line is the carry-all shown in the photo. Made of U. S. Premier Naughahyde, it



looks like leather. According to the manufacturer, however, it has advantages that leather doesn't offer in that it is washable, and scuffs and stains don't mar its finish. The carry-all is 10 x 18 inches and has an inner base of specially compressed hardwood covered with fabric. There is a zipper (waterproof) pocket on the side. The carry-all comes in black, saddle tan and oxblood and is sold only in pro shops.

Par Golf Catalog

"1963 Golf Supplies", 36-page catalog of Par Golf Manufacturing Co., Milan, Ill., features a wide assortment of equipment and supplies for ranges, miniatures, Par 3 and standard courses in addition to resale items. The firm's construction services also are described. The catalog can be obtained from Par Golf.

Futurus, Inc. Markets Spike-Resistant Carpet Tile

Long-wearing, spike-resistant Futurus "Carpet Tile" is made from nylon corded bus and

truck tires by a special patented process which gives it a chenille-like finish in 'wood-tone' colors for use in lockerrooms and other locations where durability and safe traction are required. Made and distributed by Futurus, Inc., 1076 W. Ninth



St., Upland, Calif., Carpet Tile comes in 1-foot squares for easy installation and spot replacement if necessary. According to the manufacturer, Carpet Tile isn't affected by salt or fresh water and is easily cleaned with hose, broom or

vacuum cleaner.



Range owners CAN get good service from rebuilt balls.

We can rebuild your culls so they will give the same performance as a new, good, range ball, when in proper range compressions. Here is an exclusive, unusual service! -

★ Cores rewound as much as necessary for uniform size, and good cover foundation.

★ The same quality proven cover is applied as that used on our durable new range balls.

* The same careful vulcanization.

* The same chemical paint preparation.

★ The same, best grade, urethane enamel, chemically bonded to the cover.

★ The same urethane stripe.

* After striping and branding the same finishing clear coat of urethane.

Never before has a rebuilding job of this quality been offered to range owners. S-T-R-E-T-C-H YOUR RANGE BALL DOLLARS.

Price \$2.90 per dozen

and your cut balls.

If desired, we can compression test the balls into grades.

Cut balls taken in trade.

We also make the best all new construction driving range balls in three compressions.

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We furnish you all you need on rental share basis. No investment for you! We deliver and service carts regularly and keep them in good repair — FREE. Clubs not held responsible for damages, theft or breakage.

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Rainmaster Cuts Costs Most. Specialized Automatic Sprinkling for Golf.



MOODY SPRINKLER COMPANY, INC. P.O. Box 240, Arcadia, California

Soil Moisture Detector

The Model KS soil moisture detector, marketed by Delmhorst Instrument Co., Boonton, N.J.,

measures available moisture from wilting point to field capacity. Measurements can be made at tensions as low as .2 of a bar. Cylindrical soil gypsum blocks are used in the operation. Lead wires from the block are inserted into holes in the instrument and the reading is made by simply pushing a button.



Spray Deodorizer for Shoes

Lien Chemical Co., 9229 W. Grand ave., Franklin Park, Ill., markets a spray that instantly deodorizes golf shoe odors and sanitizes to protect against athlete's foot and ringworm infection. The deodorizer comes in a handy 8-ounce aerosol which can be slipped into a shoe for storage.

Jim Bryson is a new addition to the sales staff of Leslie-Agriform Corp., PO Box 275, Newark, Calif. He operates out of Danville, Calif. and covers the Bay area.

LEADER FOR '63



LADIES — 70% Wool, 30% Nylon Stretch Peds #2850T Retail\$1.25 MENS — Same as above (solid white only) #2855 Retail\$1.25



First Flight Signs Production Agreement with Irish Firm

Professional Golf Co. and First Flight Co., Chattanooga, Tenn., recently reached an agreement with First Flight International, Ltd., Cork, Ireland to introduce English-size steel-center golf balls and clubs to European and world trade. The Chattanooga firms will receive royalties for use of their trade marks and patents. The International company uses only iron and wood clubheads made by Professional Golf and First Flight, and manufactures balls according to specifications of the latter two. The balls meet R & A standards. First Flight has had a foreign sales staff for several years but never has sold golf balls outside the U.S.

Jacobsen Turf Tractor Combines Power and Safety

The Worthington Model G tractor, produced by Jacobsen Manufacturing Co., Racine, Wis., is equipped with a powerful, 4-cylinder engine that



can pull up to 9 gang mowers over the most rugged terrain. An extermely short wheel base and 5½-ft. turning radius make the tractor highly maneuverable. What is claimed to be the lowest center of gravity of any turf tractor, enables the Model G to operate on slopes as steep as 38 degrees without endangering the operator. Hydraulic or mechanical sickle bars, Ram lift rangers, flail cutters and other maintenance units can be used with the Model G.

Reclaims Range Balls

Greatly extended use of driving range ball 'culls' at moderate cost is offered by Hugh J. McLaughlin & Son, Box 317, Crown Point, Ind., through a new, exclusive ball rebuilding service for range operators. After 2½ years of research, the manufacturer states that range culls can now be rebuilt using the same top grade cover, enamel and processes featured in McLaughlin's new ball construction.

Chemagro Publishes Report

A report on Dyrene, a fungicide manufactured by Chemagro Corp., PO Box 4913, Kansas City, Mo., has recently been published. In brochure form, it tells how supts. in N. Y., Mass, and Mich. have controlled fading-out, melting-out and dollar- and copperspot through use of the chemical. Copies are available from Chemagro.



CLUBS CANNOT FALL OUT!

World's largest seller — the only light-weight bag with the patented balancing feature that makes it easy to carry and prevents clubs from falling out. Ideal for the player who objects to excess weight . . . for caddy-less days . . . for beginners and juniors. Generous size — holds 14 clubs. Made of top quality green canvas . . . has heavy-duty rubber bottom.

Packed 5 to the carton — permits shipment to be made via parcel post. Minimum shipment — 5 bags. Suggested retail, \$7.50 each.

Balancing feature covered by U.S. Patent 2364223.

Balanced Golf Bag — a division of C. M. Hill Co.
Peoria, Ill. Sold only through
distributors of PRO-GRIP

Golf Gloves and Head Covers.



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CHEMICALS & FERTILIZERS
For the care of tees, greens and fairways

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96 Forrest St. - Jersey City 4, N. J.
201 HE. 5-5295

Perkins Combines Slicer and Grass Sprigger

The "Per-Man-Ent" turf slicer and grass sprigger that requires only a wrench and a few minutes' work to be converted from one



tool to the other is the product of Perkins Manufacturing Enterprises, Inc., PO Box 1361, Winterhaven, Fla. Tractor drawn, the unit has a movable, adjustable weight and self-cleaning sprigging blades are adjustable. A roller that holds up to 80 lbs. of water is attached. The Per-Man-Ent, operated at 5 mph, can cover 2½ acres in an hour. Full details can be obtained from the manufacturer.

Classified Ads . P. 173

LAKE LINDA PEAT MOSS AND HUMUS CO.

R. D. #1, Dalton, Pennsylvania

For healthier, longer-lasting green, tees, and fairways use scientifically prepared

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Burgett Markets Parhood Cover

A new, popular priced contour golf club cover, the 35W Parhood, is being marketed by K.

L. Burgett Co., Peoria, Ill. Of soft, durable vinyl, the cover is available in black and white, light blue and white or wheat and white. All models have an attractive welt. Burgett manufactures a



complete line of headcovers, golf gloves and accessories, all of which are available in pro shops.

Victor Acquires 54-Year Old Des Moines Glove Firm

Victor Comptometer Corp., Chicago, has purchased all the outstanding stock of Des Moines Glove & Mfg. Co., producer of golf bags and leather golf accessories. The 54-year old firm was bought from R. E. Thompson, president, and his family for an undisclosed sum. It will be operated as a wholly owned subsidiary of Victor's Golf Equipment div. Included in the acquisition was a four-story plant and warehouse in Des Moines. About 100 persons have been employed by Des Moines Glove in producing the "Tuf-Horse" brand and no personnel changes are contemplated, according to Victor officials.

West Point's New Utilafier

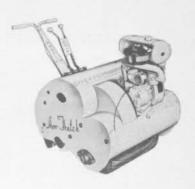
A completely new aerifier, the U-2 Utilafier, is designed for economical operation on courses and other large turf areas, according to West



Point (Pa.) Products Corp., the manufacturer of the unit. It has 80 spoons, ten to an 18-inch disc. All discs are independently mounted on the straight-line shaft for free wheel turning. Additional discs may be added to increase the spoon count to 140. When the machine is in operation, the Utilafier's transport wheels are on top of the machine. Overall cultivating width of the unit is 6 inches.

Skil Tool Catalog

The 1963 catalog of Skil Power Tools, 5033 Elston ave., Chicago 30, Ill., features over 100 models that are operated by electricity or air. Also listed are numerous accessories that fit most makes of power tools. Included in the catalog is application information to help the user select the proper model for a specific job.



How Did Winter Affect your Turf?

. . in bentgrass . . in bermudagrass

AERO-THATCH WILL HELP YOU MAINTAIN YOUR FINE TURE GRASS...

does 5 Turf Care jobs in one operation

From the standpoint of fine turf grasses, this past winter was probably the most devastating in many years. Rain, snow, desication and ice will have taken their toll on your bentgrasses. Now is the time to turn to AERO-THATCH to repair the damage, because it does 5 important turf care jobs at once: While aerating, Aerothatch displaces thatch, relieves compaction and cultivates a fine seed bed for introduction of new seed where desired and necessary. It may also serve as a power spiker. Get full details . . . contact your dealer or write to:

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Davis Grass Seed will help you establish and maintain a better wear resistant turf. We offer only seed of the highest purity and germination. Our prices are right. Immediate shipment from large stocks.



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Buyers' Service . P. 175

Coster Gives Reclaimed Cars Thorough Overhauling

H. Coster Electric Car Sales & Service, PO Box 40083, Indianapolis 40, Ind., which claims to be America's largest dealer in re-manufactured



Indianapolis warehouse of H. Coster Electric
Car Sales & Service.

golf cars, puts reclaimed vehicles through an extensive re-conditioning process before they are re-sold. Here are some of the things that are done: Cars are steam cleaned and frames and running gears are painted with Rustoleum. Bearings are repacked, forks aligned, brakes relined and any parts showing wear and tear are replaced. Motors are dismantled and tested and electrical systems and cables are replaced as required. There is no rebuilding of parts. In the body shop, new assemblies are installed where needed and the cars are refinished with three coats of Dupont Dulux. Seats are rebuilt and new mats, etc. installed. Finally, the rebuilt cars are tested on Coster's "Torture Hill" and must give practically new car performance before they are marketed.

Hudson Power Sprayers

All Hudson "Peerless" power sprayers with 10 gpm output now feature the new "Ten-O-Matic" pump, which operates without the use of packings, cups, sliding pistons or similar wearing parts. The manufacturer says the pump will maintain constant volume, up to 10 gpm at pressures up to 400 lbs., without noticeable dropoff from slippage or leakage. Daily lubrication of pump has been eliminated by enclosing the drive in an oil-filled transmission chamber. Sprayers come in 100, 150 and 300 gallon models. All are available equipped with skids, wheels or front end casters. The sprayers are manufactured by H. D. Hudson Co., 589 E. Illinois St., Chicago 11.