through, but if the layer is near the upper limit of capillary attraction, as it would frequently be in a green, the water will stop at the layer. In a green the roots will just go down to that dry layer and stop. So, you get into a lot of trouble with layering from shallow root systems. You can't go to extremes in nature; use a mixture.

Now, to go back to tile again, most greenkeepers want to know the depth, size and spacing of tile in putting greens. I like a 4" tile. A lot of 5" and 6" tile are now being made. Five inch tile is OK, but 6" provides a larger drainage way than necessary. As to the depth and the spacing, that's where everyone does not agree with me. I like to keep the water table as high as possible in the green to get the greatest possible supply of capillary water. Some say that capillary moisture is relatively unimportant as a moisture supply in a putting green. However, since the major supply of water the turf uses is capillary water (the moisture that clings as a thin layer to the soil particles) rather than free water, I sus-





PROS! Easy Profits

You can easily sell these high quality nationally advertised golf shoes at attractive profit without troubles of overhead, stock, or delivery.

Just put one pair of these shoes on your counter and watch the orders pour in. They're high grade throughout. Right-weight top quality oak soles...replaceable screw-in spikes. Send coupon below for information on our exclusive protective deal for golf pros which insures easiest and quickest earnings with no trouble or costly overhead.

NOTICE

These shoes will be sold through golf professional shops exclusively.

Send Coupon Now for complete information

CORCORAN	INCORPORATED
Connelison M.	ven character

Send me complete information on how I can make extra profits with your high-quality golf shoes.

Name____

Address____

April, 1949 91



DUBOW

Symbol of Golf Club Excellence

JOCK HUTCHISON and BETTY HICKS PRECISION-BUILT GOLF CLUBS GRADUATED GOOSE-NECK IRONS LAMINATED and PERSIMMON WOODS COMPLETELY NEW

DISTINCTIVELY STYLED

for
MEN and WOMEN GOLFERS

also Makers of the New

DUBOW H. C. — SUPER 803 COVER GOLF BALL

The finest Golf Ball that can be made Write for descriptive folder and price list

J. A. DUBOW SPORTING GOODS CORP. 1905-13 Milwaukee Ave. Chicago 4, Ill.

FOR EVERY PRO

A 10 TO 1

SURE THING

LEXOL

LEATHER CONDITIONER

With a gallon of LEXOL (\$3.00 to you) you can treat 30 leather bags at \$1, each. Very little labor cost, if any. A good

rainy day job for the boys in your shop.



Get LEXOL, the selfpenetrating liquid leather conditioner at your Wilson branch.

Made by
THE MARTIN DENNIS
COMPANY

Dept. J Newark 4, N.J.

pect these people do not mean exactly what they say, In other words, if the grass does not depend upon capillary water, then it must depend upon the only other type available which is free or gravitational water.

Provide Capillary Water Supply

It is free water that fills the pore spaces of the soil and excludes air, and this is the kind that must be drained off. It is the capillary water we are most interested in. I expect what those who depreciate the importance of capillary moisture really mean, is that it is impossible to maintain an adequate supply of capillary moisture without frequent watering. That is true on too many putting greens. But, frequent watering is costly and always results in temporary, at least, saturation of the surface which presents certain problems while it lasts. I feel it would be a move in the right direction if every greenkeeper would work towards maintaining as great a supply of capillary water from the water table as possible and thus cut down watering.

To provide a greater supply of capillary water it is necessary to hold the top of the free water table as close to the surface as is consistent with good turf needs. The maximum use of the free water stored below cannot be obtained if tile is laid too deeply because the water level is held below the efficient range of capillary movement. As far as I know, the highway engineers have done the most work on capillary movement of water in soils. Their researchers show that the further one gets away from a reservoir the slower the movement. Water will rise in peats 5 1/2" in one day through capillary attraction. In sands, water will rise 11 1/2" in a day. As the soil particles get finer, the water rises higher. In silt loams it will rise about 20" in a day and in some clays it will rise even higher.

These are the possibilities in three components of the proper top soils I have been discussing—peat, sand and silt or clay loam. When a mixture of these three exists, one may expect the maximum supply of capillary water within 5 1/2 – 20" from the top of the water table, which is controlled by the depth of the tile. Since turf roots do not go much deeper than 6", theoretically, the water table can be held that high; but that is hardly practical. Lay the tile about 18" deep. This should provide a maximum of capillary water—and it is not so shallow that super

dry areas will appear on the surface above the tile.

The spacing may be fairly close if necessary - even 10 to 12 feet apart. It won't make any great difference because the idea is to get the free water out. Drainage will not draw off the capillary water. Some like to put an inch of cinders or gravel in the bottom of the trench in which the tile is layed. It does facilitate laying of tile because the tile can be moved around to a true grade quickly. Some also like to cover the tile around the sides and over the top with cinders or gravel in order to keep the loose soil from running into the tile through the joints, and that's all right. But, the cinders should not be carried to within less than about a foot of the surface. Back fill the trench with the prepared surface soil.

In conclusion, let me add that I have tried to show that the drainage of a particular putting green is not an exact science; it is more of an art. Perfection in drainage does not depend upon engineering alone but also on soil physics, plant physiology, horticulture and agronomy. Greenkeepers know their turf problems better than any one else. Study each situation, and don't underestimate the importance of proper soil structure in the putting green.

in the putting green.

HOW MUCH "MIND-READING"

(Continued from page 36

get into the member's mind. These pros do all right by themselves by thinking of their players first. They quickly catalog their members and know what elements must be emphasized to appeal to the individual. One member may be shy, another may be show-offy, another have a driving ambition to win something, another just out to have some fun, another belonging to the club because his family wants club membership, another may be rich and tight, another may want to buy everything he can sign for but have a hell of a time paying, one may be a good fellow and another may be a complaining sour-puss who is one of the admission committee's mistakes. The pro has to be all things to all men, and - to all women who are active in the club's golf the pro's adaptability and finesse must be even greater than with the men.

Humans Are Simple

But golfers aren't so complex that they represent an unfathomable problem to the pro who thinks of them individually. That

The BURTON

"MOBILE"

A Bag Designed For



Patented Bottom; Heavily reinforced for long life. Drag iron, nine tempered studs.

TWO POPULAR MODELS!

Model No. OP-1; --VYLAN plastic treated fabric, russet steerhide trim, full 9" ring. Tan. \$2500 To your customers.

Model No. OP-2;—Rubber coated duck, VYLAN plastic trim, full 8" ring, Tan. \$1500 To your

(Both Models with Tuck-A-Way Inside Hood)

Send for Catalog on complete Burton line and price list.

BURTON MANUFACTURING

JASPER

ALABAMA

April, 1949 93

individual treatment is a big part of the successfully handled pro job. It's simply a case of thinking of the other guy or the woman. The answer to handling the golfer is no more abstruse than the explanation the idiot gave when he found he lost a horse. You remember that old varn of the dope saying he figured out what he would have done if he were a horse, doing the same thing, and there the horse was. If that policy works on a whole horse it will work on any part of same that happens to be represented in a club's membership. The pro is hired to get the right answer without requiring members to hand it to him. He merely has to out-guess the members and do it first. With what he should know about his job that should not be a difficult problem in mind-reading.

CONTROLLING FACTORS

(Continued from page 44)

mounts of Kentucky blue grass. Some architects included small quantities of south German mixed bent seed because it was the only type of bent seed available at that time. When the Green Section was formed, Dr. Piper advised seeding with Kentucky blue grass because it is the common turf grass in northern areas. The recommended mixture was eighty per cent Kentucky blue grass and twenty per cent red top to provide cover while the blue grass was becoming established. This combination was in common use for twenty years or more. Turf was reasonably good, provided it was not cut too close. The use of lime was frowned upon during that era. When Kentucky blue grass was used on strongly acid soil of low phosphorus content, it failed or the fertility deteriorated rapidly with the disappearance of the blue grass. Then weeds, poa annua, and clover took over. Kentucky blue grass never makes a dense, tight turf, so it is always hard to keep clover out of it. Generous fertilization and high cutting are the most effective means.

The use of colonial bent, mostly Astoria type, started with the development of large scale seed production in the Pacific Northwest. Seed mixtures for original planting, or for re-seeding, contained five to fifteen per cent colonial bent. The balance was Kentucky blue grass and red top occasionally with some fescue. The use of bent received a setback when chinch bugs started to invade fairways in the eastern part of the United States, because the bent grasses fared worst. Treatment with tobacco dust was

expensive, and none too effective. Now that DDT and Chlordane give good control at reasonable cost, the bents have regained favor. The tendency is to use the bent alone for reseeding during renovation of poor fairways because Kentucky blue grass and red top seed have become too expensive. Rates of seeding vary from 15 to 40 pounds per acre, and occasionally more.

The Astoria strain of colonial bent has performed well, especially when lots free from Seaside were obtained. Red tag and uncertified seed contain more creeping bent than the blue tag seed, and are less desirable for that reason. The Highland strain of 'colonial bent is being recommended by some. It is said to be more drought-tolerant than Astoria, because it grows on higher and dryer land in its native habitat. It has a different green color, and is said to be a trifle coarser in texture.

Creeping bents are considered least desirable because of their tendency to become matted and to produce a fluffy turf. Strains differ in this respect; Washington is especially bad, but Arlington (C-1) and some others produce excellent fairways. The development of desirable types is needed especially for use on watered fairways. Under irrigation, creeping bent grasses eventually take possession. Fluffiness can be prevented by frequent mowing and close cutting. The turf on creeping bent fairways should be thinned periodically by cross-discing, or by the use of the West Point aerifier, or a rotary hoe.

Another objectionable feature of creeping bent is its tendency to overrun the roughs along the edge of watered fairways. Players have a justified complaint about impossible lies when the ball is just off line. This strip of bent should be treated as semi-rough, and should be mowed a trifle higher than the fairway. Usually one round with the fairway gang is enough.

Bent on Unwatered Fairways

The notion that bent grass will not persist on unwatered fairways is general. The fact that patches of matted creeping bent die during periods of prolonged drought is the reason for the belief. Colonial bent and some creeping bent strains can survive long periods of drought. The unwatered fairways at Clovernook and Kenwood in Cincinnati contain a high percentage of colonial bent which has persisted for many years. The same is true at Camargo, even since watering stopped there. These fairways are well fertilized

and play well, even when brown, because of the uniform turf coverage.

No grass makes a better fairway than Bermuda when it is adequately fertilized and cut close. Fairways can be watered without serious trouble from crab grass and clover, provided enough nitrogen is used to keep the turf dense and tight. Fairways infested with these pests can be renovated by sodium arsenite treatment to kill the crab grass and clover, followed by the generous use of nitrogen to make the Bermuda spread and form dense turf. Carpet grass makes good turf on moist, low-lying areas in regions where climate is suitable for its growth.

Grasses for the Semi-Arid West

Irrigation is required in this region to produce really good fairway turf. Then blue grass or combinations of it with bent can be used in the cooler northern part, and Bermuda grass in the southern section. Where water is not available, or the amount is limited, buffalo grass is customarily used in the south and fairway strain of crested wheat in the north.

Mowing Practices

Golfers prefer and usually demand closely cut fairways. Grass is never cut short enough for them. The ball must rest on





IT'S NEW! IT'S TERRIFIC! THE LIQUID

"Beats anything I've ever used for grip", says Frank "Lil Abner" Strasz, World's Longest Driver.

A few drops of CINCH on the hands will give your customers the grip that means better golf instantly. CINCH is sanitary . . . stainless . . . dries instantly. 10 to 12 applications in the 25¢ tube — 10¢ profit on each tube.

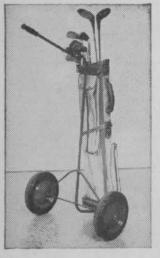
This attractive display container is offered free with initial order of 2 dozen tubes.

\$6.00 Retail Value 3.60 You Pay Only \$2.40 Your PROFIT



CHEM PRODUCTS, INC. HARTFORD . CONNECTICUT





RENT
THEM
OR
SELL
THEM
AT A
GOOD
PROFIT
Model G-1

HANDEES GOLF CADDY

• Ball-bearing Wheels

• Easiest Rolling of Them All

Large Oversize 10 inch Semi-

pneumatic Tires
STURDY CONSTRUCTION . . .
PRECISION BUILT . . EASY
ROLLING . . STEEL FRAME . . COLLAPSIBLE
HANDLE . . FITS IN ANY CAR . . WEIGHS
ONLY 13 POUNDS . . perfectly balanced to roll
through sand traps . . over rough ground, or
just about any place where you can walk. Lowest price offered on a golf cart with wheels this
large. Write for club and pro discounts in lots
of six.

HANDEES CO. Dept. G4
Bloomington, Ill.

IDEAL SPORT GIFT or PRIZE!

Perpetual Calendar
Any athletic Sun-Ray
figure on beautiful walnut base 5½° high
Suitable engraving space.
G-2144 Ea. (no lax) 3.75
Write for New Catalog
Edwin W. Lane Co.
32 W. Randolph, Chicago

top of the turf and not down in it. The club head must make clean contact with the ball in order to control its flight. These are reasonable requirements of fairway turf. The problem is simple in the South because Bermuda will withstand close clipping. The same is true of bent fairways in the North. Both should be cut at 1/9 The situation is different inch or less. with Kentucky blue grass and fescue. They cannot withstand continuous close cutting. Complete surrender to the golfers' demand for short cut fairways is suicidal. Turf deterioration together with weed and clover infestation is sure to occur. Higher cutting is necessary with some grasses so they can manufacture carbohydrates (principally sugar, starch, and cellulose). This is the principal function of green leaves. The process is called photosynthesis, because it occurs only in daytime. The energy needed to cause carbon dioxide and water to unite comes from sunlight. But the two combine only in the presence of chlorophyll, which is the green substance in the leaf. During sugar formation, free oxygen is liberated. Plants purify and enrich the air we breathe. They absorb carbon dioxide and liberate

After carbohydrates are produced in the leaf, they are elaborated into protein, chlorophyll, etc. During fabrication of these complex plant substances, the sugar is transformed and combined with nitrogen, phosphorus, sulphur, magnesium, iron, etc. So when considering or discussing the fertilizer requirements of turf, it is important to remember that the primary raw product from which every other constituent is derived is manufactured by grass in the leaf blades. Any nutrient absorbed from the soil or from added fertilizer is effective only when the turf has enough leaf surface to produce needed carbohydrates. Grass must be cut high enough to provide the

required leaf surface.

The fact that about 95 per cent of the dry weight of grass is carbohydrate, or its derivatives, further exemplifies the importance of sugar manufacture in the leaf. Only five per cent comes from the soil.

WILLIAM B. LANGFORD GOLF COURSE ARCHITECT

Balanced Topographical Design
Member:

American Society of Golf Course Architects Telephone: KEystone 9-6501

2405 Grace Street, Chicago, Illinois

From a practical standpoint, inherent differences in the growth habit of grasses should be taken into account in deciding upon height of cut. Kentucky blue grass, Canada blue grass, and the fescues creep by means of submerged stems. leaves grow erect. The bents and poa trivialis, spread by means of surface runners. Their leaves tend to grow horizontally. Consequently, these grasses can be cut closer with impunity than the blue grasses or fescues. Too high cutting of creeping bent is actually detrimental. It favors development of an objectionable thick surface mat. During dry spells this mat impedes the penetration of applied water, and by trapping surplus water it causes the turf to rot during hot wet spells.

It is best not to cut Kentucky blue grass and fescue closer than 1-1/4 to 1-1/2 inches. The preferred practice for lawns is to approach the higher limit. On golf courses they are usually cut at 7/8 to 1 inch in spring and fall, and at 1-1/4 inch during summer. Average players and many of the better ones are content with such fairways, provided grass coverage is uniform and the turf is dense. It means cutting often so grass will not become unduly long before

the next time it is mowed.

On theoretical grounds at least, there is good reason to allow blue grass and fescue to make as much growth as possible at the start in the spring, and to keep it high for a short time in order to permit the plant to produce the maximum quantity of sugar. It is the time of greatest demand because new roots and most of the rhizome develop-

ment occurs in spring. After that and in fall when weather is cool and grass grows rapidly, no harm will result from somewhat closer cutting. Mowers should be raised and grass cut higher with the approach of summer. The extra growth insulates and shades the ground, thereby reducing the loss of moisture from direct evaporation. Consequently, the turf stays green longer and survives drought better. Shade also helps discourage clover and crab grass.

Mowers can be raised at any time, but should never be lowered drastically in hot weather. The only safe way is to lower the cut slowly, just a little each week.

Fairways must be cut oftener when mowers are set to cut fairly high. Turf cut at 1/2 inch is only 1-1/2 inches long even after grass grows an inch between cuttings. Fairways are still playable. However, when the turf is cut at 1-1/2 inches, the grass is 2-1/2 inches by the time it is mowed again, provided the interval between cuttings is the same. Then fairways are unplayable, Golfers complain bitterly about bad lies, say they can't find the ball in the long grass and become furious.

The switch to colonial bent in the North permits continuous close cutting of fairways, which is what the golfers want. Even with close mowing, it and creeping bent have enough leaf surface to produce ample carbohydrate. The height of cut should be adjusted to prevent the formation of a surface mat, otherwise serious trouble is likely during bad weather.

(to be continued in May issue of Golfdom)

Jackman Sportswear

Ask for
JACKMAN'S
1949 Catalog
It's a guide to this
year's best sellers in
SPORTSWEAR

Sportswear will be a focal point of selling activity in maintaining pro shop volume this year. Foreseeing its importance, we have assembled in the 1949 Jackman Sportswear line what we believe to be the most select array of apparel and accessories ever affered for pro shop selling. You'll agree, as hundreds of professionals already have, when you see this year's top selection in the new Jackman Sportswear catalog. Send for your copy — today.

REN SMITH, Pres.

6332-34 Roosevelt Road

OAK PARK, ILL.

All-Weather Jackets • Headwear • Sports Sox • Gloves
Accessories • Sport Coats • Haberdashery • Tubular Bags
Golf Carts • Tournament Prizes • Rubber Shower Caps • "Golferscap"

100% Nylon — Shirts, Sweaters, Argyle Hose & Pussyfoot Sox

PRO FINISHED PERSIMMON HEADS

WOODS HAND MADE TO ORDER

Quick Service on All Types of Repair Work.

Bert Dargie Golf Co.

2883 Poplar Avenue, Memphis 11, Tenn.

SAVE UP TO \$1000 A SEASON By using ROYAL'S

ALUMINUM DRIVING RANGE CLUB

Longer Life



No Repairs

NOW USED IN OVER 42 STATES
Also matched sets of ALUMINUM WOODS

For complete information write
ROYAL GOLF CLUB COMPANY

6411 No. Oakley Ave.

Chicago 45, Ill.

EARN EXTRA DIVIDENDS

ADD A

MINIATURE GOLF COURSE

To Your Driving Range



Builder & Designer of America's Finest

Miniature Golf Courses and Driving Ranges

444 Brooklyn Ave., New Hyde Park, N. Y.

Driving Ranges

AND

Miniature Golf Courses

GOLF BALLS — CLUBS TEES—MATS—PUTTERS

Write for prices

EASTERN GOLF CO.

244 W. 42nd St., Dept. A, New York 18, N. Y.

NEWS from the MANUFACTURERS

FULL COLOR MAILING INSERTS ON POWER-BILT CLUBS AVAILABLE

Hillerich and Bradsby Co., 434 Finzer St., Louisville, Ky., have prepared a special, four-page, full color catalog insert showing an attractive display of the latest Power-Bilt golf clubs which are available in quantity to professionals making direct mailings to their members and prospective customers or as inserts to be enclosed with monthly statements. It is an eye-appealing mailing piece which the alert pro can use to advantage. Write the company your needs and shipment will be made promptly.

"DYNAMITE THREAD" FEATURES NEW ACUSHNET BALL CONSTRUCTION

An entirely new type of thread, described as super-resilient, and a certain special method of winding known as "True-Circle", are being used to give this year's Acushnet Titleist golf balls added distance and improved shot control. Enthusiastic over the balls' performance in test play, the players started calling the new thread "Dynamite Thread", a phrase so descriptive that Acushnet is building its 1949 advertising campaign on "D.T."

Acushnet tells of their concern over the new construction during its early development, when the D.T. Titleist showed distance that caused doubt as to its legality. By trial and adjustment this was solved so that, while longer than any previous



Pro-Grip

Just Squeeze Bottle
No Messy Bag
ONLY 50 CENTS

NON-SLIP GRIP RESIN

A new and superior package — a squeeze-type non-breakable bettle . . now makes Pre-Grip resin more popular than ever. Especially suited for golf, tennis and all other sports.

MANUFACTURER'S SPECIALTY CO.,

2736 Sidney Street, ST. LOUIS 4, MO.

Acushnet ball, it satisfies all required rules of ball construction. "D.T." Titleist is backed by Acushnet's most vigorous sales, advertising and promotion programs. Color ads will run in the "Post", with ads in "Time" and color back covers in "GOLF-ING" throughout the season. Special advertising material will be available to Pros, such as free matches (a last year hit), counter cards, etc. Acushnet reports the D. T. Titleist off to a fast start, winning praise from many winter circuit pros and leading service pros in the south and west.

LEWIS'S GREEN ETIQUETTE POSTER



"Don'ts" of green etiquette. Attractive reminder poster available through dealers handling Lewis golf ball washers. PROS - when they insist on the best - suggest ...

By KING

THE FINEST IN CLUB CRAFTSMANSHIP

KINGS CUSTON GOLF CLUBS Shreveport, La.

GOLF PENCILS

\$1.10	per	Gross	-	100	Gross	Quantity	
1.15	47	**		50	- 11	**	
1.25	9.5	#		25	(44)	11	
1.35	331			5	21.	H	
Stam)	10	e P	er Gross Extra	

SEABOARD PENCIL CO.

45 W. 57th Street, NEW YORK 19, N. Y.

When it is GOLF PRINTING!

Specialists, for years to many of America's largest and most exclusive courses, can best serve you, too.

Score Cards - - Charge Checks Greens Maintenance Systems Caddie Cards - - Handicap Systems Forms for Locker and Dining Rooms and for the Professional.

Samples to your club for the asking.

VESTAL CO., 703 S. La Salle, Chicago

When you make a poor shot SMILE and change to NEW PARK	Mail this coupon to any of your suppliers or direct to: L. A. Processing Company 801 Milford Street Glendale 3, California Please ship me			
"ALL-WEATHER" GRIPS PARK "ALL-WEATHER"	City State (Please print plainly) ' GRIP — Greatest Grip in Golf!			

Golf Course For Sale

My clients, the Order of Franciscan Fathers, wish to sell their 18-holf golf course known as the Cedar Lake Golf Club, Cedar Lake, Indiana. This course is near Hammond and Gary, Indiana. Cedar Lake itself is one of the best resort towns in the State. It has a summer population between 40,000 to 50,000.

Here's what one of the nation's leading golf course architects (name available upon request) has to say about this course—"I have carefully inspected the Cedar Lake Golf Club in Cedar Lake, Indiana. I consider the total cost to reproduce this golf course today would be \$91,800.00. This figure would include 129 acres of land more or less, consisting of an 18-hole golf course, practice putting green, service buildings, bridges, water supply system, tees, greens, fairways, sand traps, roughs and the clubhouse."

Last year this golf course grossed \$27,687.42. However, its potential is unlimited under actual ownership of a golf course operator. My clients are not golf course operators. Therefore, someone individually or collectively who wants to get a fine golf course at a reasonable price can do so.

As part of the sale there is an inventory including furniture, fixtures, machinery, equipment and merchandise worth today's market about \$10,000.00. The right party or parties have a real opportunity, particularly so if they can deal on cash terms.

To see the course you may go direct to the Franciscan Monastery across the street from the club at Cedar Lake, Indiana. Father Victor or one of his assistants will personally escort you over the course. Should you prefer to contact me as the attorney for the Order, my name is Walter Rojek, 111 W. Washington St., Chicago 2, Illinois, Telephone, Dearborn 2-4479.

MCNULTY IN CHARGE PRO GOLF SALES WILSON'S NASHVILLE OFFICE



William J. McNulty, for 25 years associated with golf and the sporting goods industry, has joined Wilson Sporting Goods Co. to take charge of the professional golf activities of the company's Nashville office, it is announced by L. B. Icely, Wilson president.

McNulty brings an especially wellrounded background to Wilson. His golfing knowledge extends through personal experience as a caddie, apprentice in the pro shop, salesman, buyer, manager of a branch office, manager of a sporting goods department in a large store, merchandise manager, vice-president, and president of a sporting goods manufacturer.

"I have known 'Mac' for a great many years," said Icely in making the announcement, "and I am sure that his extensive experience in every phase of golf — from caddying as a youngster right on up through the most advanced stages of merchandising while serving as vice-president

