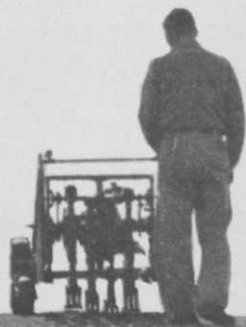


THE 1964 VERTIFIER

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Wide open fairway or tight trap shoulder. Fancy footwork around the clubhouse or full throttle out on the course. Any type or size of mowing. Name the problem. International Harvester has *exactly* the right tractor and mower to solve it. 108 different mowing combinations. Mighty good thing, too. Listen. You can almost hear that grass growing.

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International Harvester Co., Box 7333, Chicago 80, Ill.

Dear Mr. Lincoln:

- How would you suggest solving my job problem? (Note attached)
- Let me see literature on _____
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International Harvester
the people who bring you the machines that work





day before subjecting them to the week-end traffic.

On Friday night green watering is a headache because traffic wounds on soft greens don't heal rapidly and there is always plenty of evidence of ballmarks. If the wind doesn't let down on Thursday night, I'm forced to water Friday evening, but the sets are appreciably shorter.

Friday morning all the greens are mowed, and following right behind the greenmowers are the two spray rigs. The 45 greens, two putting greens, and two bent nurseries are sprayed each Friday. Each rig takes out six loads and barring any breakdowns, it is usually 4 p.m. when they are finished. This Friday fungicide application is a Philadelphia-Baltimore practice. The supts. there want to be safe over any three-day weekends when they operate with skeleton crews.

Stay Clear of Greens

When the greenmowers are returned to the barn, two Toro Professionals are moved out to mow tees, and a third to clean up around trees and bushes. The Locke triplex is used to mow the banks around the greens and one width around the fairway traps. We make an effort to keep the tractors from mowing too close to the greens so that their wheelmarks aren't seen in the same place all the time. This places a heavy burden on the Locke operator.

Two tractors, pulling seven-gang units, are used to mow fairways on the South Course. A new, low-center-of-gravity tractor pulls a five-gang on hilly Rolling Hills. After everything is operating smoothly, Ted Wiersema, my mechanic, mows the North course fairways, which are long and wide, with a nine-gang unit. I always have a man ready to replace Ted in case he is called back on a breakdown. At about 3:30 p.m. all the fairways but one or two have been finished and it's quite satisfying to see three tractors rolling down that last fairway. All week long one seven-gang and one five-gang have been working the roughs. So there is never any rough to be mowed on Friday.

Our extra help push rotaries on the clubhouse lawn or along the creeks where weekend bottlenecks are likely to occur.

The Friday night details include: changing the hole cups for Saturday morning, filling ballwashers and putting out clean towels. On Friday nights we water tees in three sets, all of 1½ hours duration.

Saturday and Sunday mornings my crew goes to work before the sun rises. We load five greenmowers on the pickup truck and drop them off on Nos. 1, 2, 3, 4, 5 of the South course. A second truckload takes care of the low numbered greens on the North course. The remaining four machines mow the practice putting greens and then proceed to Rolling Hills. By 7:30 a.m. all the greens have been mowed and the machines washed and put away. When the sandtraps have been raked, and the garbage hauled from the refreshment stands, the employees are free to go home.

Cups Are Changed

Just before noon on Saturday two boys change the hole cups and move the tee markers. Around 6 p.m. the hole cups are changed again for Sunday morning.

On Sunday morning the greens are mowed again, traps raked, tee markers changed and garbage hauled. The crew is usually homeward bound by 8:30 a.m.

An emergency crew is on alert for Sunday syringing duty since the last watering of the greens took place early Friday morning. At noon on Sunday the hole cups are changed once again.

On Sunday evenings I usually return to the club. This enables me to look for any weekend damage, start the pumps and give the waterman his schedule. On Sunday (as on Thursday) we can water more heavily because Monday's play is light. Sunday evening is a fine time to prepare the coming week's schedule, Tournaments on Tuesday, Wednesday, and Thursday. How many golfers? Which course are they on? Is there a ladies group this week that wants special attention? If we have 85 airline stewardesses on the North course on Tuesday, that's where I want to be! That's one of my fringe benefits.

How about twilight leagues this week? Are they playing every night or do we get a break one night this week?

Does this sound like a merry-go-round? Confidentially, it is.

Change Handicap Allowance

Under new rules adopted by the USGA, golfers in four-ball play may now use 100 per cent of the difference between their handicaps and that of the low-handicapped player on a better ball basis. In all other four-ball play they will use full handicaps. Previously the allowance was 85 per cent.

I'll never forget...

The feud, the frog and the birdie

by Superintendent Al Fortino,
Aptos Beach Golf Club, Aptos, Calif.



"As evenly matched as two amateurs could be, Herman and Charlie started playing for drinks, but by the 18th the ante involved quite some cash. It was 'all even' as they prepared to hole out. Herman was left with an easy three-footer for par. Charlie was 25 feet away from a birdie. He putted. The ball came to rest on the very lip of the cup. Just as Herman pulled the pin, a frog hopped out of the hole right onto Charlie's ball. 'Looks like we end up all even,' Herman crowed as he slapped his leg in joy. Startled by this movement, the frog hopped off the ball...kicking it just enough to give Charlie his birdie. Herman threw away his putter, stalked off the course and hasn't touched a golf stick since."

Keeping your course's cups free from frogs may not be part of your regular job...

but turf disease control should be—weekly, in most cases, throughout the growing season.

More and more superintendents are protecting their courses with Du Pont's "Tersan" OM turf fungicide. "Tersan" OM is a combination of "Semesan," a mercurial fungicide, and "Tersan" 75, an organic sulfur. This combination gives fast knockout of turf diseases plus long-term residual protection. Each of these fungicides may also be used separately if the superintendent so desires.

While fungicide application is necessarily a frequent task, nitrogen fertilization *needn't* be. You can supply your turf with enough nitrogen for the entire playing season with just two applications of Du Pont "Uramite"

ureaform fertilizer—one in the spring and one in the fall. "Uramite" is 38% nitrogen—slow-release nitrogen that resists leaching and feeds turf steadily without burning, throughout the playing season. For faster green-up, you can spread or spray water-soluble "Nu Green" urea fertilizer. It's 45% nitrogen, non-corrosive and compatible with all Du Pont fungicides.

Du Pont Turf Products help you keep your course healthier and greener...with minimum labor expense. For full information on how to maintain outstanding playing conditions with these time-tested Du Pont products, consult your golf course supplier—your service agency.

On all chemicals, follow labeling instructions and directions carefully.



TURF PRODUCTS

Better Things for Better Living...through Chemistry

There's Sugar In that Turf

Grass wouldn't have a framework without it . . . It builds needed protein . . . And supplies a reserve for revival in the spring . . . But without ample nutrients it could never do this vital work

By O. J. NOER

Grass, like every other living thing, cannot live on water alone. At a Missouri experimental station, it took five times more water to produce each bushel of corn on check plots than was needed in the adequately fertilized ones. So instead of relying on water only, the secret of a good turf is to use adequate amounts of fertilizer first, and then apply just enough water to keep it that way.

Every living plant is a factory. It manufactures a simple sugar, the basic product from which every other plant constituent is produced. Sugar production occurs in the green portion of the plant, mainly in the leaves. Some of the sugar is changed to cellulose, which becomes the structural framework of the plant. Part is used to build protein, the most important plant substance. A portion is converted into starch or oil, and is stored for future use when they are needed to revive dormant perennial grass in the spring, and for the same purpose when turf falls prey to any type of injury, short of death.

Survive Defoliation

It is customary to assume that plants produce sugar in abundance. Plenty of sugar is made during the life of most plants, the ones that grow from youth to maturity, but not always for grasses and legumes. They are among the few plants that can survive constant defoliation. But

for continual survival there must always be enough leaf surface left so that the manufacture of sugar can continue at a rate which will permit normal growth, provide a reserve for use in adversity, and initiate new growth after winter dormancy.

This is the reason erect growing grasses like bluegrass, fescue, ryegrass and colonial bent perform best when cut high — up to several inches. They suffer severely when mowers are set to cut below 3/4 inch. The prostrate growing grasses such as poa trivialis, creeping bent, Bermuda, zoysia and carpet grass can produce ample sugar even when cut close.

Where High Cutting Hurts

With all of them, high cutting favors thatch development. It is detrimental rather than beneficial. Only the top foliage stays green. Leaves below turn brown for want of exposure to sunlight. Then scalping occurs. As a consequence, the operator is prone to raise the bed knife. This only makes a bad situation worse. Creeping bent, Bermuda and zoysia turf should be kept tight by close cutting, never above 1/2 to 5/8 of an inch.

When clippings are not removed, only nitrogen is subject to loss, some by leaching and part by denitrification. The other mineral elements, including phosphorus, potash, calcium and magnesium, are stored in the soil exchange complex for future use after their release as the clippings undergo decay. The dominant role of nitrogen and the lesser need for phos-

Now, preparation of the fine, uniform top dressing required for greens and tees can be a mechanized operation by using the latest of Royer's golf course-designed equipment—the POWERSCREEN. This unit combines the screening and conveying of top dressing into a one-step operation. A sloped-deck, vibrating screen prepares the fine top dressing mixture and a discharge conveyor moves the mixture away from the screen to a height convenient for either stockpiling or loading small trucks or trailers. Ruggedly constructed, the POWERSCREEN features—

- welded, tubular-steel frame
- woven-steel-wire screen with 1/4" openings (other openings available)
- portability—easily moved by one man
- troughing-type, discharge conveyor
- choice of drives—gasoline or electric
- traditional Royer low-maintenance design

Find out more about the new POWERSCREEN by sending for Bulletin PS-100.

When the POWERSCREEN is used in conjunction with a Royer Shredder, both top dressing quality and production are improved. The shredder "Royerates" the top dressing ingredients by a cleated-belt action that shreds, aerates, removes non-shreddables, and blends the ingredients to a homogeneous condition. In addition, the shredder feeds the vibrating screen at an angle and height that assures maximum production.

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phorus and potassium is exemplified on the fairways at one Milwaukee course. The bent turf has received nothing but a 6-3-1 fertilizer since 1933. There is no better fairway turf anywhere. These watered fairways receive about 3,000 pounds of fertilizer per acre each year.

Monthly Nutrient Loss

Based on studies of Bermudas and bentgrasses, the average monthly loss of nutrients in clippings is about one pound of nitrogen, not more than 1/2 pound of phosphoric acid and 3/4 pound of potash per 1,000 square feet of a golf green. At Memphis, the quantity of sulfur was about the same as phosphorus. These figures can be used as a rough guide in formulating a fertilizer program for greens and for tees where the clippings are removed. However, a more vigorous rate of growth is desirable on tees because of wear. That means somewhat more nitrogen, as well as phosphate and potash should be applied.

Kind of grass and type of soil have pronounced effects upon fertilizer practices. In the Mississippi and Ohio river valleys, bluegrass is the dominant grass. The soils are above average in fertility and seldom more than moderately acid. In New England and in the Pacific Northwest, fescue and bentgrasses, mostly of the Colonial type, are the common grass species. Soils are less fertile, usually low in phosphorus, and are moderately to strongly acid.

The fescues and bentgrass can survive under these conditions, but bluegrass can't. The only way to keep fescue in the Midwest, out in open areas, is to make conditions unfavorable for bluegrass. That means minimum amounts of lime, nitrogen and phosphate. On watered fairways in the North, bluegrass gives way to creeping bent under programs of plentiful fertilizer and heavy watering.

Southern Grasses

Bermudagrass is the dominant turf grass in the South, in well drained places which are devoid of excessive shade. Carpet grass occupies damper locations. St. Augustine in the deep South, and zoysia elsewhere are the best shade tolerant grasses. Bahia and centipede are called the poor man's grass because of their low fertility requirements. Centipede thrives

This article is condensed from a speech made by Noer at the Oklahoma turf conference in December.



Iowa State U's associate dean of agriculture, Louis M. Thompson (center), prepares to give GCSEA scholarship checks to (l to r) Theodore B. Bailey, Jr., Washington, Ia., Joseph Burris, Willoughby, O., James E. Wieborg, Odebolt, Ia., and Flave E. Markland, Vinton, Ia. The checks range from \$300 to \$500. Markland is a graduate agronomy student; others are undergraduates in the horticulture college.

in acid soil where it is able to assimilate needed iron. On neutral to alkaline soil centipede becomes chlorotic and dies unless sprayed repeatedly with ferrous sulphate or chelated iron. The solution is to use a different grass.

Bermudagrass tolerates considerable acid but grows best when soil is no more than slightly acid and well supplied with calcium. Lots of nitrogen is needed to produce a dense, tight turf. The use of several hundred pounds of actual nitrogen per acre of watered fairway is not uncommon on poorer soil where the growing season is a long one. A Nevada club used almost 400 pounds per acre in 1953. Yet the supt. thought it was not enough. The range in Oklahoma is much less, more like 150 to 250 pounds.

Zoysia requires less nitrogen than Bermudagrass. Where zoysia and Bermuda are intermixed, the Bermuda dominates under a heavy nitrogen feeding program. With lesser amounts, zoysia may take possession.

Soil Reaction

Soil reaction affects turf growth and the effective use of fertilizer. A desirable range is pH 6.0 to 6.5. It is a good one for growth and a desirable one for the availability of soil nutrients.

Lime usage is justified on moderately to slightly acid soil, and imperative on strong to very strongly acid soil. It may
(Continued on page 114)

Why get double sprin

...here?

...here?

...here?

New 2-speed head goes twice

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No puddling, run-off or waste. Toro's new 660 pop-up rotary head delivers water uniformly across the sprinkling pattern. Even where coverage overlaps.

New built-in, 2-speed action makes it possible. The 660 automatically rotates twice as fast in overlapping areas. Automatically slows to regular speed in areas covered by one head.

It has efficient 3-nozzle design... for inner, middle and outer coverage. Sprinkles areas as large as 200 feet in diameter. Has precipitation rates as low as .29" per hour.

The gear train is permanently lubricated and self-contained in a sealed housing. Water can't enter! Neither can sand, dirt! Heads last longer, maintenance is minimized.

Toro manufactures a full line of the most efficient sprinkler heads, nozzles, valves and controllers available. We can engineer the right system for any budget, any job. Let us prove it to you. Write for full information.

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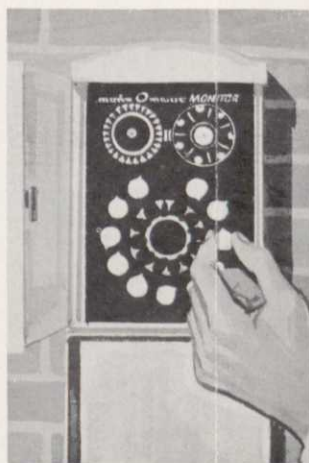
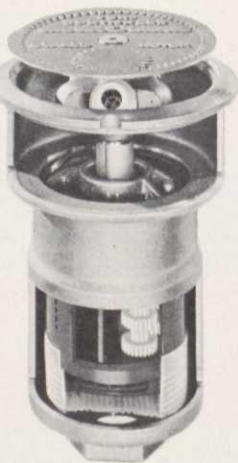
inking coverage...

...here?

...here?

...here?

as fast in overlapping areas!



FULL SELECTION of gear-driven rotary pop-up heads available. Gear trains permanently lubricated, sealed. Offer industry's lowest precipitation rates, widest coverage with same water pressure, volume. #650: coverage to 182' in diameter... wide selection of nozzles. #630: 96' to 150' diameter coverage... up to 60% more coverage than standard units. #610: lowest cost gear-driven head available. 40' to 100' diameter coverage... full, $\frac{1}{2}$, $\frac{1}{4}$ circle.

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And it helps in many ways. In knowing exactly what you need . . . and building it. In developing the new features that help you on the job. Features that mean greater maneuverability. Speed. Safety. Finer cutting action. Dependability.

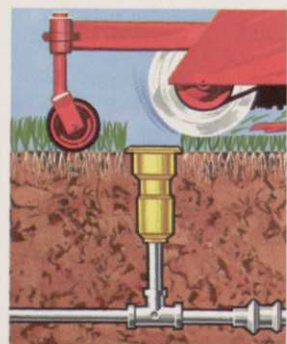
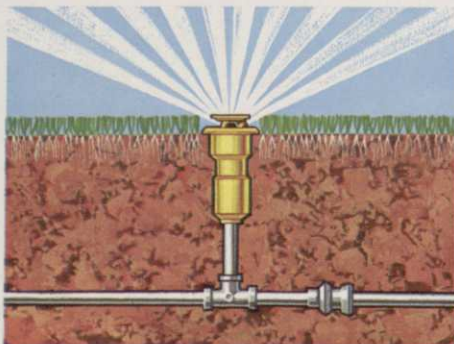
50 years ago Toro built its first piece of equipment. Today we're the world's largest manufacturer of mowers for every use. A good reason to call your Toro distributor for all the facts on Toro's best . . . the 50-year fleet.



The 32" Whirlwind® . . . a riding rotary built for rough terrain. Mows at speeds to 6 mph; cutting heights adjustable, 1" to 4".

The 30" Parklawn® . . . perfect all-around mower for formal turf. Trims close, takes slopes in stride. Cutting heights: $\frac{3}{8}$ " to 2 $\frac{1}{2}$ ".

The 76" Professional® . . . for formal turf. Mows up to 20 acres a day, trims close, turns tight. Cuts at heights from $\frac{3}{8}$ " to 2 $\frac{1}{2}$ ".



Automatic sprinkling systems . . . engineered for any budget, any job. Full selection of heads, nozzles, valves, controllers. Heads are gear-driven rotary pop-up type with *sealed* gear trains. All

operate on minimum water pressure, volume; all feature industry's lowest precipitation rates, yet give wider, more uniform coverage. And all service from the top; no digging required. Write for new brochure.



The Toro Parkmaster® . . . cuts a 15' swath at speeds of 5 to 10 mph. Cuts clean and even on steepest slopes. Exclusive hydraulic system picks up mowers to dodge obstacles without slowing down. Gets the job done fast. Then the Parkmaster folds to 8' transport width and rolls down the road at speeds to 40 mph.



The Workmaster . . . will out-climb, out-haul, out-run, out-last any other utility car. Write . . . we'd like to prove it on your grounds. Also, write for all the facts on Toro's Caddymaster and Golfmaster.

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Bob Baldock is seen in both photos as he inspects the installation of irrigation pipe at the Shore course. At left, a joint is being welded with a solvent. At right, a connection is made by inserting lengths into a coupling. A rubber gasket and lubricant are used in making the connection water tight.

How Corrosion Was Countered at Monterey's Shore Course

Irrigation pipe that would hold up in sandy soil was needed at this California layout . . . This article outlines the solution to the problem

By **BOB BALDOCK**
Golf Course Architect
Fresno, California

Designing a course in the midst of several world famous courses is like being born into a family of talented ancestors. Everyone is watching closely to see if you are going to live up to expectations.

That is the problem I faced about three years ago when I began the design and construction of the Shore course of the Monterey Peninsula CC in Pebble Beach, Calif. The Del Monte forest and Monterey Peninsula are famed for such magnificent layouts as Pebble Beach, Cypress Point and the Dunes. Trying to come close to matching any of these invites a good deal of pressure even before you go to the drawing board.

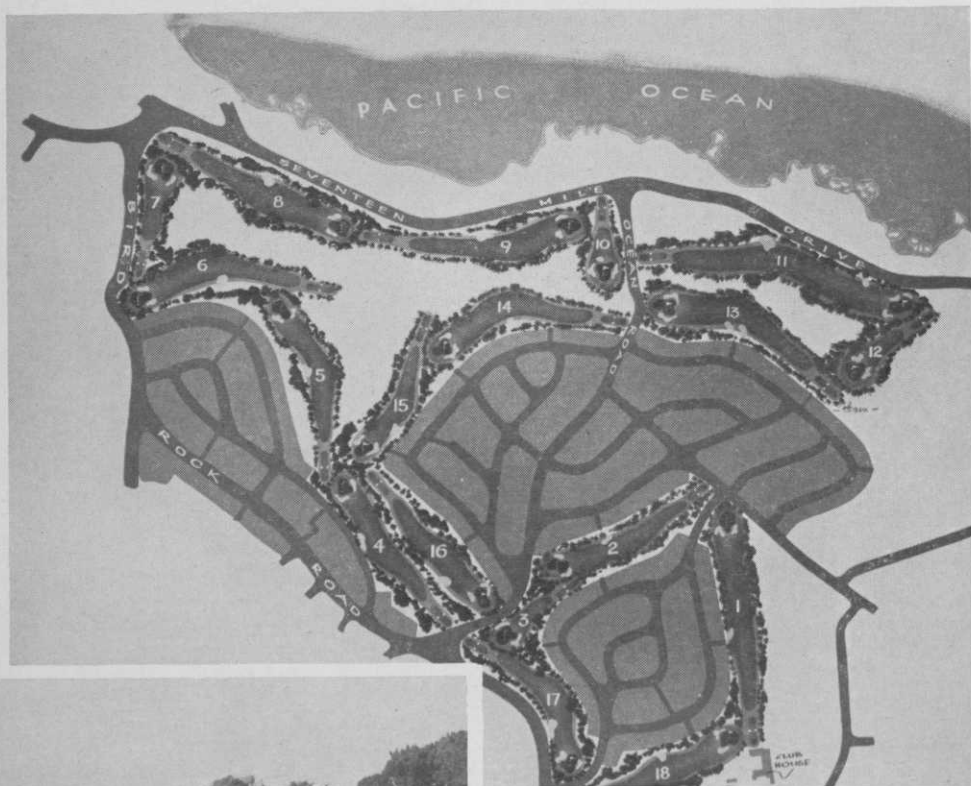
Pebble Beach, perhaps the most fam-

ous of these links, was designed in 1917-18 by Neville and Douglas Grant. The latter won the California state amateur on this course a few years later. The Dunes course, badly overworked by golfers through the years, is 37 years old. Seth Raynor was the designer, although refinements later were incorporated by Bob Hunter. Cypress, 33 years old, is the youngest of the Del Monte forest courses. Raynor also designed it, but it was completed by Alister Mackenzie when Raynor died.

Pacific Backdrop

The Shore course, with its 8th, 9th, 10th and 11th holes bordering the famed 17-Mile Drive, is located south of the Monterey Peninsula Club's present Monterey Dunes course. Eleven holes that flank the Pacific provide golfers with the same scenic and playing challenges of the other three links.

The No. 1 fairway at the Shore parallels the Dunes' 18th hole. All of its holes are within a brassie shot or two of the ocean or wind through the Del Monte forest area of luxurious homes. The short-



Large photo shows the layout of Monterey Peninsula's Shore course. At left, gamboling deer are having a light snack on a fairway.

est hole, No. 10, is 165 yards; the longest, No. 11, extends to 565 yards.

The nearness of the Del Monte residences compounded the design and construction problems. With work on the course scheduled to last for about six months, we felt obliged to minimize the dirt and unsightly appearance that are part of any construction job. In addition, the course had to be designed so as not to invade the privacy or property lines of any adjoining properties, or to present an undesirable view.

Planned in 1925

The Shore course was planned in 1925. However, due to the financial conditions of the late '20s, the work that was started was suspended. Then, a few years ago, Del Monte Properties deeded 125 acres to the club and the way was cleared for

building the course.

The availability of only 125 acres meant that we were faced with tight problems in design. The USGA has specified 160 acres as being ideal for 18 holes. It considers 120 acres an absolute minimum for a standard 6,500 yard layout. Thus, with our 125 acres, we were working with a very thin margin. The Shore course is 6,425 yards long — 3,300 out and 3,125 on the heavily hazarded return nine. Working with such small acreage, however, is not unique — it has become a common problem for every golf architect.

Building a course today is a complicated and often very expensive project. With the cost of land constantly going higher, the object is to do the most possible with the least land. This involves considerable study of contour maps and aerial photos, the establishment by surveys of course perimeters, and the selection of a clubhouse site on the basis of accessibility, visibility and availability of parking space. (Continued on page 106)