

ANNOUNCING

NEW budget-priced ball washer!

**Combines
long life with
low maintenance**

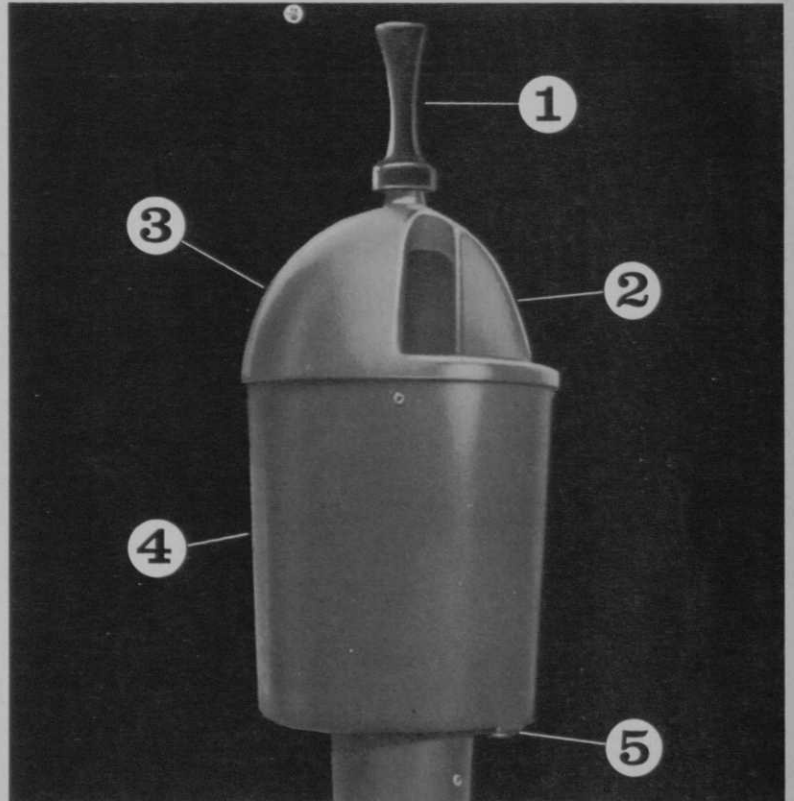
New Lewis aluminum-fiber-glass housing with stainless steel, rubber and nylon fittings assures rust-free dependability and trouble-free operation.

LEWIS LEADS AGAIN! You asked for a Ball Washer combining trim design with smooth operation and minimum maintenance . . . at a modest price. Lewis engineers achieved this with the remarkable new GF-68 Washer, combining aluminum and fiberglass. Its functional design and smooth, splash-free cleaning action pleases players from the first insertion of the ball to its final automatic transfer to the holding tray.

Greens Superintendents recognize these top quality features . . .

Lewis fine quality materials assure long life and easy maintenance:

(1) Tough phenolic grip holds solid stainless steel plunger shaft firmly, permits 360° swivel. (2) Oversize opening directs ball to nylon paddle for spin-action cleaning. Exclusive design automatically ejects ball into receiving "tray". (3) Cast aluminum top is designed for rough use. Easily removed to replace brushes after 3 to 5 years of normal use. (4) Molded fiberglass base forms large water chamber. Washer can't become rusted to post. (5) Outside drain plug for easy flushing.



New Fluorescent Flagpole features high visibility . . . pinpoints cup on green from 100-150 yards out. Ken Voorhies, Columbine C.C., Denver, Colorado, shows vertical stance of pole with new chamfered ferrule and chamfered cup.



Lewis Deluxe GF-555 Tee Stations are used by Wade Flatt on all eighteen tees of his Skyline Country Club at Wichita Falls, Texas. He uses Lewis Line equipment exclusively because of its dependable service.

20-55



Lewis Line GOLF EQUIPMENT

Cup Cutter • Cups • Flags • Flagpoles • Tee Markers • Tee Stations • Ball Washers
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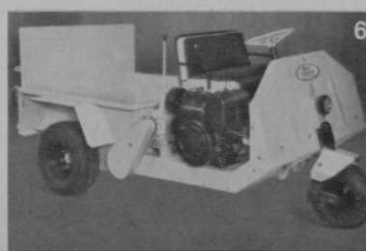
JACOBSEN... first choice for fine turf



BIG PERFORMANCE ON FORMAL TURF

The Jacobsen Turf King 84 is a versatile, all-purpose mower for fine turf. Variable forward speed plus reverse allows you to do much of the close work and trimming you are now doing with a walking mower. It has high frequency, constant speed reels and will put a fine, smooth finish on up to 20 acres per 8 hour day. The three power-driven reels hug uneven, rolling ground. Also in 76" width. Grass catchers are optional.





1. LIGHT TOUCH ON FINE TURF

Jacobsen designed the F-10 Mowing Tractor for mowing fine turf areas with minimum manpower. With all mowing units ahead of the tractor wheels, you won't have wheel marks or streaks of uncut grass on fine turf. Full visibility of all mowers. Individual controls let operator adjust mowing swath. With 7 units, the F-10 can cut approximately 60 acres per 8-hour day. Hydraulic lift raises mowers for transport.

2. RELIABLE AND HANDY

The Jacobsen Park 30 is ideal for smaller turf areas where trimming and maneuverability are a requisite. Large diameter reel cuts long grass cleanly. Optional 10-blade reel cuts fine turf. Designed for day-in, day-out mowing.

3. RUGGED TWOSOME

These two Jacobsen Rotaries are built for rugged commercial work on golf courses, parks, industrial grounds. They are very maneuverable and each is 3 H.P. with 5 quart gas tank. Power-propelled, 21" cut. Regular 20" cut.

4. FOR THE WIDE-OPEN SPACES

The Jacobsen G-10 is a rugged, beefed-up tractor with power to pull up to 11 gang mowers over rolling terrain with ease. Low center of gravity for safety on side-slopes. Use with either Fairway or Blitzler pull-type gang units.

5. SMOOTH OUT YOUR GAME

Every golf course needs this Rogers Aero Blade to remove thatch and aerate turf. Attachments available for renovating, tilling and spiking. Four-foot cutting width. Fits any tractor with 3-point hitch, PTO drive. New exclusive seeder attachment seeds and covers in one operation.

6. THE EFFICIENCY TRUCK

This Rogers Utility Truck is a great all-purpose run-about to haul men and supplies. Drop-down ramp for easy loading of equipment, tools, fertilizer. It will tow gang mowers, sweepers, trailers, spreaders, seeders. Use it to save expensive man-hours and bigger vehicles.

JACOBSEN

...better turf care ideas

JACOBSEN MANUFACTURING COMPANY • RACINE, WISCONSIN 53403



Turfgrass research review

by Dr. James B. Beard

How compaction affects turf

COMPACTION AND WEAR OF TURFGRASSES.

W. E. Cordukes. *Greenhouse-Garden-Grass* 6(3). 1967. (Plant Research Institute, Ottawa, Ontario, Canada).

From 1965 to 1967 studies were conducted to assess the compaction effects on typical turfs of eastern Canada. Five mixtures containing combinations of either Merion or Common Kentucky bluegrass with Pennlawn red fescue or Norlea perennial ryegrass were established in the fall of 1962 on a sandy loam soil. Compaction was achieved using a modified aerifier equipped with 16 metal shoes. The two compaction treatments involved 10 or 50 passes by the compaction machine over an area 3 feet wide by 20 feet long. The compaction treatments were applied at various intervals during the year (spring, summer and fall) to simulate varying seasonal compaction affects. Also, evaluated were four renovation procedures which involved combinations of irrigation, fertilization, aeration and vertical slicing. Observations made included evaluations of turfgrass injury, weed invasion, bulk density of the soil, capillary pore space, water percolation rate and quantity of rooting.

Following the compaction treatments the area showed visible wear with the grass becoming brown and eventually thinning. The soil was obviously depressed

as a result of the compaction. Subsequently, the area was invaded by dandelion and common plantain. Seasonal compaction treatments increased the soil density by approximately 6 per cent and reduced the total pore space by 6 to 12 per cent. Compaction also resulted in a reduced rate of water percolation and decreased the total quantity of roots in the upper 6 inches of the root zone.

Eventually, the compaction treatments were discontinued and the area was permitted to recover. Full recovery in terms of density of desirable species occurred within one year. Based on the soil density and total pore space determinations, no significant differences were found one year after the compaction treatments were terminated.

Aeration, vertical slicing, or a combination of the two, increased the rate of recovery from compaction. Merion Kentucky bluegrass recovered more quickly than common Kentucky bluegrass or Pennlawn red fescue. Ten compaction passes per day from July to October reduced the water percolation rate from 10 to 15 fold. *Comments:* The study reported above was conducted on a sandy loam soil. The degree of compaction, in terms of effects on soil density and pore space, would be even more severe on a clay soil. As a result, greater turfgrass injury would be expected as well as a slower rate of recovery. It is

also evident that the turf is capable of recovery if not excessively compacted and if traffic is withheld for a period of time. In colder climates where the soil is subjected to the rigors of winter freezing and thawing, soil compacted can be alleviated to the extent that the soil density and pore space is corrected to the level present prior to the time the compaction occurred.

OTHER REFERENCES OF INTEREST:

1. Ball-bouncing and ball-rolling as a function of mowing height and kind of soil have been studied at Weibullsholm B. Langvad. 1968. (from Weibulls, Landskrona, Sweden).

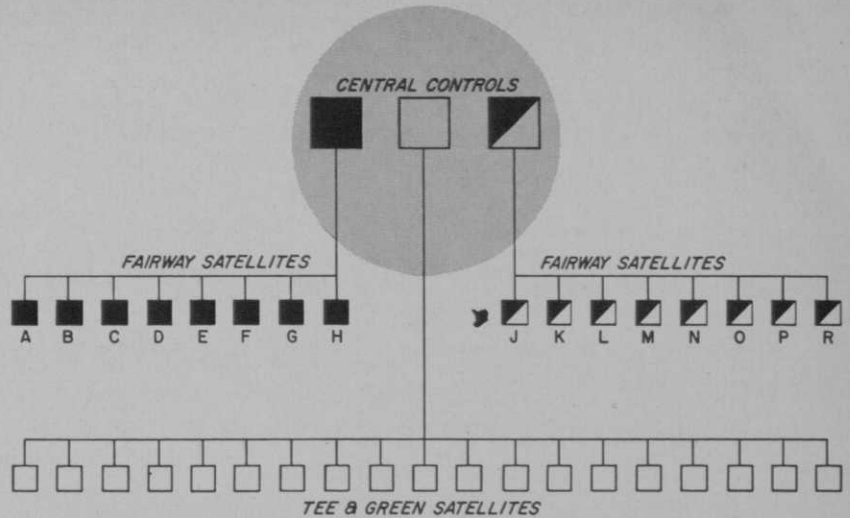
2. Controlled release nitrogen fertilization of turfgrass. C. R. Skogley and J. W. King. *Agronomy Journal*. 60:61-64. 1968 (from the Department of Agronomy and Mechanized Agriculture, University of Rhode Island, Kingston, R.I. 02881).

3. Bahia Grass. G. M. Whitton. *Florida Turf*. 1(2):1-6. 1968. (from the Florida Turfgrass Association, 4065 University Boulevard, North, Jacksonville, Fla.).

4. The effects of temperature and light on vegetative growth. V. B. Youngner. *California Turfgrass Culture*. 18(3):22-24. 1968 (from the Department of Agronomy, University of California at Riverside, Riverside, Calif. 92502).

VARI-TIME® central control system by TORO®

Satellite Controllers connected to one central control allow flexibility of zone control (separate variable timing for each sprinkler head) plus central control of starting times and repeat cycles. Cost is only one to three percent more than conventional zone control system.



Three central controllers located in Superintendent's office or pump house signal an entire golf course or large turf sprinkler system for automatic, semi-automatic or by-pass as required by weather. Central control allows instant changing of watering times and number of cycles for effective soil infiltration. Improves health and vigor of grass.

Toro's sprinkler system saves labor, saves water.

Central control costs only 1 to 3% more than old-fashioned zone control systems.

The cost of turf maintenance labor (*when available*) has risen at the rate of 5% a year for the past ten years. There is no end in sight.

That's why automatic sprinkler systems have caught on so rapidly in the last decade.

But zone control systems still require a lot of manual adjustment, particularly in times of drought or heavy rainfall periods.

TORO'S Vari-Time central control system permits *more-remote* control. True labor-saving automatic control from a central source.

TORO'S water-saving 2-speed gear-driven sprinklers rotate at normal speed in over-

lapping areas, then automatically slow to ½ speed in areas covered by just one sprinkler. This eliminates puddles and run-off in overlapping patterns, saves water costs and smooths out precipitation. The same amount of water is applied in 40 minutes that conventional single speed heads apply in 60 minutes in the non-overlapped areas.

If savings in labor and water costs interest you, call your nearest TORO distributor. (He's listed in the Yellow Pages.) Or write: TORO Manufacturing Corporation, 8111 Lyndale Avenue South, Minneapolis, Minnesota 55420.



Automatic Turf Sprinkler Systems

HIGHLAND COLONIAL BENT

It's easy to find at least 10 good reasons for considering Highland Colonial Bentgrass in your program.

It's one of the most economical of the fine-bladed grasses . . . thrives on close-cutting to 1/4 inch . . . is durable under heavy foot & vehicle traffic . . . thickens and heals scars . . . can be used alone or in mixtures given bentgrass management . . . is excellent for winter overseeding . . . retains good color in cold weather . . . its slow growth rate helps cut maintenance . . . is adaptable to many soils and climates . . . and is a winter-hardy grass . . .

GREAT ON ALL GREENWAYS!

For more information or enough seed to plant a 500 sq. ft. test plot write to:

Oregon Highland Colonial Bentgrass Comm.
2111 Front Street NE / Salem, Oregon 97303

For more information circle number 279 on card

Graffis

Continued from page 58

USGA continues to have superior clubs and courses asking for its championships. Tournament sites for the strictly commercial events are getting tougher to sign up even at increased rents. Private clubs again are the controversy that resulted in George S. May's Tam o' Shanter abandoning the Big Money Tourney initial period when club members complained about giving up play despite their heavy dues. Resort courses are re-evaluating the advertising and prestige elements of the tournaments after the PGA-APG laundry was washed in public.

Think this tournament picture revision is new? When the North and South Open ended after many years at Pinehurst and the tourney was replaced by the North and South Seniors the whole Pinehurst area benefited by millions of dollars of the older golfers who pay for playing golf.

Bert Purvis, veteran pro salesman in upper N.Y. State, and suc-

cessfully handling popular lines, says some pro salesmen are getting same percentage of commission they got ten years ago although percentage of expenses has increased greatly . . . Purvis says PGA Business Schools have a great deal to teach about pro buying, and has the opinion that costs of time and money involved in pro buying may be an extravagance beyond what pro credit risks used to be in the old days before the credit managers got smart and pros became better risks than sports goods stores. . .

When golf business gets to the point of really learning what is efficiency in handling golf course maintenance budgets, it has to focus attention on the figures of the Southern California GA Committee on cost analysis. The committee found that cost percentages hadn't changed much over five years: labor, 70 percent; supplies, 12 percent; water (you know what that is in Southern California), 10 percent; maintenance and repairs, 6 percent; and miscellaneous, 2 percent.

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STOCK MARKET

Sisco and its distributors maintain so much quality material for your convenience, that it's like shopping in a super-market for sprinkler irrigation stock. If you just need a reliable Buckner replacement valve or fitting — fine, we have it in stock. Or, if you need a complete sprinkler-irrigation system, we stock that too! And, we offer you a first-rate design service, backed by over 40 years of experience in turf-grass irrigation. That's where you get extra dividends when you let Sisco raise your stocks.



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Look under BUCKNER Sprinklers in the Yellow Pages



For more information circle number 216 on card

New tractor-rake replaces six men with hand rakes

Now—one man on a Cub Cadet Hydrostatic Drive tractor with an exclusive International sand-trap rake can keep all your traps in top condition—and cut your labor costs.

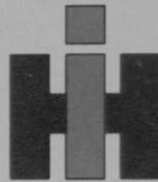
Fifty-four spikes on the front gang rake down to 3½ inches deep to break up rain crust and root out weeds. Rear gangs of serrated paddles do the final smoothing job. Entire 72-inch-wide rake hugs the slope of the trap, right up to the trap lip—rakes at uniformly constant depth all the way. A bare minimum of hand raking may be necessary at very steep or overhanging lips.

A smooth-finished trap, from center to outside, is possible because the compact Cub Cadet tractor turns in such a tight radius. And it floats over the sand on either

single- or dual-tire combinations, depending upon your sand conditions.

Want to mow? Just pull three pins to remove the rake from the tractor's 3-point hitch. Quick-attach the rotary mower for grass grooming around tees and greens.

Only your International dealer has this exclusive sand-trap rake. See him for rake, Cub Cadet tractor details—and a custom-tailored IHCC credit plan.



INDUSTRIAL EQUIPMENT

Wheel and crawler tractors • loaders • backhoes
dozers • forklifts • mowers • special duty tools

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For more information circle number 208 on card

International Cub Cadet Hydrostatic Drive tractor with sand-trap rake.



**Worth more—
when you buy, use, trade**



curse of the

Sound like a Grade-B horror film? The beast can bring in customers, but the dilemma is, at what cost to the condition of the course?

By Gerry Finn

Behold, the ever-wise, but bewitched golf course superintendent. Once again he finds himself in the clutches of a new adversary—a snarling, mechanized monster said to be a distant cousin of the golf car. It wears no disguises. It spares no victim. It is, indeed, a wolf in wolf's clothing.

The great snowmobile rush is a product of the our time. Recreation is now one of man's basic necessities, whereas it once was a luxury. And with recreation came the idea of putting man within easy reach of its facilities in the

dead, forlorn season of winter. So, there was born this chain-driven demon which can run amuck if not properly disciplined.

There is no splitting the verdict in the superintendent's clash with this intrusion on his sacred grounds. He is aware of his underdog status in an attempt to rid his sprawling workshop of the snowmobile. There is none among the profession who can say its invasion of the winter scene hasn't caused some concern in the never-ending program of course conditioning. But the golf course appar-

ently has been designated as a haven for the spiraling-popularized vehicle. It is a natural in this respect. Its potential along these lines is limitless. Barreling through a sand trap . . . skidding over a green. What else could the adventurous spirit seek?

In a recent spot check of the New England area, an obvious mecca for snowmobile activities, 17 out of 20 superintendents expressed strong views in opposition to their use. The minority, too, wasn't that emphatic in the raise of hands. Its position was based on technical conclusions concerning the snowmobile's harmful effects on turf.

Adding to the confusion is the mixed reaction of the golf course



snowmobile

landlord—the club president, board of directors, independent owner and others who control the use of the grounds. For the most part, the financially sound private clubs go along with the superintendent's voice in support of the negative stand. They are oriented to the fact that the problems of the super must not be compounded by risking the occurrence of damage from sources other than Mother Nature.

On the other hand, the economic windfall accompanying the promiscuous use of snowmobiles has prompted certain courses to turn their acreage into booming winter playgrounds. In this instance, it seems the ringing sound of the cash register drowns out the whirl-

ing, grinding roar of the mechanical sleds.

As a matter of fact, it has become commonplace for these enterprising courses to promote the formation of local snowmobile clubs and assume an active part in the organization of a schedule of rallies and races. Packed bars and crowded dining rooms are the desired result. And it works wonders.

With this bonus-plan operation gaining popularity, the superintendent's war on winter wheels finds him losing ground rally by rally. It becomes a case of realistic, business-like outlook by the struggling course owner or the corporation guiding the financial path of a private country club. It stands

to reason that if an owner can develop year-round returns from his investment in the golf course, his mind is going to busy itself trying to lure the snowmobile to his otherwise winter-darkened place of business.

Snowmobile rallies are fast becoming the thing. On occasion they draw as many as 500 hungry and thirsty people to the rallying site. The golf course owner, whose revenue depends as much on whisky and soda as birdies and bogies, is fascinated by the possibility of the big off-season cash register hit. And you really can't condemn such an attitude, especially if the summer before has been one of sweat and scratch.

In addition to these woes, the

Continued on page 108



“Nearly 9,600 pounds-- and not a mark on the turf!”

“I could hardly believe it when they tested a loaded Champion Doo-All Trailer on our No. 11 fairway,” said Steve Zappe, Greens Superintendent at the Springfield (Ohio) Country Club.

“We had about 12 inches of rain in three weeks. The morning before the test, the course was closed because of standing water.

“I let them run the trailer only in the rough at first, then down the edge of the fairway and, finally,

right down the middle. There was not a mark on the turf — you couldn't even tell where the Terra-Tires had passed. My shoe heels were actually doing more damage than the Doo-All loaded with two yards of sand.”

Could you use this gentle work-saver on your course? Models in $\frac{3}{4}$, 1, $1\frac{1}{2}$ and 2 cubic yard capacities, convertible to flatbeds, and all with **Terra-Tires**.

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