

Beard *Continued from page 65*

during this study indicates that the topdressing and cultivation treatments utilized did not give complete control of thatch accumulation. Thus, mechanical removal may be required from time to time.

Observations concerning the occurrence of dry spots as well as water penetration ratings indicate that topdressing, cultivation and liming result in less problems with water penetration. These were the same treatments which resulted in the least amount of thatch accumulation. In addition, cultivation and topdressing improved soil aeration. The degree of improvement in soil aeration was by far the greatest from the topdressing treatment.

Over the 10 year period the highest quality turf resulted from the topdressing treatment. Although cultivation reduced the rate of thatch accumulation, it did not produce a corresponding increase in turfgrass quality similar to topdressing. The cultivation treatments resulted in a certain degree of turfgrass injury which offset the benefits of thatch control. The highest quality turf was produced from the treatment involving the combination of liming, extra nitrogen and topdressing. Although liming and extra nitrogen did not result in a higher turfgrass quality when used alone, there was an increase in turfgrass quality when used in combination with topdressing.

Under the conditions of this test, the wetting agent did not produce any definite improvement in turfgrass quality. The wetting agent did give some improvement in water penetration through dry spots but was only temporary and did not provide a long term solution to the problem. The extra nitrogen treatment resulted in a decrease in dollar spot while the topdressing treatment increased the incidence of dollar spot. The annual bluegrass composition of the bentgrass turf appeared less on the topdressed turf. In general, good overall turfgrass quality was associated with a low organic matter content at the surface and a good moisture relations. □

HERE'S WHY YOU SHOULD ADD MARS' ONE-MAN GOLF CARS TO YOUR FLEET...



You're missing out on some easy revenue if you don't have Mars one-man golf cars available for rental. Singles, threesomes, and fivesomes are a source of income which you might now be losing.

Mars "BUZZ-A-ROUND" one-man golf cars rent profitably for half of what you have to charge for a 2-man car. Makes it easier for the odd man to justify riding instead of hitch-hiking.

Mars "BUZZ-A-ROUND" electric car big battery capacity provides a full 36 holes on one charging under normal conditions. Put that income in the old till every day!

8 years' research and 6 years' service on the nation's courses have produced the '68 "BUZZ-A-ROUND". Rugged, lightweight...and engineered for long, trouble-free service.

Leasing programs available in some areas. Write for complete descriptive literature.



**"BUSIEST EARTH BUZZERS
ARE FROM MARS"**

MARS INDUSTRIES INC.

5209 W. Broadway • Minneapolis, Minn. 55429

For more information circle number 226 on card

Cooper Champion

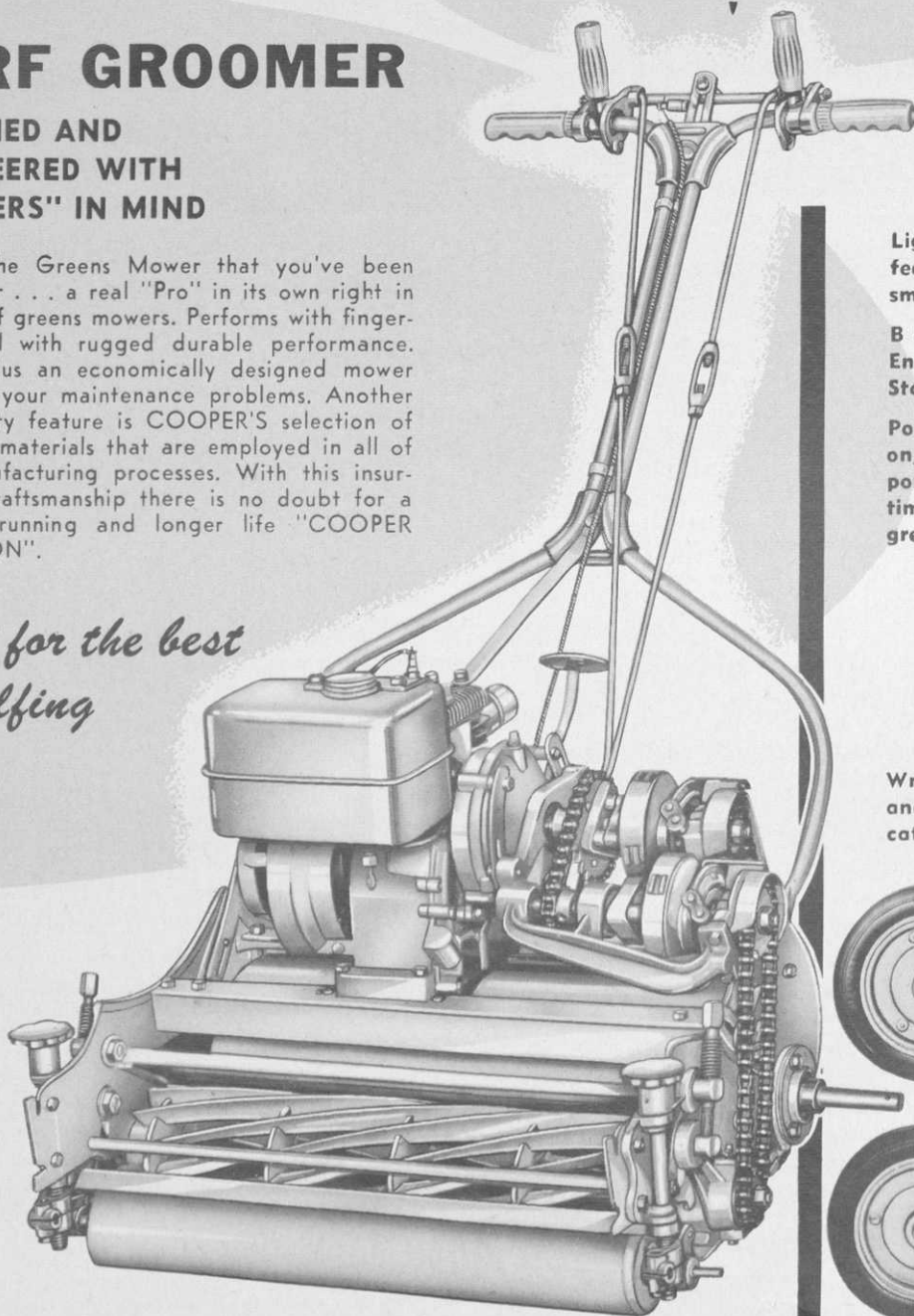
GREENS MOWER
FULL 21" CUT

TURF GROOMER

DESIGNED AND
ENGINEERED WITH
"GOLFERS" IN MIND

Here is the Greens Mower that you've been waiting for . . . a real "Pro" in its own right in the field of greens mowers. Performs with fingertip control with rugged durable performance. All this plus an economically designed mower to reduce your maintenance problems. Another high quality feature is COOPER'S selection of top-grade materials that are employed in all of their manufacturing processes. With this insurance of craftsmanship there is no doubt for a smoother running and longer life "COOPER CHAMPION".

*Built for the best
in golfing*



Lightweight with perfect balance for smoother cutting.

B & S 3.00 HP 4-cycle Engine with Recoil Starters.

Power driven, quick-on, quick-off transport wheels — saves time from green to green.

Write for literature and detailed specifications.

COOPER MANUFACTURING CO.

422 SOUTH FIRST AVE. MARSHALLTOWN, IOWA, U. S. A.

For more information circle number 225 on card

WHATEVER THE JOB...

Miller has a team of irrigation specialists to perform it . . . Expertly! Where ability and reliability count most in sprinkler irrigation systems . . . that's where you will find the Miller team. Miller has four groups of specialists that embody a total capability in the field of sprinkler irrigation . . . In short . . . the works!

THE TURF SUPPLY DIVISION, Sprinkler Irrigation Supply Company, is well known in the industry as Sisco. It is a veritable super market for sprinkler irrigation supplies . . . Top quality products manufactured by leaders in the industry. Sisco and its dealers stock a broad range of these products because they know that one system can't solve all problems.

THE CONTRACTING DIVISION, Miller Sprinkling Systems, is unique in this industry. Each important phase of an installation is handled by specialists with years of experience . . . backed up by the most extensive line of specialized irrigation installation equipment known in the industry.

THE AGRICULTURAL DIVISION of Sprinkler Irrigation Supply Company sells, services and installs aluminum portable pipeline systems and mechanical move sprinklers.

THE DESIGN DIVISION, Irrigation Design Associates, brings 40 plus years of experience to bear on design problems and tailors irrigation systems to customer needs.

THE RESULT: Irrigation systems engineered and guaranteed to give you the best possible water distribution, with maximum dependability and minimum operating expense.

Contact Miller today and find out what sprinkler irrigation can do for you!

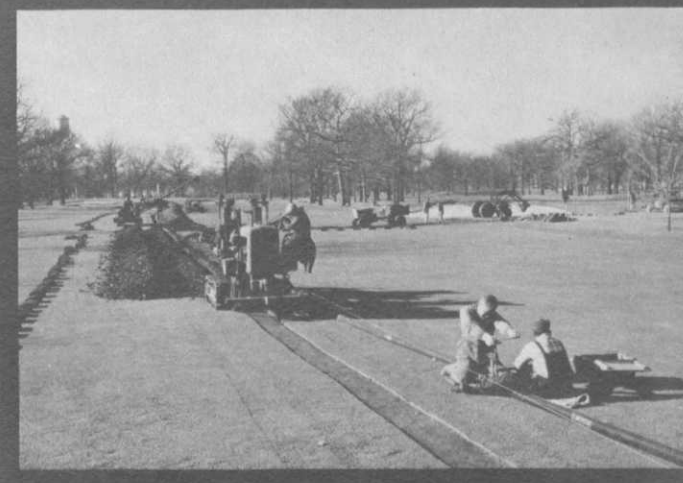
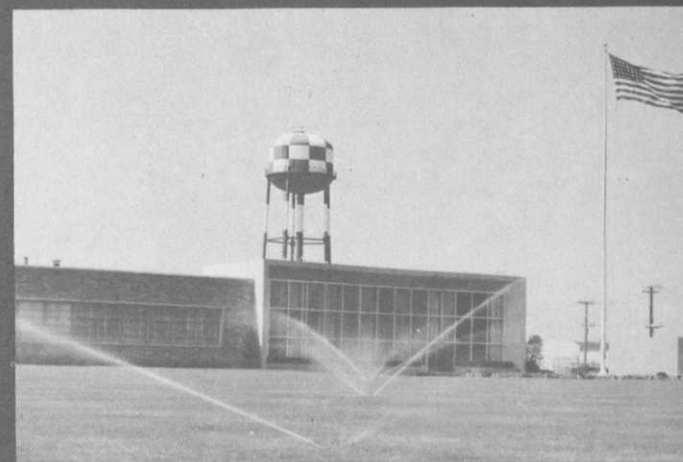


Sprinkler Irrigation Supply Co.
(313) 548-7272
Miller Sprinkling Systems
(313) 398-2233
Agricultural Division
(313) 548-7272
Irrigation Design Associates
(313) 398-2233

Turf Irrigation: Golf Courses, Industrial, Commercial, Civic, Residential
Agricultural Irrigation: Food Production, Frost Protection, Sod Production
Waste Disposal: Food, Industrial, Sanitary Waste Processing
Portable Pipelines: Dewatering, Temporary Water Lines



We install and supply
Buckner and Johns-Manville materials



Put a charge in your golf car operation

By Don Wilson

President, Lester Equipment, Los Angeles, Calif.

Optimum results in the operation of battery powered golf car rental fleets are achieved only through a balanced blend of proper golf car facilities, good personnel maintaining the golf cars and good maintenance.

FACILITIES

While it is realized that many golf courses already have a heavy investment in existing facilities which cannot be modified immediately, it should prove helpful to outline optimum facilities for those that can be improved, and for any new construction. Proximity of golf car storage and maintenance area in relation to the first tee or pro shop and nature of the facilities are of almost equal importance. Proximity assumes much greater importance than suspected when considered in terms of most productive use of key personnel time. In many courses, the distance between the two points is so great that key golf car personnel spend an inordinate amount of their time making up mule trains to tow the cars to the rental point, breaking down the train, and returning to the storage area to repeat the procedure. As a result, the golf car personnel have too little time for vital preventative maintenance of the cars and proper battery care. Many golf courses put emphasis on getting the cars up to the rental point regardless, and too little importance is placed on maintenance.

For year-round operation, in climates which experience a wide range of nighttime temperature

Utilize proper facilities, quality personnel and good maintenance to boost your fleet's effectiveness

extremes, an enclosed car storage area is a good investment. Location of this storage area underneath the pro shop has become extremely popular in the past three years because, subject to terrain limitations, it offers economy of both available space and construction costs. As a by-product, this arrangement provides warmer climate for the cars in the winter and cooler temperatures in the hot weather. However, the layout of car storage, charger mounting and installation of electrical outlets for the chargers should be considered carefully within these following guidelines:

1. For the long daylight hours of late spring and early summer, the parking of cars should permit "last-in, last-out" operation without the maneuvering of a large percentage of cars. Access to exit doors in this storage area is naturally a very critical factor.
2. Chargers should be preferably mounted above the cars on shelves or hung from hooks in such a manner that the golf car man has easy access to the charger controls and charger ammeter visibility without climbing all over the cars or ascending a step ladder. In such an arrangement, it should be possible to gain access to all the battery terminals while the batteries are still on charge, even with Surry tops.
3. For flexibility in permitting increase of the fleet or temporary additional leased cars

for tournament purposes, the optimum electrical installation employs ducted AC busses routed strategically throughout the car storage area. Additional circuit breakers with outlet receptacles for charger plugs can be inserted readily in such ducted busses when additional outlets are required. In electrical system design, allow for 15 amps minimum per outlet and circuit breakers of not less than 15 amps per single charger outlet.

4. In one section of the storage area, allow for a work area with air compressor, work bench, drive-up ramp for work to be performed underneath cars, water outlet for hose attachment and good drainage facilities.
5. Provide good cross-ventilation in the car storage area in such a way that it can be reduced in cold weather.

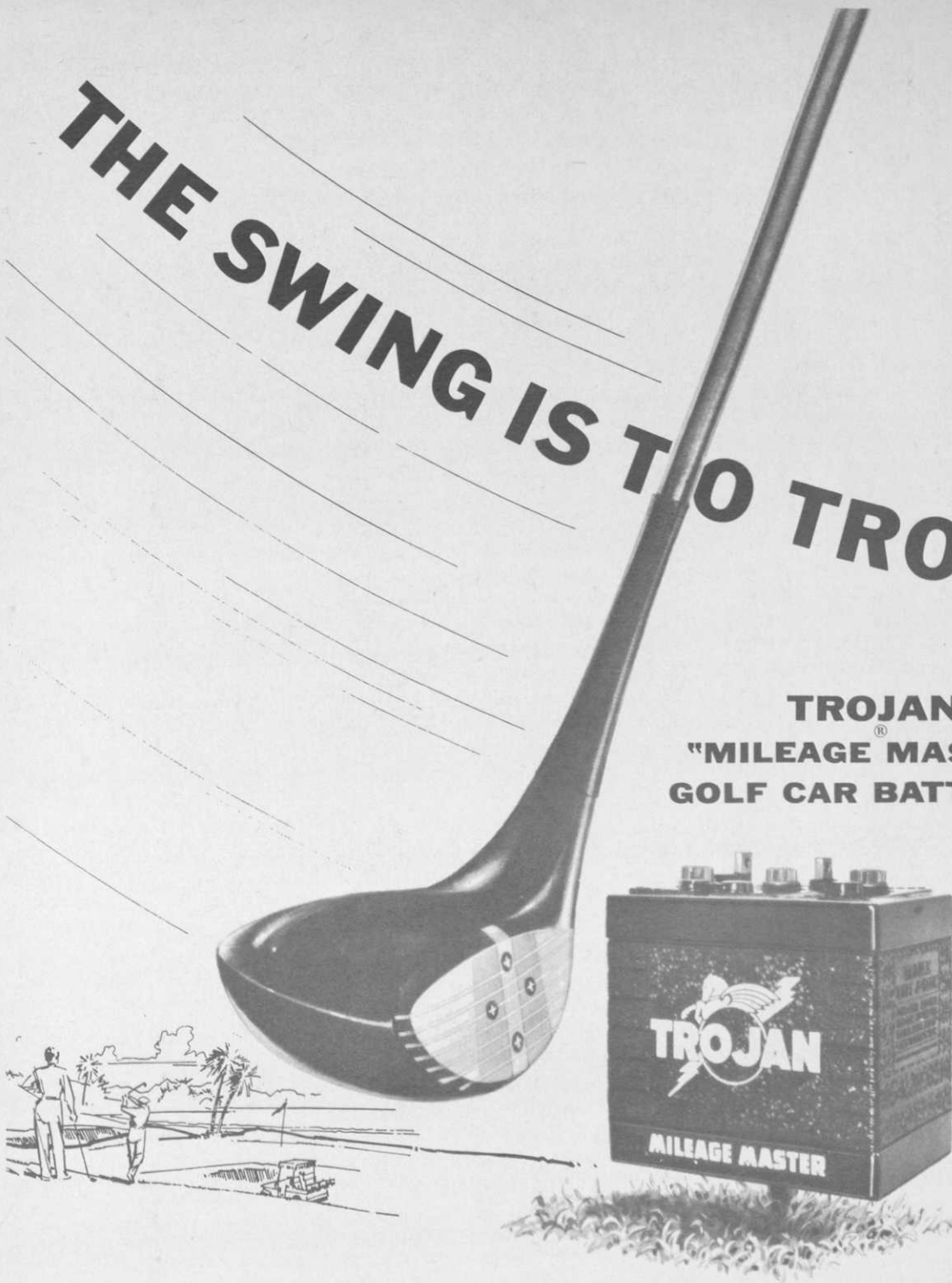
PERSONNEL

As in every well-run business operation, personnel is one of the most important factors of success. Most country clubs and golf courses have overlooked the importance of this factor to an amazing extent. Too frequently, the golf car attendant is assigned the additional duty of gathering up balls on the driving range. When such a person is paid too little, he is often found playing "bag-boy" for the tips he can garner. The tendency to assign golf car maintenance responsibility to the junior or apprentice

Continued on page 86

THE SWING IS TOO TROJAN

TROJAN[®]
"MILEAGE MASTER"
GOLF CAR BATTERIES



More driving power . . .

Lower maintenance cost . . .

Proven dependability over years of rugged service . . .

is why more and more of the country's leading golf courses prefer
Trojan Mileage Master Electric golf cart batteries.

TROJAN BATTERY COMPANY

724 East 61st Street • Los Angeles, California 90001

For more information circle number 195 on card

golf car operation

Continued from page 84

pro has merit only as part of his training.

The fallacy of these past and present practices becomes readily apparent when a financial analysis is made of the capital investment and the income potential from an optimized operation. Such analysis should take into consideration refunded rental fees resulting from enroute failures on the course, cost of preventable or reducible parts and battery replacement, and potential lawsuits that might arise from possible accidents attributable to poor maintenance. The most progressive country clubs have confirmed the wisdom of hiring a good key man, paying him well, and according him a position of stature.

At least one manufacturer of golf cars holds maintenance clinics in strategically located cities throughout the United States and also operates at its plant a one week detailed training course for those who can arrange to attend. A club with more than 50 cars could easily justify the transportation and daily living expenses of their key golf car man for participation in such a training course.

MAINTENANCE

As a generalization, the batteries are probably the most mistreated parts of the electric golf car. This may be due to the fact that previous exposure of most people to lead-acid batteries is limited to their automotive experience.

However, the design and manufacture of batteries for golf car use is different from automotive types to provide good life under the more severe operating requirements in repeated deep discharge cycling. As a result of this more severe duty cycle, proper battery care is of critical importance. At a recent session of the American Golf Car Manufacturers Association Technical Advisory Committee, battery manufacturers reported that a large percentage of the

short battery life cases were due to excessively deep discharge of new batteries and insufficient charge during the long daylight hour days of the year.

This report of the battery manufacturers emphasizes the importance of charging new batteries and older batteries which have not been used for a month or so before they are sent out on the course and limiting the use of new batteries to 18 holes between charges for the first five cycles. It also lends credence to the recommendation for a car storage area layout which permits last-in, last-out operation and points up the importance of rotating cars in use.

In proper care of golf car batteries it is exceedingly important that batteries be checked for water level every week and water added as necessary after they have been charged rather than when they are in a discharged state. The one exception to this rule applies only when electrolyte level is below the plate separators. In that case, water should be added to cover the separators and watering completed after they are fully charged. Overfilling cells causes loss of acid, not just water, decreasing the specific gravity and thereby reducing available battery power very markedly. When batteries are brand new they appear to need additional water very infrequently, but don't be misled by this initial experience. After they get cycled-in and start aging, water requirement increases steadily throughout their remaining useful life.

Some fleet operators have been guessing the number of hours for timer setting according to the number of holes the car went instead of following the instructions furnished with the charger. In many such cases this has been a cause of shortened battery life. With the newer types of chargers which compensate automatically for AC supply voltage, the initial charge rate into lightly discharged batteries is relatively low and this charge rate tapers more rapidly than with deeply discharged batteries. However, the specific gravity of the electrolyte rises

more slowly under the charge pattern and hence the full charge time is necessary for a full charge with equalization of cells. When all 18 cells of a 36 volt golf car show equal and normal finish charge voltage, overcharging at the low finish rate is preferable to undercharging.

The ampere-hours of power that batteries can deliver and receive from the charger varies directly with the electrolyte temperature. Hence, in periods of cool or cold nights, the cars should not be sent out for as many holes as they go in warm weather. In addition, the cars should be put on charge as soon as they come off of the last rental while the electrolyte is warm and they should be given a 4-6 hour equalization charge once a week.

Batteries and their hold-down devices should be kept clean and dry at all times. Be sure that the charger is "off" whenever inserting or removing the charger plug in or from the car. It is good practice to turn every charger on when first opening the car storage area in the morning to ascertain which cars taper down below five amps within 15 minutes. The ammeter should jump up to a high reading initially tapering steadily to a point below five amps. Those that do behave thusly have been fully charged and should be good for 36 holes. Those that don't taper down should be given additional charge until they do taper down to below three amps without the batteries getting exceedingly hot. The number of cycles (discharge-charge) available from a set of batteries varies inversely with the depth of discharge between charges. Thus, if cars are run 45 or 54 holes between charges, a reduced number of cycles life can be expected versus 36 holes between charges.

Lastly, in field experience it has been noted that battery powered golf cars are being used more intensively than previously. In a more intensive operation a lesser number of months of battery life should be expected, but the net income of a fleet operation should be higher. □



**Fleet
Operations
Officer?**

**Now
hear
this...**

Now you can reduce your golf car maintenance man-hour overhead / save on battery replacements / cut your losses and increase your fleet-operations profits.

Because...

POWER WATCH is the first solid-state, fully automatic battery charger. Built-in circuit breaker; no moving parts. Fully guaranteed. Safe.

POWER WATCH is easy to operate—so simple it is duffer- and fool-proof. No timers or charge-rate controls to set; no hydrometer needed. (Eliminates necessity to measure battery condition before charging.) All this means lower-cost, unskilled help can handle!

POWER WATCH brings batteries back to full life, safely, automatically—after deep-cycling, golf car drain.

POWER WATCH monitors battery energy and keeps batteries at peak power. No battery electrolyte "boil-off"—no under- or over-charging. Power Watch increases total battery life.



*This is it!
POWER WATCH—the finest, most
versatile charger/monitor
designed and engineered for golf
car batteries. Compact: 6½" x
7½" x 11½" — 24 lbs.*

*Further details, features and specifications are covered in our reply
to your inquiry. Write, telephone, or send Golfdom Reader Service Card.*

All American Engineering Company

Commercial Products Division, P.O. Box 3126, Wilmington, Delaware 19804 Telephone: (302) 999-0576

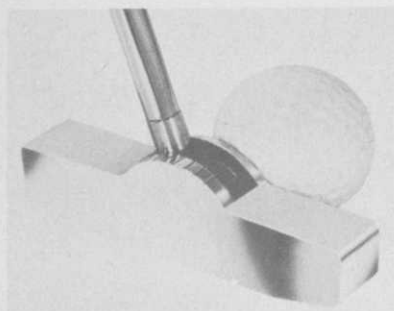
For more information circle number 172 on card

New products



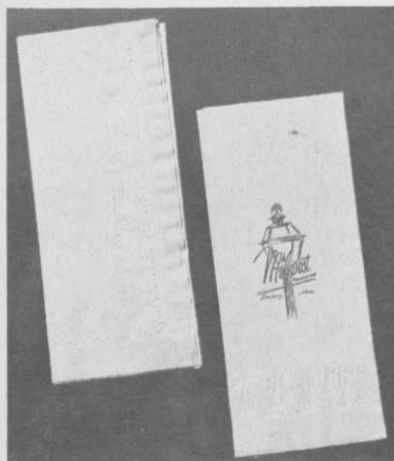
Turf-Vac introduces a hand-held vacuum hose designed for use with the Turf-Vac GPU grounds sweeper. The hose is six inches in diameter, 10 feet long (longer lengths available on special order) and is made of steel-lined fiber.

For more information circle number 127 on card



Northland's Gifts offers Select-A-Putt, a putter that can be adjusted to almost any angle, used right-or left-handed. It comes in standard 34" length and has an unconditional money back guarantee. Price: \$19.95 postpaid.

For more information circle number 101 on card



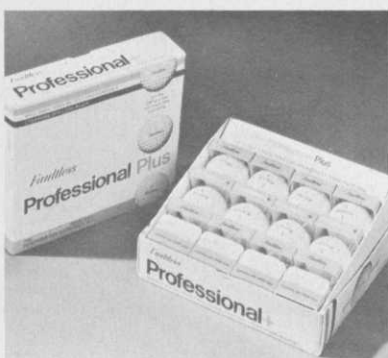
Smith-Lee Co., Inc., introduces a 20" x 17" four-ply dinner napkin embossed with the traditional eagle. Available in white and gold, plain or print.

For more information circle number 102 on card



Smithco, Inc., announces two new two-wheel vehicle trailers which have a capacity of 16 cubic feet and 23 cubic feet, respectively. Both have ramp-type tail gates and hitches that will fit most mobile carriers.

For more information circle number 103 on card



Faultless Rubber Co. introduces Professional Plus, a higher velocity, one-piece ball tailored for tournament play. According to the manufacturer, it is cut-proof, scuff-proof and has solid ball accuracy. Retail: \$1.25.

For more information circle number 104 on card



United States Ceramic Tile Co., has introduced new spicy "earthtone" for their mosaic tiles. These unglazed tiles are durable and slip resistant. Patterns are available in "Indian red," "cork tan," "chestnut brown," "bamboo," plus a matte glazed "ivory." All tiles provide years of low-maintenance service, as well as distinctive colors that won't fade or deteriorate, according to the company.

For more information circle number 105 on card



Eastern Sambar, Inc., imports and distributes Sabaru Sambar, light (under 1,000 lbs.) maintenance truck. Features include wide space cargo bed, side gate, independent suspension, turning radius of 13.1 feet and rear engine. Price: \$1,395.

For more information circle number 106 on card



John Deere & Co. offers two backhoes, the 9250 and 9400, which have faster cycle times, more strength, deeper digging depths and new bucket designs, according to the manufacturer. The 9250 is an IEMC-rated, 13½-foot backhoe, designed for the JD300 and JD400 loaders. Specifications include a 2,000-pound vertical load lifting capacity, a 6,750-pound digging force and a 180-degree arc swing. The 9250 features an automatic hydraulic swing brake, hydraulic hoses routed inside the boom, a dipperstick and a choice of nine buckets, ranging from 12" to 36" and from 1.6 to 7.2 cubic foot capacity.

For more information circle number 107 on card

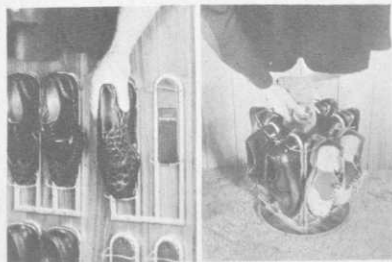
York Modern Corp., has designed a landscape rake that combines rake, scarifier and grading blade. Designed for use with any tractor having a standard three-point hitch and extra hydraulic valve control package, the "professional" model reportedly enables users to complete more earth-working projects in less time and with less effort.

For more information circle number 108 on card



Courier Communications, Inc., introduces a five-watt, six channel hand-held CB transceiver. The CWT-50 features three advanced integrated circuits with 15 transistors, antenna with power-boost loading coil, diecast metal enclosure with separate mike and speaker, variable squelch, battery indicator, RF-power meter and optional AC power supply for conversion into a base station. Weighing 2 3/4 pounds, it comes equipped with earphone, hand and shoulder straps.

For more information circle number 109 on card



Allsop Automatic, Inc., manufactures the Shoe-In line of shoe trees. The Traveler holds a pair of shoes, comes in black or white and retails for \$5. The Valet, a wall tree, retails for \$5. The four-unit Lazy Susan is 14" high and contains a storage compartment for polishing gear. Price: \$25. Also available is a vinyl carrying bag in black, red or beige which retails for \$6.

For more information circle number 110 on card

Simplicity Manufacturing Co., has developed a new rotary trailing grass mower which combines the work of three machines. The new mower combination unit includes, one Simplicity Landlord or Sovereign tractor, containing a 48" rotary mower, pulling two 48" trailing mowers.

For more information circle number 111 on card

Continued on page 90

"The highest income producing facility in which any golf club owner can invest."

Robert Beard President,
Lakeside Golf & Golfomat Club, Fort Wayne, Indiana

GOLFOMAT®

An ingenious electronic simulator permits actual play on world famous courses, indoors, day and night, 12 months a year. Player hits regulation, free-flying ball; uses every club in the bag.

Let us prove to you—with facts—that GOLFOMAT can produce a net profit equal to or exceeding net profit from a regulation course.

WRITE TODAY for your free copy of a full-color case history brochure documenting the profitability of Golfomat at Lakeside Golf and Golfomat Club.

GOLFOMAT

41 West 56th Street • New York, N.Y. 10019 • Phone 212 582-6040

For more information circle number 239 on card

TEE BIRD

ELECTRIC!

Quiet, clean,
low cost
operation.



SIMPLE TO MAINTAIN...

No complicated,
expensive,
electronic
controls.

SOLID ENGINEERING!

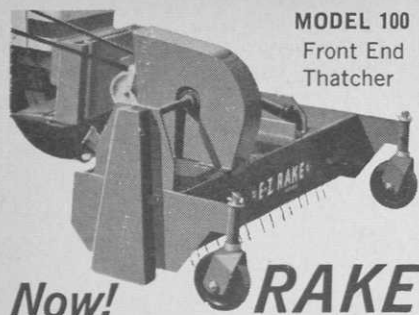
Built to last...
like Taylor-Dunn
industrial vehicles.



TAYLOR-DUNN

2114 W. Ball Rd., Anaheim, Calif. 92804
(714) 535-6021

Dealer inquiries welcome...
regarding valuable territories.



MODEL 100
Front End
Thatcher



MODEL 40
Vacuum
Sweeper

Now! RAKE
**MOW-
VACUUM**
In One Operation!

SEE YOUR TRACTOR DEALER OR
WRITE:

E-Z RAKE Inc.

P. O. BOX 295
LEBANON, INDIANA 46052

For more information circle number 207 on card

New products

Continued



Warn Mfg. Co. adds to its line the Model 800 Portable Winch. Weighing 21 pounds, it pulls with a strength of 800 pounds on a single line, is belt-driven and pulls 17 feet of line a minute. Powering the winch is a one hp, two-cycle gasoline engine.

For more information circle number 112 on card

Gold Crest, Ltd. has created a three-dimensional gold and silver bullion initial alphabet crest—an added sales item for the pro shop. Both men's and women's styles are available in standard crest size and a smaller 1½" by 1½" size. The woman's crest is studded in pearls, and the smaller size can be worn on sweaters. The man can order his initial in sweater or cap size also. These crests now can augment present sales of your country club crest.

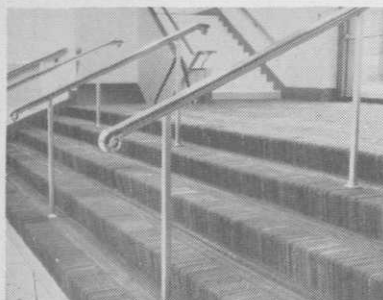
For more information circle number 113 on card

Bunton Company, Inc. has announced an optional attachment for its heavy-duty, self-propelled, rotary power mowers. The attachment features toe-touch, instant hitch, which allows the operator to attach or detach without tools or bending over. It also features foot operated brakes.

For more information circle number 114 on card

Atlantic Headware Co., Inc., offers a soft, waterproof and shrinkproof hat, the All Weatherbird. Made of cotton poplin, it retains its shape whether it is washed or rolled. Colors available: natural, olive, light blue, maize, navy and black.

For more information circle number 115 on card



GUARANTEED THREE YEARS AGAINST ALL TRAFFIC!
HANDSOME, LASTING FLOORCOVERING
ECONOMICAL TO INSTALL—MAINTAIN

FUTURUS GOLF CLUB CARPETILE



Check FUTURUS with ALL others:

- ☐ Absolutely SAFE and SKIDPROOF—wet or dry.
- ☐ HIGHLY RESISTANT to heavy spike shoe traffic.
- ☐ Women's spiked heels DO NOT penetrate its surface.
- ☐ NOT AFFECTED by exposure to fresh or salt water.
- ☐ EASILY INSTALLED by anyone—Cleans readily.
- ☐ Indoors or Outdoors—completely WEATHERPROOF.
- ☐ Neutral color tones BLEND with any background.
- ☐ STAIRWAYS—Safest, Most Durable of All.

Made from selected nylon cord heavy duty tires—buffed to chenille-like finish. Strips ¾" thick are bound to glasscloth impervious to moisture... then cut to 12"x12" tiles. Used successfully throughout the country for other recreational and commercial purposes.

For further information, prices—and USER-PROOF of FUTURUS Carpetile service satisfaction—write:

FUTURUS, INC. 1076 West Ninth Street
Upland, California

U.S. Patent No. 3,352,733

For more information circle number 200 on card