

sity approved a new Toro irrigation system to give Dickerman better control over soil moisture in the shallow portions of the field.

Dickerman also wanted to combat soil alkalinity. He added a small pump that could inject fertilizers and wetting agents into the irrigation system and installed a network of french drains. "I wanted to flush the salts out of the soil periodically by using irrigation water containing wetting agents," he explains. "The Santa Ana could tolerate the alkaline soil better than the common bermuda, but we also overseed with perennial ryegrass for the Fiesta Bowl. I didn't want alkaline soil hurting the germination or establishment of the ryegrass since we never have more than two to three weeks between home games in the fall to overseed." Gypsum is also spread on the field to amend the soil.

Dickerman would prefer not to overseed. "The Santa Ana rarely goes dormant here," he explains. "We found that spraying the turf with charcoal suspended in water keeps the soil warm during the fall and winter." The black granules absorb sunlight to build up a reserve of heat in the soil during the night. He experimented with pregerminating the ryegrass before overseeding, but decided that he got a denser stand of ryegrass just as fast by applying charcoal. "To apply the pregerminated seed you have to mix it with sand. The sand granules are abrasive to the soft, wet seed and can damage it."

When night temperatures fall below 60 degrees F. in the fall the field is covered at the end of a day with a tarp that is dark on one side and light on the other. "The dark side absorbs the late afternoon sunshine and keeps soil temperatures up overnight," explains Dickerman. "This helps the overseeded ryegrass germinate quickly." Conversely, the light side of the tarp reflects heat when the field needs to be covered during the day.

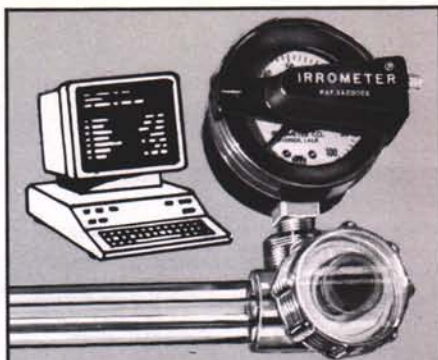
The field is overseeded in October with a blend of Derby, Regal and Allstar perennial ryegrasses. "We wait until the team has two away games in a row," states Dickerman. "First we scalp and verticut the field with a Toro triplex. We pick up the thatch and stems with a Turf Vac and go over the field with an Olathe sweeper to pull out any remaining debris. This opens up the Santa Ana so we can broadcast the ryegrass evenly over the field. We continue to broadcast seed before games during the rest of the season to let the players work the seed into the soil."

The aggressive hybrid bermudagrass produces thatch, so Dickerman implemented a regular program of aerifying, verticutting and topdressing. This is done every four weeks between May and October. The field is heavily aerified, verticut and topdressed before overseeding and a second time after the Fiesta Bowl. "Since the field is used for mud bogs, motocross and other events (the Pope held a mass in the stadium this past September), we also aerate after those,"

continued on page 22

of a new spirit of cooperation between the athletic department and the physical plant department brought about largely by the Fiesta Bowl. Both the university and the Fiesta Bowl were receiving national attention as teams from football conferences across the nation came to Phoenix to play the Sun Devils. Columbia Broadcasting System (CBS) was interested in televising the game, usually held a day or two before Christmas. ASU created a public events department to help handle the details of the Fiesta Bowl and to attract other events to the stadium.

By working together, the three departments were able to generate the support needed to finance the field improvements. When CBS finalized its agreement in 1973 with the Fiesta Bowl to start broadcasting in 1974, ASU quickly decided to rebuild the field as Dickerman had suggested. In addition to the new soil and sod, the univer-



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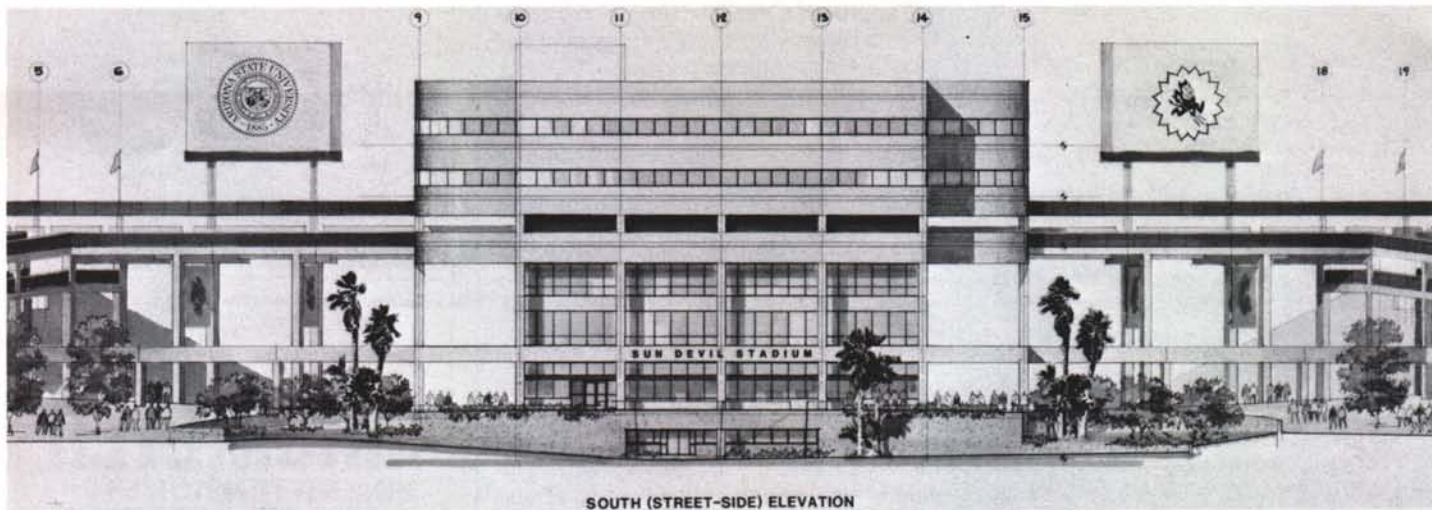


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SOUTH (STREET-SIDE) ELEVATION

The seven-story expansion on the south end of Sun Devil Stadium to constructed this winter will consolidate athletic department offices now spread across campus and include a sports medicine clinic, conference center, weight training center, classrooms and 1,700 more seats.

Sun Devil Stadium

continued from page 21

Dickerman adds.

Dickerman is not embarrassed to admit he uses green paint to prepare the field for a televised game. Ken Rosenbaum, who does all the field marking and painting for the athletic department and is also in charge of ASU's Packard Baseball Stadium, takes care of painting Sun Devil Stadium. "Three days before the Fiesta Bowl, Ken sprays the field with a mixture of water and green paint that contains chlorophyll," describes Dickerman. "The paint colors the thatch and any damaged or dieing turf. We mow the field before the game to give it a striped appearance. Ken touches up the lines and paints the emblems the day before the game."

The week after the game, Bob Schwietzer, lead groundsman at the stadium, verticuts deeply to break up the paint in the endzones and emblems. "Painting the field is a major decision," states Schweitzer. "It takes the cooperation of all three departments involved at the stadium. You don't paint unless it makes sense. Last year, when Miami played Michigan, everything had to be perfect, so we painted. This September we covered the field with geotextile and plywood for the Papal visit. The Sun Devils had

a game four days later. It was hot and the bermudagrass was almost yellow when we uncovered the field. We had to paint."

In 1978, the success of the Sun Devils and the Fiesta Bowl led to a series of changes. Athletic Director Dr. Fred Miller believed the Sun Devils had outgrown the Western Athletic Conference. Instead of playing the U.S. Air Force Academy, Brigham Young University, Colorado State University and San Diego State, Miller felt the Sun Devils should put their strength on the line against the football powers of the Pacific-8 Conference. He was willing to put ASU's football program up against the University of California-Los Angeles, Stanford University, Washington State University, Oregon State University and the University of Southern California. To him it was the next step for the Sun Devils.

Changing conferences meant changing the Fiesta Bowl. If the Sun Devils became the champions of the Pac-10, the new name of the conference after the University of Arizona and ASU switched, they would play in the Rose Bowl, not the Fiesta Bowl. The Fiesta Bowl staff had anticipated such a move by ASU. Its contract included a release clause which allowed it to invite a second "at-large" team to replace the Sun Devils. Now the Fiesta Bowl had to compete with

the Orange Bowl, Rose Bowl and other major bowl games for the best college conference champions.

While Sun Devil Stadium became the host for the football powers of the Pac-10, the Fiesta Bowl succeeded in attracting highly ranked teams from other conferences. Within a short period of time, Sun Devil Stadium was launched into national prominence. Producers of other events wanted to book the stadium. ASU's events department grew steadily to meet the demand.

"Motocross, mud bogs and concerts were a big change from football," remarks Dickerman. "We had to cover the field with geotextile and plywood. We dumped hundreds of yards of dirt on top of that for motocross and mud bogs. Afterwards, we'd have to fix depressions made in the field, patch areas with sod and aerate heavily to get the field back in shape. It wasn't the kind of thing university stadium groundskeepers normally do."

Arizona State High School football semifinals and finals have been held at Sun Devil Stadium for years, as have the state high school band championships, but now its scope of events was changing. The city of Phoenix wanted a professional football team and Sun Devil Stadium was the only facility capable of handling one. When the United States Football League (USFL) was launched, Sun Devil Stadium entered professional sports as the home field for the Wranglers.

The short life of the USFL Wranglers may have been just a glimpse of the future. "The university places some important restrictions on the use of Sun Devil Stadium," explains Tom Sadler, event coordinator. "One of them is no alcoholic beverages." Restrictions like these can complicate matters for a professional football team that relies on concession revenues for operations, especially a young expansion franchise.

Although the National Football League has yet to form a committee to consider expansion teams, Bart Star, former quarterback for the Green Bay Packers, who lives in Scottsdale, is leading a campaign to get

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a NFL franchise for Phoenix, and visits Sun Devil Stadium as many as three times a week. Star has not publicly stated whether he would prefer a future team to play at Sun Devil Stadium or a dome stadium proposed for downtown Phoenix.

Meanwhile, the university is going to break ground this winter on a multi-million dollar expansion for the south end of Sun Devil Stadium. The seven-story structure will contain the ASU athletic department offices, a large weight training center, a sports medicine clinic, classrooms, locker rooms, coaches offices, a conference center, an ASU Hall of Fame, and outdoor loges facing into the stadium. The expansion will add 1,700 seats to the 72,000 at present. Two new scoreboards will also be installed, one with an instant replay video screen. The expansion will provide the university with one of the most complete stadium sports facilities in the nation.

A center of this quality could serve as a lure for a future professional football team. "The expansion on Sun Devil Stadium was not designed with a professional football team in mind," says Jason Eslamieh, design project manager. "However, there is plenty of room for offices if a franchise did want to use the facility."

"We are going to partially rebuild the field at the same time," states Dickerman. "Years of use have worn down the crown. After the Fiesta Bowl, we are going to remove the

sod and rebuild the crown." New Santa Ana sod has been ordered and will be installed by May.

Dickerman believes that a total overhaul of the field will be necessary if the stadium is chosen by a new NFL franchise. "It's possible that a stadium commission will take over Sun Devil Stadium and lease it back to ASU and a professional football franchise." If that happens, Dickerman thinks the commission should install a PAT System so the field can withstand a busier event schedule. "That would solve the problems with alkalinity, poor drainage and irrigation." A stadium authority would also remove some of the restrictions on the facility and make it more attractive to event producers.

Although Dickerman, as assistant director of physical plant, has much more on his mind than the stadium field, he stays involved. Standards he implemented for the field are still followed closely by David Webb, campus grounds manager and Schweitzer. The soil is tested every six weeks for nutrient levels. "The fertilizer is adjusted to the soil test results. We increase potassium levels in the fall to boost winter hardiness and phosphorus levels in the spring to help the bermudagrass root system," Dickerman says. "We supplement the granular slow-release fertilizer with some nitrogen, iron, soil penetrant and micronutrients injected into the irrigation system."

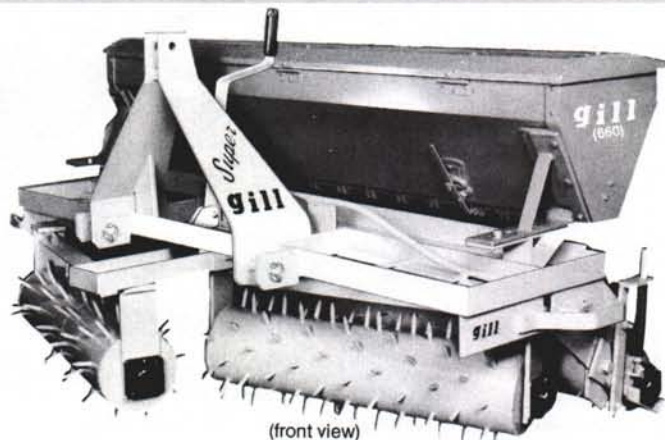
"ASU covers 850 acres and has 43,000

students," explains Webb. "We maintain two baseball stadiums, two football practice fields, two band practice fields and acres of intramural fields." Much of the campus is designed with desert landscaping, but the athletic facilities are irrigated (both automatic and flood), overseeded, aerated and top-dressed regularly. "An 18-hole golf course and driving range are on the drawing boards," Webb adds.

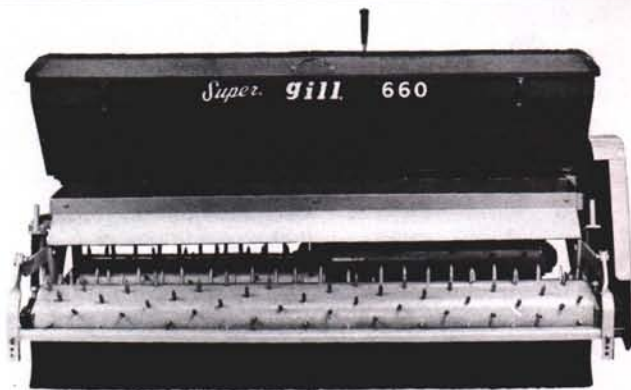
It may be impossible to attribute the phenomenal growth of the university to a stadium that was built almost 30 years ago, a very successful football program, three university departments working closely together and the Fiesta Bowl. But last year, it all paid off. The Sun Devils captured the Pac-10 championship and defeated the University of Michigan in the Rose Bowl. The Fiesta Bowl was able to arrange a "college superbowl" between the number one ranked University of Miami and number two ranked Pennsylvania State University. The game was telecast in prime time on January 2 giving ASU and Sun Devil Stadium exposure the trustees could never have imagined possible.

"If those two buttes were just a little further apart, Sun Devil Stadium could have been wide enough for baseball," said expansion project manager Eslamieh. It would appear that ASU has every intention of keeping its sports program a driving force for both the university and the city of Phoenix.

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PINE VALLEY TOPS LIST OF 100 GREATEST COURSES

Pine Valley Golf Club in Pine Valley, NJ, manicured by superintendent Pat Gertner and his crew, has retained its number one ranking in *Golf Digest's* 1987 listing of America's 100 Greatest Golf Courses. The course also took top honors in 1986, the year it hosted the Walker Cup. At that time, Gertner was assistant to superintendent Dick Bator.

Pine Valley is followed by Cypress Point at Pebble Beach, CA, under superintendent Manuel Cardoza and Augusta National in Augusta, GA, under the care of Paul Latshaw.

A record eight courses appear in the magazine's list for the first time. Of the eight courses, four were designed by Jack Nicklaus, including Desert Highlands in Scottsdale, AZ; Castle Pines Golf Club in Castle Rock, CO; Annandale Golf Club in Madison, MS; and Grand Cypress Golf Course in Orlando, FL. Robert Trent Jones is the architect of the most courses in the top 100 with 14. Donald Ross designed 12 of the courses, Dick Wilson was the architect of nine, Pete Dye has eight on the list and A. W. Tillinghast and Nicklaus each have seven.

A panel of golfing experts ranks each course in seven categories: shot values, resistance to scoring, design balance, memorability, aesthetics, conditioning and tradition. Pine Valley scored the most points

in shot values and design balance. Cypress Point topped the aesthetics category. Augusta National topped the conditioning and tradition categories. Oak Tree Golf Course in Edmond, OK, was ranked highest in resistance to scoring.

The complete list of 100 course appears in the November issue of the magazine.

ARNOLD PALMER KEYNOTES OHIO SHOW

The Ohio Turfgrass Foundation (OTF) has announced that Arnold Palmer will be the keynote speaker for the Ohio Turfgrass Conference and Show, Dec. 7-10 at the Ohio Center, Columbus, OH. He will open the conference Tuesday afternoon, Dec. 8.

Palmer will speak as a guest of the Toro Company, Century Equipment, Inc., and North Coast Distributing, Inc. (Ohio's Toro suppliers.)

George Toma, grounds superintendent for the Kansas City Royals, will lead off one of two half-day sessions on athletic fields. Toma, who is a consultant to the National Football League, is knowledgeable in both natural and artificial stadium turf. He will be followed by Dr. Jack Harper from Pennsylvania State University speaking on player safety and Dr. Martin Petrovic from Cornell on soil management.

In the golf courses sessions, greens construction, the black layer, annual bluegrass

control and overseeding are just four topics out of more than ten that will be addressed. Plant growth regulators, insecticides, fungicides and herbicides will also be covered at sessions during the event.

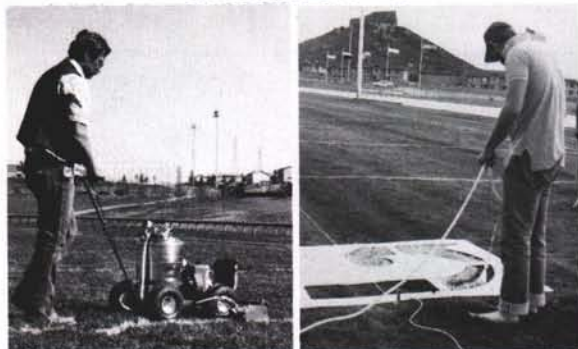
For more information, contact the OTF office at Ohio State University, Room 234 Kottman Hall, 2021 Coffey Road, Columbus, OH 43210.

ARTIFICIAL TURF MAKER SETS RECORD IN 1987

Astroturf Industries, Inc., of Dalton, GA, will complete a record 23 installations this year, says L. L. McCool, vice president of sales. They range from Seibu Lions Baseball Stadium in Tokyo, Japan, to Alfred E. Smith High School in New York, NY. The new fields bring the total number of Astroturf fields in the world to more than 500.

Thirteen of the fields were new installations while ten were reinstalls, says Ed Milner, international sales manager. "We are not experiencing a trend to convert artificial surfaces to natural turf," he adds. "In nearly 20 years we have only had six stadiums replace artificial turf with natural turf, and they are facilities that really don't experience the kind of heavy use that makes artificial surface important. When installations begin to age, most of our customers want new Astroturf."

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ASSOCIATIONS ENDORSE PRO SHOW

The Pro Show, to be held for the first time Nov. 18-20 in Dallas, TX, will offer one of the largest, most comprehensive displays of commercial equipment ever seen in one show, according to the Outdoor Power Equipment Institute, Inc., sponsor of the trade show and conference program. OPEI and six other associations have endorsed the show, including the American Association of Nurserymen (AAN), Sports Turf Managers Association, Engine Service Association, Irrigation Association (IA), Associated Landscape Contractors of America and National Landscape Association.

Nearly 300 exhibitors will display their products under one roof, in addition to a large outdoor demonstration area. The displays will include grounds maintenance and installation equipment, horticultural chemicals and plant foods, irrigation equipment, landscape accessories and materials, maintenance supplies and services, and outdoor power equipment. A free shuttle will be provided between the Dallas Convention Center and the outdoor demonstration site.

In addition to the trade show, Pro Show 87 will include 40 seminars designed to provide information that will increase professional skills and the profitability of your business.

Twelve of the seminars are admission-free. Fees for the others range from \$25 for some one-hour programs to \$100 for full-day sessions.

Attendance at the trade show is free. Exhibit hours will be 9 a.m.-5 p.m. on Nov. 18 and 19, and 9 a.m.-3 p.m. on Nov. 20.

For more information about Pro Show 87, phone (502) 582-1672 or use the toll-free number, (800) 654-0349.

PARK FIGHTS SALTWATER INTRUSION

When you build a park three feet below sea level, a few miles from the Pacific Ocean on a drainage canal, you anticipate a few problems. But the city fathers of Carson, CA, never dreamed that salt water intrusion up the canal during infrequent floods would make it impossible for them to keep turf alive at Del Amo Park.

The three-acre park next to Carson City Hall is used year-round for baseball, soccer and football. In 1982, park director Howard Homan realized that even though all the rainfall in the city south of Los Angeles falls basically during one month each year, one spillover of saltwater from the canal made it nearly impossible to grow turf there the rest of the year. Salt would not only damage the turf, it corroded the electric and irrigation components buried in the soil. He installed pumps to get the water off the park quickly after floods, but the salt finally contaminated the fresh water lying below the field.

After six years of trying to beat the problem, Homan finally agreed to a proposal made to him in the beginning by Don Morgan of Sierra Stadium Corp. Morgan holds the Prescription Athletic Turf (PAT) franchise for the Los Angeles area. The patented PAT system features a plastic water barrier originally designed to keep water underneath the field, not away from it. The idea is that sand and drainage pipes placed above the liner could be used to control the moisture content in the root zone at all times. Pumps connected to the drain lines can actually suck excess rainfall out of the field within minutes and can inject water back into them during drier periods to provide subirrigation.

When Homan was finally ready for the PAT System, Morgan wasn't. He called in Jim Eagle, the Texas-based franchisee to do the work. Eagle, who builds golf courses back in Texas, was not concerned that this would be the largest of nearly 20 PAT systems installed. Working with PAT inventor Dr. William Daniel, Eagle decided to raise the elevation of the entire park by nearly one foot. All curbs and bleacher foundations had to be raised as well. All irrigation and electrical lines were removed and replaced above the liner once it was installed.

In a few weeks Del Amo Park will once again be filled with hundreds of soccer and football players competing on healthy natural turf from sunup to 11 p.m. But the final test of the system will come this winter when all 13 inches of annual rainfall cause the canal to overflow.

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THREE-WHEEL DRIVE



Mowing fine turf on slopes or in wet conditions can be difficult with a conventional two-wheel drive mower. To improve traction and maneuverability under these conditions Jacobsen has developed an optional hydraulic drive to the third wheel on its Tri-King 1471.

The hydraulic motor on the rear steering wheel significantly improved traction during tests this past summer. It enabled the Tri-King to mow up slopes where other triplexes slipped to a stop or the operator had to raise the reels to get traction.

Aircraft yoke-type steering, a foot-operated hydraulic reel lift and a 71-inch cutting deck add to the efficiency of the mower. Turf managers can also purchase optional wheel weights, grass catchers, grooved or solid front rollers and five- or ten-bladed reels to match the mower to their conditions.

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UTILITY VEHICLE



The Multi-Pro 44 from Hahn can be a dump truck one minute and a sprayer, aerifier, or topdresser the next. The compact vehicle with a low center of gravity was designed for interchangeability. Powered by a 16 hp Kohler engine with a three-speed synchronized transmission, the Multi-Pro has the muscle to operate a series of attachments without strain.

Four large high-flotation tires exert only half the psi on turf that some utility trucks

do. With the addition of an hydraulic package, the Multi-Pro is able to dump the contents of the utility bed or lift and lower an aerifier attached to the back of the unit with a three-point hitch. A 14 cubic foot pendulum-action spreader, 160 gallon sprayer or 1,500 pound capacity utility bed can be attached or detached to the vehicle's frame in minutes.

The flexibility of the vehicle is enhanced with options such as an 18.5-foot-wide spray boom, a foam marker kit and quick coupler hoses. A speedometer, hour meter, ammeter and fuel gauge are located on a panel next to the steering wheel. Without attachments the Multi-Pro is 94 inches long, 56 inches wide and 49 inches high.

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Clean-up after mowing, leaf removal and debris pickup are a breeze with Parker Sweeper Company's Vac-35. Instead of blowing litter into a pile for pick up later, remove it in one pass from turf, sidewalks, tennis courts or parking lots with this walk-behind vacuum.

A 30-inch-wide intake directs material into a large capacity bag for convenient disposal. An exclusive deflector fills the collector bag to maximum capacity and deflects any harmful objects picked up by the vacuum away from the operator. Vacuum hoses from four to eight inches in diameter are optional to extend the reach of the unit.

Push and self-propelled versions of the vacuum are available with either five hp Briggs & Stratton engines or eight hp Kohler engines. Pneumatic tires on the rear and dual casters on the front provide stability on uneven terrain. Sturdy, plow-type handles give the operator control over the vacuum at all times.

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EQUIPMENT PREVIEW

ROTARY WORKHORSE



The turf manager needs all the power he can get when mowing acres of tall grass or long grades. A 24 hp twin-cylinder Onan engine delivers that kind of power for Ransomes T24 mowing tractor.

The extra horsepower also enables the tractor to easily handle cutting decks up to 74-inches in width. Cast iron cylinder liners in the air-cooled engine provide years of dependable service.

An instrument panel located directly below the seat gives the operator easy access to the choke, throttle, electric key start, ammeter and hourmeter. Twin saddle fuel tanks allow the tractor to mow for hours at a time without stopping. For added stability and traction, weights can be attached on the wheels or the rear of the tractor.

RANSOMES INC.

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TOPDRESSER



GreenCare International has replaced the conveyor belt with a roller drum in the design of its new Spread Master topdresser. A PTO-driven hydraulic pump turns the roller drum and brush applicator at infinitely variable speeds to apply topdressing evenly to fine turf. Any tractor or utility vehicle with 12 to 60 hp and PTO of 540 rpm can power the topdresser.

Topdressing material placed in the large

hopper is fed through an adjustable hopper gate by the rubber-coated roller drum. A rotating brush beneath the drum propels the topdressing into the turf. The brush speed can be adjusted to allow the topdressing to trickle down or be thrust down into the turf to backfill aeration holes. The amount of topdressing can also be controlled from a light dusting to a thick layer.

Simple controls make adjustment easy while the hydraulic system increases reliability and lowers maintenance. The unit is available with pneumatic tires or a roller suspension.

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TRIFLEX CUTTING DECK



Managers of large turf areas can now increase their mowing productivity with the 88-inch-wide Triflex cutting deck from The Toro Company. The company had parks, schools, colleges and golf courses in mind when they designed the deck which folds up to provide the same transport width as six-foot-decks. The Triflex deck cuts 22 percent more turf than a six-foot-deck in the same amount of time without sacrificing transport convenience.

The deck has a three-piece sectional design that allows the left and right wings to be independently raised or lowered. Mowing can take place with both decks raised, one deck raised or both decks down. The operator can raise or lower the wings while in motion. The blade of the wing stops automatically when raised and starts when lowered.

The Triflex deck can be retrofitted to attach to all Groundsmaster 322-D, 327 and 72 tractors. It features full flotation, four casterwheel design for high-quality cutting without scalping. Adjustable skids on each wing, anti-scalp rollers on the deck and anti-scalp cups on each of the five blades guide the mower along the contour of the ground.

With all wings down the Triflex can mow nearly five acres per hour when travelling

at 5 1/2 mph. The height of cut is adjustable from one to four inches in half-inch increments. All hydraulic lift controls are within easy reach of the operator.

THE TORO COMPANY

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SOIL CONDITIONER



Compacted soil on baseball infields and horse tracks and rough graded soil can be restored to a textured, open and smooth surface with one pass of the Turferra by Lely. Counter-rotating tines cultivate the soil as deep as nine inches. A crumbler bar behind the tines breaks up soil clods into pea-sized particles for smoothing by a brush.

The Turferra can be powered by tractors with as little as 25 hp and a category I or II three-point hitch. Models are available from 60 inches to 120 inches in width. A deflector bar eliminates ridges between rows.

The unit can also be used to renovate worn areas on soccer and football fields before reseeding, sodding or sprigging.

LELY

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LEAF MULCHER

When leaf removal is impractical turning leaves into a fine mulch is one alternative. The grounds manager can mulch acres of leaves quickly with the commercial leaf mulching attachment from Bunton.

When attached under the deck of Bunton's 36-inch, 48-inch or 52-inch walk-behind mowers, the mulcher frame causes the mower blades to lift the leaves and grind them continuously until the particles are small enough to exit through small diameter holes in the frame. The finely-ground natural mulch is then distributed by the mower over the turf.

The mulcher attachment, built with heavy gauge steel, is installed and removed quickly with only a few bolts.

BUNTON CO.

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EQUIPMENT PREVIEW

WATER-COOLED MOWERS



OMC Lincoln has boosted the horsepower on its Front Line tractor mowers with the addition of two new water-cooled gasoline engine models. Both the model 808 three-wheel and model 809 four-wheel feature a four-cycle, three cylinder Teledyne-Wisconsin engine that develops 26 hp at 3,600 rpm.

The model 809 is equipped with hydraulic power steering. By using the traction assist brake on the inside wheel, the four-wheel tractor is capable of a zero turning radius. The three-wheel 809 with manual steering can also turn in a zero radius. Both tractors can operate 60-inch rotary or flail cutting decks or a 72-inch rotary deck. Other attachments include the Grass Caddy collection system, 60-inch angled sweeper brush, 54-inch snow blade, 51-inch snowblower and a leaf blower.

The Front Line tractors have a high visibility operator console with hour meter, fuel gauge, water temperature gauge, oil pressure and alternator indicator lights and an overheat warning light for the engine coolant. An automatic seat switch shuts down the engine if the operator leaves the seat with the PTO engaged.

CUSHMAN/OMC LINCOLN

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IRRIGATION COMPUTER

A field satellite can have the intelligence and flexibility of a central irrigation computer with Valcon's V-III Irrigation Computer. A micro-processor in the V-III enables it to act like a computer when used as a satellite. The controller can be programmed to operate up to 48 valves up to six times per day, to budget water use in ten percent increments and to run stations individually without the help of a central computer. This allows smaller systems to have the advanced functions of large irrigation systems with central computers.

The V-III also fits right into larger, computerized systems with its two-way communication feature. Valcon has programs to drive an IBM PC-XT enabling it to operate up to 200 field satellites. A customized package of software has been developed especially for landscape irrigation applications. The central computer can operate field satellites either by hardwire or telephone modem.

Both the V-III and the central computer can be reprogrammed to customize the controllers to the specific site. Small Valcon systems can grow easily into large ones without changing satellites or sacrificing the benefits of computerized irrigation programs.

VALCON AUTOMATIC IRRIGATION CO.

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TRACTOR-MOUNTED AERATOR



The Turf Plugger from Classen Mfg. is a 3-pt. hitch compatible, tractor-mounted aerator that can be used with any PTO drive vehicle.

Weighing 450 pounds, the Model 800-24 is designed for turf care professionals with large parcels of land. When set at a two-by-four-inch spacing, the 48-inch wide aerator will aerate more than one acre per hour. At a spacing of two-by-two, it can aerate a half acre per hour, with hole depths up to three inches. Hole patterns will vary from 2 X 4 inches to 2 X 1 inches depending on tractor speed.

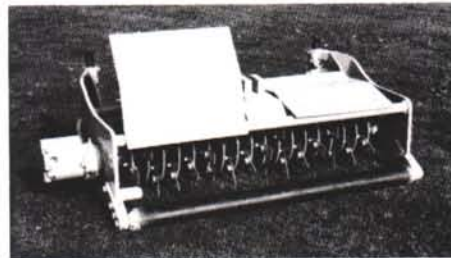
Standard tine sizes are 1/4, 3/8 and 1/2-inch. An optional 5/8-inch tine is also available.

CLASSEN MFG

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THATCHING REELS

Thatch accumulation on bentgrass and hybrid bermudagrass fairways or fields can have a negative effect on both their playability and maintenance. Removing the thatch from such large areas can be overly time-



consuming with small verticutters and dethatchers. That is why Roseman Mower Corporation developed vertical thatching reels that can be interchanged with the cutting reels on its pull-behind hydraulic gang mowers.

Each verticut reel contains 54 heat-treated, reversible blades that remove thatch and runners without lifting the turf. The blades are mounted in rows spaced approximately 1 1/2 inch apart. The amount of thatch removed is accurately controlled by height settings on the caster wheels.

Five or seven of the Hydra-Gang verticut units are mounted on a Roseman frame to provide from 11 to 15 1/2 feet of thatching on each pass. Each 30-inch-wide unit floats independently to fit the contour of the ground. Hydraulic power is provided by a PTO-driven unit attached to the three point hitch of the tractor. The speed of the verticut reels can be increased to 1,500 rpm in areas with heavy thatch accumulation.

Connecting or disconnecting the reel gang and hydraulic unit takes less than ten minutes to free the tractor for other duties. The verticut reels can also be removed from the frame and replaced with cutting reels.

ROSEMAN MOWER CORPORATION

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PLASTIC COVER REMOVER

Large plastic covers up to 40-feet-wide and 300-feet-long can be removed and stored quickly and easily with the Rol-zit Plastic Remover. The machine does the work of 15 or more men according to Agrotec, the manufacturer.

Plastic covers are rolled neatly onto ten-foot-wide storage rollers by the PTO-powered trailer. The trailer can then be pulled by a tractor to a storage location where the plastic and its roller are removed. An empty roller can then be placed in the trailer to remove other covers. The process is reversed for reinstallation of the covers.

Covers wider than ten feet must first be folded to fit the roller. Then they can be rolled directly onto the roller.

AGROTEC INC.

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