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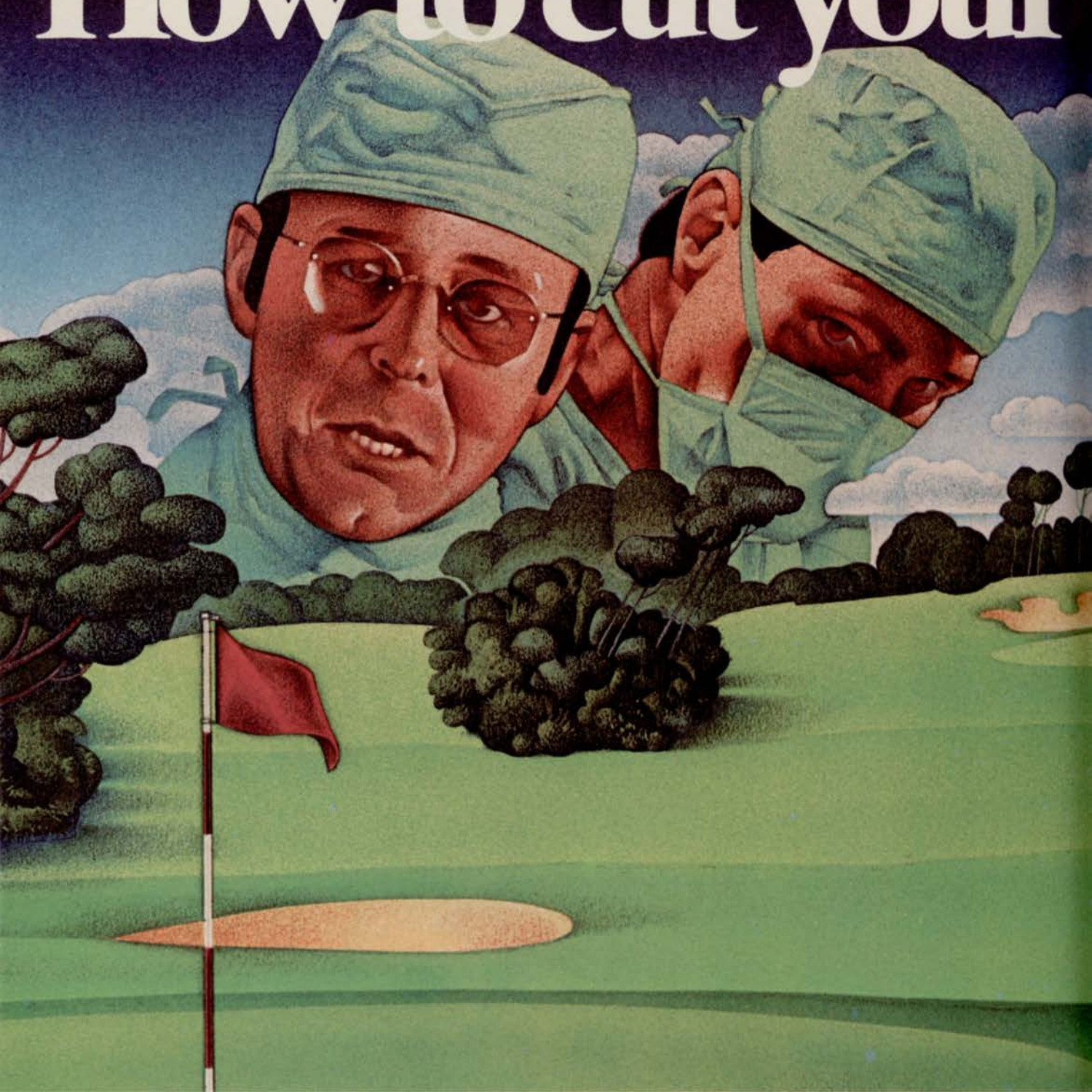
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# How to cut your



Long-lasting Chipco® 26019 fungicide is as good for your budget as it is for your turf.

Because it gives you the longest residual activity, you'll need fewer treatments on greens and tees with Chipco 26019. And fewer treatments on fairways, where it controls diseases longer...from 21 to

28 days. So for every treatment you eliminate thanks to Chipco 26019, you'll save up to \$10 an acre in fuel and labor!

And Chipco 26019 is strong medicine. No other fungicide gives better control of the major turf diseases. Chipco 26019 is effective on *Helminthosporium*



# operating costs.

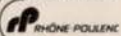


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Leaf Spot and Melting Out, Dollar Spot (including benomyl-resistant), Brown Patch, Fusarium Blight, Fusarium Patch (Pink Snow Mold), and Gray Snow Mold.

For healthier turf on greens, tees and fairways — plus a healthy cut in operating costs — control diseases with long-lasting Chipco

26019. It's just what the doctor ordered.

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mitted in Kezar Stadium. Although they haven't had any rain here for 48 hours, the footing was as bad as if it had rained all morning. There's no turf here and no drainage. It's the league's worst field even when it's dry." And Deacon Jones said, "It's unfair to NFL teams to play in this joint. It is as bad for the 49ers as it is for the others. The field is pure dirt. You can't play football here, and I think it's up to the commissioner to legislate some minimum standards. If he did, he'd have to throw Kezar out."

### **The Move to Candlestick**

Candlestick Park was built and opened in 1960 when the New York Giant baseball team moved from the east coast. Baseball players complained about the soil on the skinned infield which, due to unpredictable swirling winds, picked up soil particles and hurled them into the faces and eyes of the players.

In order to resolve the complaints an artificial turf surface was selected and replaced the natural grass playing field. Additional problems began when the San Francisco 49ers moved into Candlestick from Kezar Stadium and the seating capacity was expanded from 42,500 to 58,000 (61,000 for football) in 1972.

The artificial surface was praised as the "cure all" for all of the past mistakes and ills. This praise, however, was short-lived, and was summed up on November 14, 1973 in a Los Angeles Times Sports Section lead article, "Ban artificial turf says Brodie before someone gets killed." John Brodie was the San Francisco Forty Niners' quarterback who played in Candlestick during the early 1970's.

The artificial turf surface at Candlestick Park was considered the hardest surface to play on in the NFL. Many reasons were given for the decision to replace the artificial surface at Candlestick Park and include the following:

- 1 - The under-padding deteriorated to the extent that resiliency was nonexistent and the playing surface became "rock-hard."
- 2 - The surface became matted

when the plastic grass-like blades broke down in the presence of sunlight.

- 3 - The seams split apart causing a safety hazard to players.
- 4 - Wet, damp weather caused poor traction, slippage increased and players experienced conditions comparable to those on the ryegrass at old Kezar Stadium.

Finally in 1979, Candlestick's 130,000 square feet of deteriorated synthetic turf was ripped up. Paramount in the decision was the cost of replacing the wornout artificial turf surface along with its pad for over \$6.50 per square foot. The economics of staying with the artificial field was weighed against the cost of returning to a less expensive but improved natural grass playing surface.

### **Advancements in Natural Sportsturf**

Over a decade ago, everyone was caught up in the fervor to eliminate natural grass playing surfaces in favor of the "trouble-free" and "lower maintenance" synthetics. However, the science and technology necessary to construct a good natural grass playing surface was neither available nor perfected at this point. In those days most sportsfields were seeded to on-site native soils with few modifications for drainage or the like. Soils used were often clay or silt which became heavily compacted, waterlogged or extremely hard. The result was a shallow root system, poor soil aeration, sparse grass and wet, soggy terrain. Worn-out turf and bare spots prevailed everywhere.

With the introduction of synthetic turf, shock waves were felt throughout the turfgrass industry giving impetus and stimulation to new ideas and concepts. Many hours were spent by some of the best minds and most progressive plant scientists and soils specialists to consider alternatives to artificial turf. These alternatives were found, refined and perfected.

Today, the new natural grass sportsfields are functional and highly sophisticated. They are engineered, well-planned, and con-

structed to meet the needs and demands of both the grass plant and the competitor.

### **New Breed of Manager**

The new natural grass playing surfaces require a new breed of sophisticated turf manager, not just an out-door janitor. He must know what to do, how to do it, and when to perform any number of particular functions. Today's turf manager must care and be concerned about the field he maintains and whether or not he receives the credit due, he feels the satisfaction and inner pride of accomplishment.

Although many concepts and innovations in the design and construction of natural grass sportsfields are available today, the one principle each has in common is a good soil mixture. The soil is the base or foundation on which the field is constructed; therefore, the basic component of each of these surfaces is sand. Sand affords good drainage, excellent root development and a consistent texture. Since sand can be managed in most any weather and is uniform, it provides good footing and is predictable because it will not seal up under heavy use.

Recently the NFL players voted. The playing surface which ranked highest was one with a sand rootzone; synthetic surfaces finished a distant last.

### **The Allweather Field**

An example of a sand rootzone system is the Sportsturf "TD" Field (TD = total drainage). This system was installed in Candlestick Park and developed by a man who has wide experience with sand fields and their construction, Melvin Robey.

Like other multi-use stadiums, Candlestick Park must endure full season play of both the San Francisco Giants and the 49ers. Stadiums which receive a lot of play need special attention.

The Sportsturf Field consists of the following seven specific points:

#### **1. PURE SAND ROOTZONE**

The uniqueness of a Sportsturf "TD" Field design is the all sand rootzone which provides a superior

*Continues on page 26*



# "Mitsubishi tractors—the tough team that's never sidelined."

Bum Phillips, Head Coach, New Orleans Saints



In my business, I demand pro performance, the first time and everytime. That's why I want to tell you about the Mitsubishi line of two and four-wheel, mid-size tractors. Tractors built tough, to tackle all your landscaping and turf maintenance jobs, reliably and economically year after year.

Whether it's the compact Beaver, the economical Bison Diesel or the 38 hp, rugged Stallion, all Mitsubishi tractors can handle the implements you need for mowing, load-

ing, grading, snow removal and lots more. And Mitsubishi's multi-cylinder, water-cooled, diesel engines keep fuel consumption low and performance consistently high.

Designed with you, the grounds maintenance professional in mind, Mitsubishi tractors have tough-job features like a differential lock for greater traction, live hydraulics for really accu-

rate implement control and multi-speed PTO for equipment flexibility.

So, as one pro to another, if quality performance is the name of your game, check out the winning team of mid-size tractors built by the pros—Mitsubishi.



Bison Diesel  
30 hp

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**Built by the PROS**



natural grass playing surface, regardless of the weather at game time. Special characteristics of the sand allow the excess water to drain away, while maintaining the proper balance of air and water in the rootzone so a tough, deep rooted turf is developed. Careful selection of the sand also eliminates the hard, compacted fields that are such a hazard to the players. The depth of the sand is 18 inches throughout the stadium.

**2. SPECIAL SURFACE MIX**

The zone immediately beneath the grass receives special attention because of the importance of this area to the establishment of a tough root system. Small amounts of carefully selected organic amendments - peat, bark, hulls, bagasse - are incorporated into the sand. The addition of this material allows for the rapid development of the grass by helping to produce an environment favorable for root growth. The organic material adds to the overall resiliency of the turf, while helping to hold nutrients and store moisture in the sand rootzone.

**3. FIELD MOISTURE CONTROL SYSTEM**

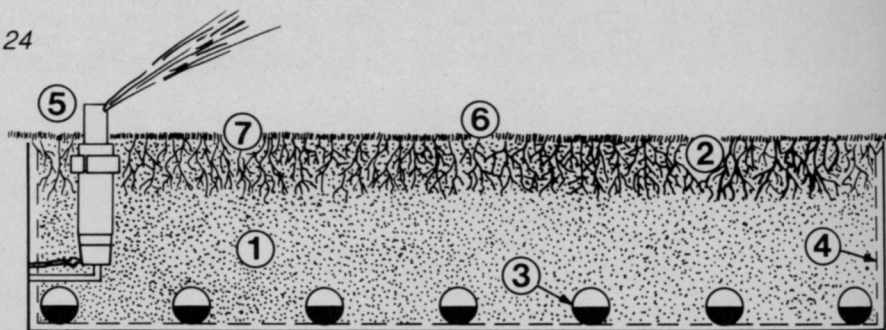
The network of four inch drainage pipes (spaced at eight foot intervals) beneath the field play a key role in the control of the moisture in the sand. It is this piping system, with a unique modification contained within the pipe, that forms the nucleus of the Sportsturf "TD" Field.

**4. PLASTIC BARRIER BENEATH SAND**

To allow for total control of the water within the sand matrix, a plastic liner is frequently incorporated into the design. This lines aids in conservation of water and plant nutrients, reducing the overall expenses of supplying these essential elements to the grass. Another important function of the plastic barrier is to prevent external water from the surrounding subsoil from contaminating the sand.

**5. SURFACE IRRIGATION**

Supplemental surface watering is an important feature in the design of a natural grass field. The duplication of Nature's rainfall plays a significant role in the normal growth and development of a good athletic field grass. Where it is re-



**Profile of Sportsturf rootzone.**

quired, special techniques for burying the sprinkler heads beneath the surface of the grass have been developed.

**6. FLAT PLAYING SURFACE**

A new dimension is available in athletic field design. The excellent internal drainage characteristics of the all-sand rootzone permits the playing surface to be nearly level. Gone is the need for the traditional 18 to 24 inch crown that is necessary on all other types of athletic fields. Now everyone—coaches, players, spectators—will have an unobstructed view of the game.

**7. NATURAL GRASS PLAYING SURFACE**

According to a survey among athletes, a majority preferred to play on a natural grass field. The natural playing surfaces offer several advantages. On a hot day the grass acts as an air conditioning unit, easily reducing the surface temperature by 30 degrees, when compared to an artificial turf field. This is an important factor in insuring the safety of the players, whether it is just a practice session or an important league game. Another feature of real grass is its natural resiliency—the ability to absorb tremendous impact helps to protect the players from many serious injuries.

**The Current Dilemma**

During the recent NFL playoff games involving the San Francisco 49ers and New York Giants and later the Dallas Cowboys, newspaper headlines, player interviews and the broadcasting media discussed the condition of Candlestick's playing surface.

Newspaper headlines read, "Groundskeeper Tackling 49er's Tacky Turf", "Sod Squad Prepares Candlestick for Game", "Candlestick Park has Started to Show its Age", "Giants may Sue S.F. on

Candlestick, Club losing patience over bad Conditions".

The players and coaches seemed to have mixed reviews. New York Giants coach, Ray Perkins said, "it's still a horsebleep field." Linebacker Jack Reynolds of the 49er's, "it's like playing in a swampland," but running back Tony Dorsett (Dallas) said he was not concerned about the field; he gained 91 yards in the game.

Announcers for CBS said, "too much attention is being given to the playing surface." CBS announcer Irv Cross said, "everyone made a big deal about the field before the game, but it is holding up well, in fact it's in great shape, and it will be okay in the second half." Further, announcer and former Oakland Raider's coach, John Madden, said, "I've never known any field that caused any team to win or lose a game," and O.J. Simpson commented, "the players much prefer natural grass, none of the players really want to play on Astro turf."

**So What's the Problem?**

In January an article in a Phoenix newspaper (Republic Sports Wires) alluded to the fact that amateur groundskeepers all over the Bay area offered their theories as to why the field is cursed. Some of these amateurs theorized it was due to the location of Candlestick—excess moisture since it is adjacent to San Francisco Bay. Others said it was due to the poor soil content. One rumor, unsubstantiated of course, that the drainage system under the field was put in upside down so the water actually drains up. Let's look at some of the facts to see what the situation really looks like.

Originally the San Francisco Giants baseball team did not want natural grass but opted for a new artificial turf carpet to be in-

*Continues on page 28*

# THESE INSECTS HAVE ONE THING IN COMMON

They now can be controlled by a **NEW** effective carbamate insecticide **TURCAM®**

TURCAM Insecticide offers the professional turf and ornamental care specialists a new effective broad spectrum insecticide for the control of a wide range of ornamental and turf pests including gypsy moth, Eastern tent caterpillar, certain scale insects and weevils, Japanese beetles, sod webworms, chinch bugs, mole crickets, white grubs and various nuisance pests such as fleas, wasps and fireants.

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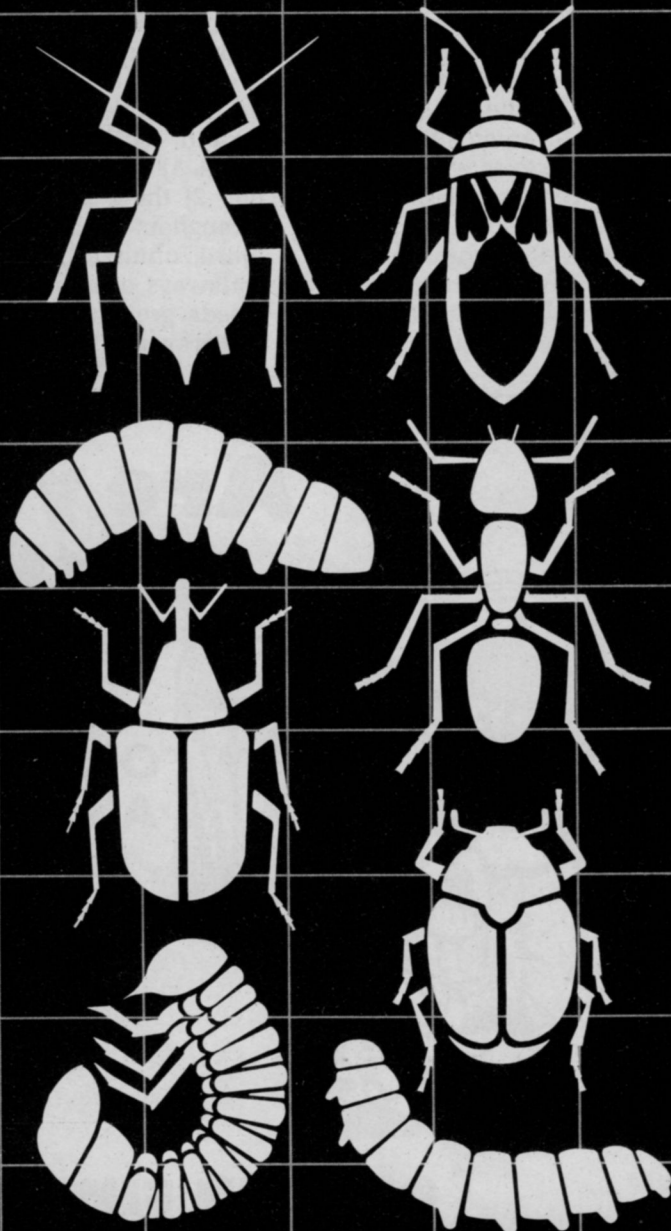
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stalled. The San Francisco 49ers wanted the natural grass field.

The field is maintained by the Giants' grounds crew during the baseball season and through the first four football games. It is then turned back to the City of San Francisco Park and Recreation Department to care for the field the remainder of the football season. Baseball only mows the grass field; they do not aerify, topdress, or fertilize. The football grounds crew is not sure what has been done, if anything, so they do enough to merely get by. In other words, the right hand doesn't know what the left hand is doing.

In October, Mick Jagger and the Rolling Stones performed at Candlestick Park. The fans watched and did whatever, on a field where no protective cover was used and the results were devastating.

Since July 1, 1981, the Bay area has received 13 inches of rain, 5 inches more than normal, and 10 inches more than last year during the same period of time.

Probably the biggest problem is due to city politics and a lack of follow-through to see that problems are resolved. Ironically (according to John Hillyer, San Francisco Examiner Staff Writer) it has taken a super season by the 49ers to stimulate popular awareness of the problem at Candlestick.

Hillyer further states that "years of indifference and neglect on the part of the city have left Candlestick Park in such a shabby condition that the patience of the Giants' organization finally is wearing thin." The Giants continue to be dissatisfied with park maintenance. However, to deal with the poor playing field would be merely to check off one item on the Giants' list of complaints about the City-owned facility. Complaints include, 1) the sound system is terrible, 2) there is concrete damage throughout the park (seats coming loose, chunks of stairs missing, walkways cracking and grass and weeds growing through them, 3) rust is everywhere, 4) the restrooms

are run down, dirty, and plumbing and fixtures broken, 4) parking lot needs releveling and repaving and is poorly drained, 5) and lastly, the turf maintenance has been sub-standard.

The blame for the neglect is really difficult to pin down. Generally speaking the stadium is run by the Park and Recreation Department. However, Park and Recreation customarily responds to the ballclubs' problems by blaming City budget-makers for insufficient funds.

Before an appropriation can be put to work, it must be cleared by the Controller's office, the mayor's office, the finance committee of the Board of Supervisors, and then the full board, an unwieldy procedure that might shed some light on why it's difficult to get things done at Candlestick.

Tom Mallory, General Manager of Park-Recreation, says that "San Francisco is great for something called 'deferred maintenance'."

*Continues on page 73*

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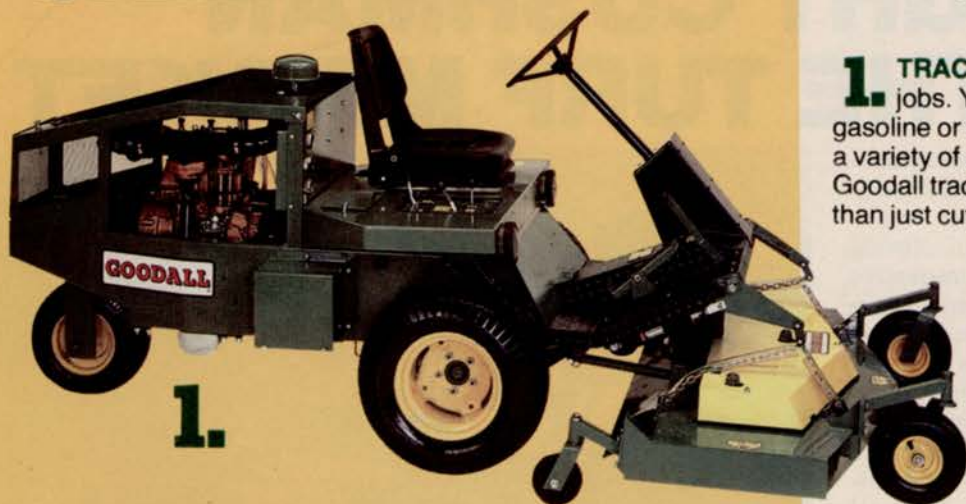
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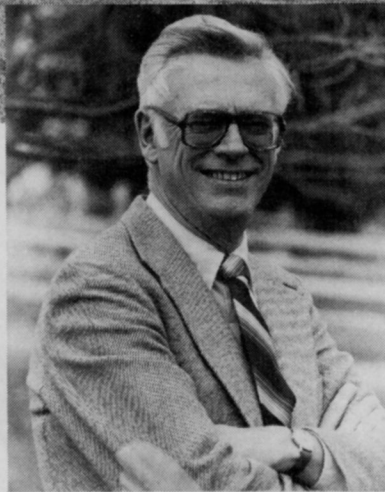
# TIRE MODIFICATION BROUGHT CUSHMAN INTO THE TURF MARKET

It was an almost token modification of a Cushman industrial vehicle that led OMC Lincoln into a major nameplate in manufacturing what still ranks as an innovative line of turf-care equipment and related accessories. Back in 1963 an engineer substituted the original tires on an industrial Haulster vehicle with wider-tread components. The intent was to provide more traction for a superintendent wanting to use the unit on his golf course. Ever since, OMC Lincoln has been rolling ahead with the production of turf-care units, only today's are custom-engineered to take the toil and toll out of landscape management chores.

"Those first vehicles were by-products of our industrial units," reflects OMC Lincoln Marketing Director Frank McDonald. "What occurred, however, was a total facelift in our manufacturing and marketing strategy. We found ourselves moving into the turf-care industry with units that were totally dedicated in design to this marketplace."

That first vehicle was available with a 9- or 18-hp, air-cooled OMC engine and became popular with superintendents for hauling mowers, fertilizer, spreaders and sprinkler heads. They offered the advantage of reduced weight, preserving the turf so tediously manicured for golfers and park visitors. OMC Lincoln field salesmen said labor-conscious superintendents were even adding hitches for pulling a gang of mowers. That word got back to the engineering drawing boards in Lincoln indicating increased sophistication had to enter the product line.

"What developed was a corporate commitment to developing vehicles reflecting the demands of the marketplace," McDonald says. "We might have remained static and tried to condition the buyer to



**OMC Marketing Director Frank McDonald.**

vehicles derived from our industrial line. Instead, OMC adopted the philosophy that it would react to the market instead of it conceding to us.

"This explains why our Cushman line evolved into a 'system' for turf care," he says. "We're constantly listening to what is needed around the world in turf-care equipment and reacting with units developed specifically for the tasks at hand."

For example, in 1965 Cushman

*Today's Cushman Truckster, adapted in 1963 from an industrial Haulster and redesigned in 1981.*

manufactured a Haulster vehicle having an 800-lb. payload and the buyer could add several integrated accessories to the 3-wheeled units. A sprayer, cyclone seeder and fertilizer spreader were available. A fiberglass cab, snow plow, tool box, stake rack and passenger seat were other options. The players on the course may have related to Cushman golf cars, but the superintendent working alongside them was quite often using a Cushman vehicle with a directly related mission, McDonald observed.

In 1966 a Cushman model with a half-ton payload rolled out. It had a six-speed, dual-range transmission and variable-ground speed governor to lend operational discipline and flexibility to the chores served. A year later, this translated into an even more newsworthy thrust—a

*Continues on page 34*