

# Golf course equipment: A history of progress, initiative



Photo courtesy of Mel Lucas

By CLAY LOYD

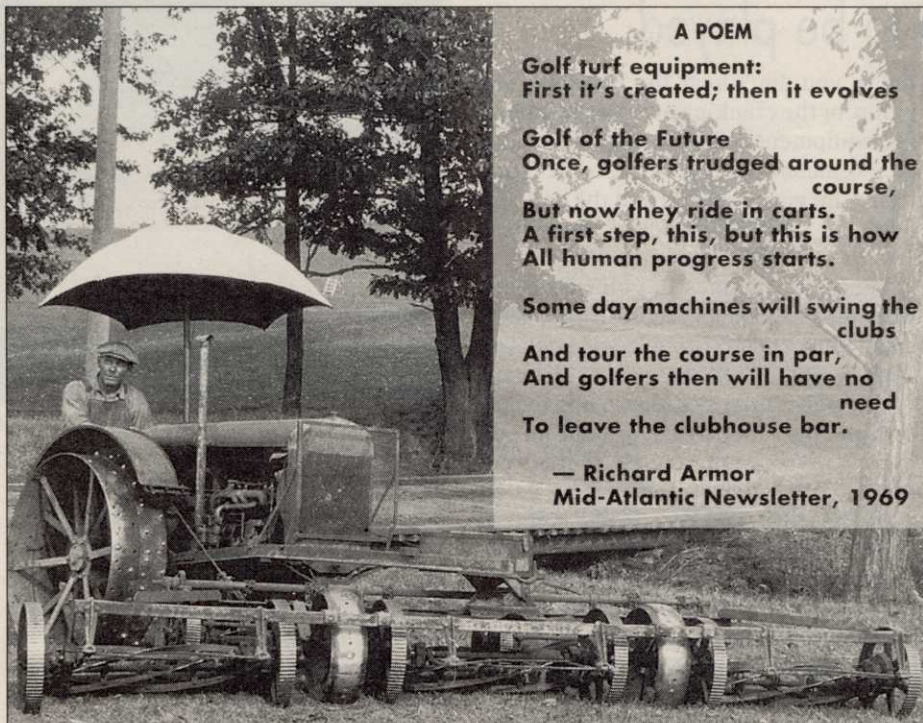
Roughly a half millennium ago, the only use made of the linklands of northern and eastern Scotland was to pasture sheep. They found shelter in natural hollows. Turf, such as it was, consisted of bentgrass and some fescue with stiff blades. The sheep kept it mowed. Rabbits were among the other animals that shared the land. They dug holes. Then, as some accounts would have it, bored shepherds began challenging each other to see who — using the staffs that were the tools of their trade — could strike the most rocks into the rabbit holes. But look out. Don't land in those hollows.

That, they say, was the beginning of golf. It really took off as railroads came in and began transporting people from the cities to the coasts on holidays and weekends to see how this new game was played. Soon, the city folks, too, were swinging golf clubs. Then they carried their newfound sport back to town.

And grow golf did. Eventually, it became a struggle to keep pace with the demand for more and better golf course management equipment. It's easy to see how such an industry has grown up around the game. Those hollows where sheep sought refuge centuries ago, for example, would become the bunkers of today and would have to be maintained.

The rabbit holes of yesteryear would someday be the cups of modern golf and would need to be leveled, and lined to

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A tractor-driven National Mower five-gang mowing unit, circa mid-1920s.

A POEM  
**Golf turf equipment:**  
 First it's created; then it evolves  
**Golf of the Future**  
 Once, golfers trudged around the course,  
 But now they ride in carts.  
 A first step, this, but this is how  
 All human progress starts.  
 Some day machines will swing the clubs  
 And tour the course in par,  
 And golfers then will have no need  
 To leave the clubhouse bar.

— Richard Armor  
 Mid-Atlantic Newsletter, 1969

Photo courtesy of National Mower Co.

prevent collapse. And — try though they did to keep the grass cut — those sheep eventually would have to go.

This is a quick look at the evolution of some of the many pieces of golf course management equipment required to build and maintain the venues for the game today.

The first real breakthrough came with the invention of the mower. You might call it the superstar of the century in the golf course management equipment inventory. "Mowers," wrote Drs. Charles V. Piper and Russell A. Oakley in their landmark book *Turf for Golf Courses* in 1917, "are the most essential element on every golf course."

That was true in the beginning, and it is true today.

Until the mid- to late-1800s, scything was about the only practical way to cut grass, except for sheep. But scything was only effective when the grass was wet. That meant you had to get up before dawn to take advantage of the dew. And it took teams of women and children following the



An old Toro walkbehind greens mower.

Photo courtesy of The Toro Co.

"scythen" to collect the clippings.

Most of the credit for advancing beyond the scything era should go to Edwin Beard Budding, an engineer from Gloucester, England. In the mid-1800s, he adapted rotary knife machines used in textile factories to remove nap from cloth and invented what is believed to have been the first mechanical lawn mower. Its main advantage was that it could cut dry grass.

After obtaining a patent, Budding and a partner began granting licenses to manufacturers, and the commercial turf man-

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## Collections of antiques on view at MSU, Penn

Probably the two best collections of vintage golf course management equipment in the world are the Dr. Kenyon T. Payne Collection at Michigan State University and at Mascaro/Steiniger Turfgrass Equipment Museum at Pennsylvania State University.

During his life, Payne gathered more than 120 pieces of antique equipment under one roof. Along with other groups and individuals, the Golf Course Superintendents Association of America (GCSAA) has added to the collection.

Among the many artifacts at Michigan State are a Turferator (an early aerifier), an Ideal greensmower, a Caldwell demountable roller/brush, a Thompson wheelbarrow seeder, a Shawnee-Worthington greensmower, steel horse hoof plates and a Paddleson leather horse boot.

In the tons of antique iron at Penn State are such pieces as Mascaro's prototype aerifier; a creosoted, wooden irrigation pipe from a golf course; an early Greensaire turf aerator by Ryan; a Royer soil shredder; and a Worthington tractor.

Payne was a turfgrass scientist and educator. Mascaro, an entrepreneur as well as an inventor, is remembered for his "Verticut" mower to remove thatch from greens as well as for his aerifier.

One of the best places to see modern and new golf course management equipment is at the huge GCSAA Golf Course Conference and Show held annually in a major Sun Belt city.

## A COMMENTARY

# A historical perspective of the golf course greenkeeper

By MEL LUCAS

As we enter into a new century where vast new horizons await all professions, we too must be prepared to advance with new technology and research. The last 25 years have pushed our industry into the most robust time a golf course superintendent has ever experienced.

Every segment of our earning power has been dramatically influenced by mowing equipment, irrigation technology, hybridization of turfgrass cultivars, biostimulants, putting green construction, fertilizer and chemical specificity toward fine-turf management, educational opportunities through journals, conferences geared toward turf care and the strong promotional activities of the Golf Course Superintendents Association of America (GCSAA).

We must take note that in no small way, the environmental movement has helped us a great deal.

How did we get to this point? We should reflect on our humble beginning. Oftentimes superintendents refer to ourselves as a bit of art and a bit of science. This is, of

course, preaching to the choir. Let us trust that the choir is well informed as to where we are and from where we came.

Many people judge us on an individual basis, be it private or public golf course. As much as GCSAA makes people aware of an honorable profession, there have been times that we have been cast as a true artisan of turf grooming; times we have been vilified via TV coverage; and times regarded as journeymen, as perceived by a judge during a case involving geese killed on a New York golf course many years ago.

The very first mention of a person responsible for the golfing grounds was in 1774. The records from The Royal Burgess Golfing Society of Edinburgh mentioned that "a boy was engaged to convey messages to and from members, to serve as waiter at dinner, carry the Captain's clubs and to alter and mend golf holes on the links." Later in their records of 1774 the titles he was given were "our cady — our officer — our greenkeeper."

The terms "greenkeeper," "keeper of the green" and "custodian of the links" have been used throughout the

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Photo courtesy of Mel Lucas

The profession of greenkeeper has come a long way since the days of the boater hat and the first steam-propelled mower (circa 1910s).



# Equipment: A history of invention

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agement equipment industry was born. Eventually, someone got the idea of a power lawn mower. One designer tried to combine a mower with a tricycle. There were several attempts to perfect a steam-driven model. A gasoline-powered mower was marketed in 1896.

The next major advance in mowing technology came in 1910 in America when Charles C. Worthington introduced his conventional reel mower. It was a design that came to dominate the commercial market. It was a 30-inch model built to cut Worthington's own private golf course.

Shortly thereafter, two or more units were linked — "ganged" — into groups. The next 10 years or so were the first real heyday of the gang mower, pulled by tractors as well as horses and used on fairways. Tractors pulling five, seven and nine mowing units could cut 20-foot swaths.

But horses were heavy, and the wheels of the day were made of steel. Damage to turfgrass could be devastating. To reduce it, powered walk-behind mowers were introduced toward the end of the Roaring '20s. Powered rotary mowers came along in the 1930s but didn't begin to enjoy popularity until the last few years of the 1940s.

In the 1960s, all-electric units, including electric greensmowers, began to be marketed with some success. The 1960s also saw the advent of hydraulic lifts to adjust cutting heights, and — with clippings already becoming something of an environmental problem — somewhat primitive mulching mowers.

The 1990s brought much-improved mulching mowers, and there has been a trend toward a return to walk-behind greensmowers instead of triplexes.

Generally speaking, the emphasis on improving mowers, especially in recent times, has been on safety features; distributing weight; diagnostic aids for simplified maintenance; rubber, turf-type tires to reduce compaction and damage to turfgrass; and a vast array of attachments.

## SOIL AERIFICATION

In the old days, soil was aerified laboriously with hand forks if it was aerified at all by anything except earthworms. The Turferator, an early aerifier with 12 tines, was introduced in the mid-1920s. A major advancement occurred in 1946 with the introduction of the FG Aerifier by Tom and Tony Mascaro.

Even more dramatic improvements were made in the 1990s, beginning with the use of water under extremely high pressure to blast holes. With that, there were no more cores to clean up. And the wear and tear on turf was virtually eliminated. Aerification could be done quickly and more frequently, and players could get back to their game in shorter order.

## OTHER EQUIPMENT CHANGES

Other developments in golf course management and the tools that it requires as the world's second millennium draws to a close have dealt with such things as grooming of turfgrass, pesticide spraying and computers.

Modern groomers to supplement more aggressive verti-cutting appeared in numbers in 1986 as attachments to triplex units. They were introduced to the fairway in 1990.

Greenkeepers of not too long ago had to use hand brooms to work top dressing into greens. Dragmats later were towed behind utility vehicles, but several passes were required, and soil compaction could be a problem.

Today, brushing attachments are available for triplexes. Everything is mechanized, rollers included.

Spraying equipment also has been greatly improved. Calibration is far better. Droplets can be made larger to reduce drift. Further protection has been made possible with skirts to reduce chemical drift and enclosed cabs to shelter operators. And in the offing is chemical mixing equipment requiring no contact by the operator.

## COMPUTERS AND COMMUNICATION

Some people say the biggest technological advance in the history of golf course management began with the introduction of computers to the field in the 1980s. Today, computers control parts inventories; schedule equipment maintenance; track maintenance records; record chemical applications; fill out government records; watch budgets; design irrigation systems; and control irrigation systems.

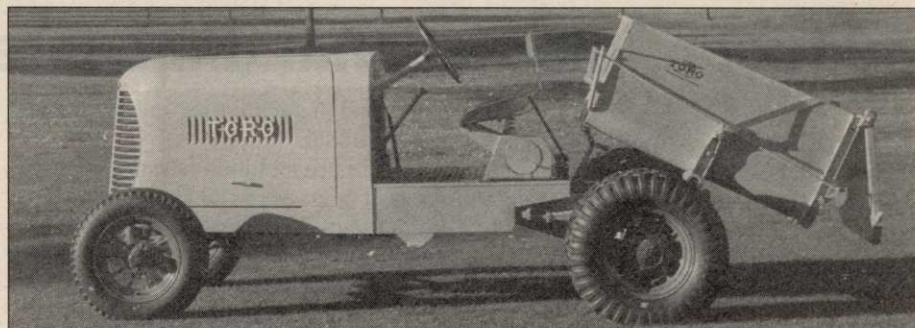
Another modern convenience is radio. In times gone by, there was a lot more shouting and waving of hands and arms by superintendents to communicate, and, often, galloping around the golf course on horseback to direct staff.

One superintendent several decades ago even developed a comprehensive and apparently satisfactory semaphore system using flags, gestures and other symbols.

## GAZING INTO THE CRYSTAL BALL

What's ahead for golf course management and the equipment it will require in the third millennium? The possibilities are unlimited.

Robots probably will do more of the work of men and women.



An early Toro tractor utility vehicle.

Photo courtesy: The Toro Co.

Laser technology may cut grass, trim trees, sharpen blades and much more.

Satellite technology will aid in irrigation, fertilization and application of pesticides, and it will help control maintenance vehicles, increasing efficiency, reducing accidents and freeing people for other work. And on and on.

Golf course management is one field in which its practitioners don't often long for "the good old days." That's because the equipment is so much better now.

Michael J. O'Grady came to the United States shortly after World War I from Ireland. "Before the advent of the tractor," he recalled in 1964, "horses were used extensively for all phases of construction and maintenance. My initial work in this country was done at Rhode Island Country Club, where we used up to 20 former Army cavalry horses. We used them to haul off trees, stumps and ledge after they had been dynamited into manageable chunks.

"Horses also pulled scoops used in excavating traps [bunkers]. I feel, however, that horses had the hardest time in cutting the grass on fairways. We often worked late into the night to make it easier and less tiring on the horses. In filling the swamps, a horse would sometimes break a leg and had to be shot.

"Before the modern aerifier, we used to fork the greens 8 inches deep and 4 inches apart. The putting surfaces were rough for a week..."

The inventor of the modern aerifier,



The barrel seeder.

Photo courtesy: Mel Lucas

Tom Mascaro (1915-1997), once pined: "The day may not be far off when a horse will be a strange sight on a golf course."

The industry has kept pace with growing demand for more and better maintenance equipment, especially over the 20th century. It has been done largely by listening to golf course superintendents, then heading for the drawing boards to help them solve equipment problems.

"Industry," Mascaro said, "exhibited at the very first GCSAA trade show, providing money that drew everybody together ... and it's been supportive ever since."

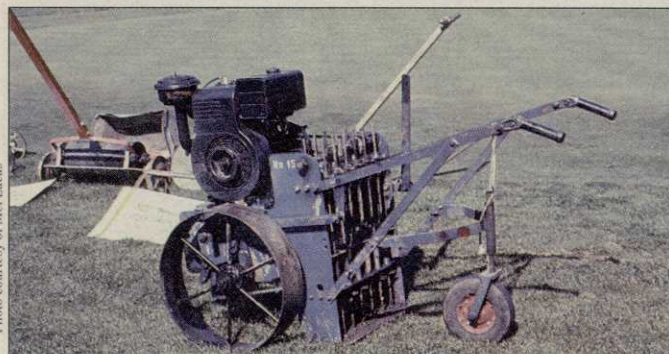
Indeed, golf course management equipment has come a long way since midway through the second millennium, especially in its last century. Today there is sophisticated, high-tech mowing equipment that hugs the contours of the bunkers in which sheep once escaped the wind.

And remember the rabbits who dug the holes in golf's infancy? Today, tools dig the holes and line them. At least one manufacturer of hole cutters has a "fool-proof" bubble to help make the hole level.

Now, would rabbits ever have thought of that?



The Foot Spiker is exhibited at Michigan State University's Turf Museum, co-sponsored by the Golf Course Superintendents Association of America.



The Night Crawler, from the mid-1940s until the early 1950s. Possibly one of the first aerifying machines. It was a gear-driven machine that would drive a hole set of screw-type augers (drill bits, basically) into the green. They would come up screwing up the soil rather than producing a core, and you had little ant hills of soil. It then made about a 6-inch hop and stopped to drill down again. It took 2-1/2 hours to do a 5,000-square-foot green. Once Ryan came out in the early 1950s, they were thrown out.

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