The History of Golf Course Irrigation

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Similar to other turfgrass innovations, irrigation emerged as an adjunct to the management of golf courses. Many golf courses used mule-drawn water wagons to irrigate golf course turfgrass around the 1850s. The practice of watering putting surfaces originated in Scotland in the 1880s. By 1894, St. Andrews in Scotland had sunk a well for this purpose.

An unusual gear-driven full- or semi-circle sprinkler was invented by Orten Englehardt circa 1930. In 1897, the Twin Comet Lawn Sprinkler, developed by the E. Stebbins Manufacturing Company in Springfield, Mass., was placed on the market. This was one of the first gear-driven lawn sprinklers to be mass produced in the United States.

Pioneers of the Early 1900s

One of the first inventors to obtain a patent for a sprinkling system was Charles Skinner of Troy, Ohio. He developed a system of galvanized piping with holes spaced two feet apart to water large areas. In 1904, John Ross of Pasadena, Calif., was the first to manufacture sprinkler heads for lawn and garden use. L.B. Harris invented one of the first gear driven sprinkler heads, the "Harris Precipitator" in 1910. Another pioneer, W. Van Thompson, founded the Thompson Manufacturing Company in Pasadena in 1907. By 1915, the Thompson revolving arm roller sprinkler was being used on golf greens and at the Los Angeles CC in 1918. This was also one of the first clubs to install pipe and quick-coupler valves around WW I. Another early pioneer, L.R. Nelson, the oldest, continuous, single-family owned irrigation business, developed a sprinkler for turf in 1906. Nelson is credited with the development of one of the early large traveling sprinklers. Nelson worked with the B.F. Goodrich Company to develop a five-inch hose that could be dragged along to work with the sprinkler. George Moody developed the automatic sequencing, hydraulic controller in 1922. This was a major development and greatly influenced the creation of automatic sprinkler irrigation, which is a large industry today. Another individual, W.A. Buckner, developed the first slow-rotating, hoseless sprinkler irrigation system. One was installed at Pebble Beach GC in 1912. Buckner further developed the quick-coupling valve, the sand resistant bearing, and the cam-driven sprinkler head. The Buckner name lives today in Fresno, Calif., under the name, "Buckner by Storm."

Pop-up sprinklers represent an important advancement in irrigation technology. John Brooks designed a brass pop-up turf sprinkler in 1916. By 1926, he had developed an electric timer that activated a hydraulic controller. When combined with the sprinkler heads, the clock made automatic irrigation a reality. By the 1930s, pop-up sprinklers made of brass were quite common. These were fixed-spray heads and were made of brass due to the metal's resistance to corrosion. In the Midwest, two brothers, Daniel and Bernard Wright of Chicago, combined their business with the Mueller Brass Company of Port Huron, Mich., to form an enterprise known as Muellermist. The company offered a complete underground turf sprinkler irrigation system with a ball-drive pop-up head as early as 1932.

Some of the earliest golf courses to install irrigation systems in the United States were Long Island's National Golf Links, the Merion Golf Club, and Pinehurst. When the game of golf spread West, golf course architects realized that without irrigation, building and maintaining courses was impossible.

The Great Depression Years

When the Great Depression disabled businesses throughout the country in the early 1930s, the irrigation industry continued to make many technological advancements.

The Rainbird Company was being launched in Glendora, Calif., during this period by Orten Englehardt and Clement LeFetra. Englehardt had experimented with two types of sprinkler heads: the gear drive, which he attempted to construct, and the vertical impact drive. Finally, he turned his attention toward a horizontal impact-drive sprinkler. Englehardt produced the prototype in 1932, and the patent was issued in 1934. Englehardt revolutionized landscape irrigation in the 1930s with his invention. This innovative design had fewer moving parts than most other sprinklers of the time, and they were more dependable and less expensive.

By 1935, Englehardt wanted to return to farming, so LeFetra and his wife, Mary Elizabeth, assumed the manufacturing and sales rights to Englehardt's invention. The Rainbird tradition had begun. One of the first turf customers for Rainbird was the Los Angeles Country Club. By the end of World War II, Rainbird was recognized as an industry leader.

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Post World War II

Once the Second World War ended, outdoor recreation and golf accelerated. The turfgrass irrigation industry boomed, since grass on all natural playing surfaces had to be watered. Completely automatic irrigation systems were available after the war, but converting quick-coupler systems did not gain momentum until the 1960s and 1970s.

A Collection of Early Buckner Sprinklers

One of the first country clubs to employ a fully-automatic irrigation system in California was Brentwood Country Club in Los Angeles in the early 1950s. Brentwood achieved wall-to-wall coverage using Buckner sprinkler heads and valves and Moody controllers. The entire 18-hole system cost Brentwood $120,000. The post-war era was also a time for independent inventors and skilled craftsman. The primary companies that occupied a good share of the turf and golf course market were Febco, Buckner, and Rainbird.

Hunter By this time, the full impact on the market by the irrigation industry had not been seen. In Riverside, Calif., L.J. Hunter founded the Hunter Engineering Company. Along with his two sons, Edwin and Joe, he began making tubing for portable sprinklers. In 1952, Edwin founded Moist-O-Matic in Riverside to commercialize soil moisture sensors. But in a very short time, Edwin's inventiveness resulted in the development of a smaller diameter sprinkler head to compete with the standard impact type head that had the greatest share of the market. Hunter's invention was a gear-driven, slow-rotating, plastic pop-up head which exhibited great reliability and uniform applications of water.

Edwin Hunter became a prolific inventor and also developed the valve-in-head sprinkler. Before his death in the 1990s, he held over 60 irrigation patents. In 1962, Hunter sold his business to the Toro Company and continued his career as an employee of Toro. But in the late 1970s, he decided to leave Toro to pursue other interests. Hunter, always the innovator, formed a new company in 1980 – Hunter Industries, which has since grown to become a full-service line supplier to the irrigation industry. He began producing and marketing plastic gear-driven sprinkler heads. Most recently, Hunter Industries began manufacturing a computerized irrigation controller and other gear-driven sprinklers for the golf market.

The Toro Company After the Toro Company purchased

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Moist-O-Matic in 1962, it branched out to become one of the leaders in the irrigation market.

Since the early 1960s, Toro has been manufacturing and marketing large-radius, gear-driven, valve-in-head, pop-up sprinklers. Within the past decade, Toro introduced a fully computerized irrigation system for turfgrass on golf courses and athletic fields. Toro remains the only manufacturer of turf maintenance equipment that also owns an irrigation division.

Later Years

Since the 1950s, the irrigation industry has grown primarily due to the introduction of the electrically activated valve. It allowed turf managers to efficiently irrigate for specific time periods without having to depend upon the hiring of an irrigation crew. When the transistor was developed in the 1960s, this eliminated the use of tubes in radio controlled units and resulted in more flexibility in controllers. Then in the 1970s, the central computer controller was designed. These are in common use on golf courses, parks and athletic fields.

Today, computerized water management systems are available to all turf managers. These systems may be combined with weather stations, which allow the turfgrass to be irrigated in conjunction with the evapotranspiration of the site. The use of reclaimed water and fertigation technology continue to be introduced and improved upon as a less expensive method of irrigating golf courses. Irrigation has played a major role in enabling golf course architects and superintendents to elevate the sport of golf to its current state.

(Editor's Note: Dr. Kent W. Kurtz has been a professor of turf grass science at California State Polytechnic University, Pomona ,for more than 30 years. This article was reprinted with permission from the the author.)

2003 MGCSA CALENDAR

MONDAY, MAY 19
SPRING MIXER
VALLEY HIGH GOLF CLUB
HOST: JEFF NORMANDT

MONDAY, JUNE 30
SCHOLARSHIP SCRAMBLE
NEW RICHMOND GOLF CLUB
HOST: TOM JOHNSON

MONDAY, AUGUST 18
MGCSA CHAMPIONSHIP
THE LEGACY COURSES AT CRAGUN'S
HOST: MATT McKINNON

MONDAY, SEPTEMBER 8
STODOLA RESEARCH SCRAMBLE
OAK MARSH GOLF COURSE
HOST: ROBERT PORTER

MONDAY, OCTOBER 13
FALL MIXER
LONG PRAIRIE COUNTRY CLUB
HOST: JOHN MONSON