



Lightweight tractor and multiple tires kept turf damage at minimum when irrigation trench was dug at El Dodaro course.

# If It Works in the Oil Fields It Will Work for Us

*That is what El Dorado CC officials  
decided when they picked Delrin  
pipe for their irrigation system*

**E**conomy at no sacrifice of efficiency was in the minds of the committee headed by Walter Harbison at the El Dorado (Ark.) CC selected to install a completely automatic watering system for the 18-hole, 6,361-yard course. Thanks to the committee, the club realized its goals — and golfers were only slightly inconvenienced during the five weeks it took to install the system.

Today, fairways, tees, and greens are watered by a system incorporating Toro automation and sprinkler heads and Du Pont's "Delrin" acetal resin pipe.

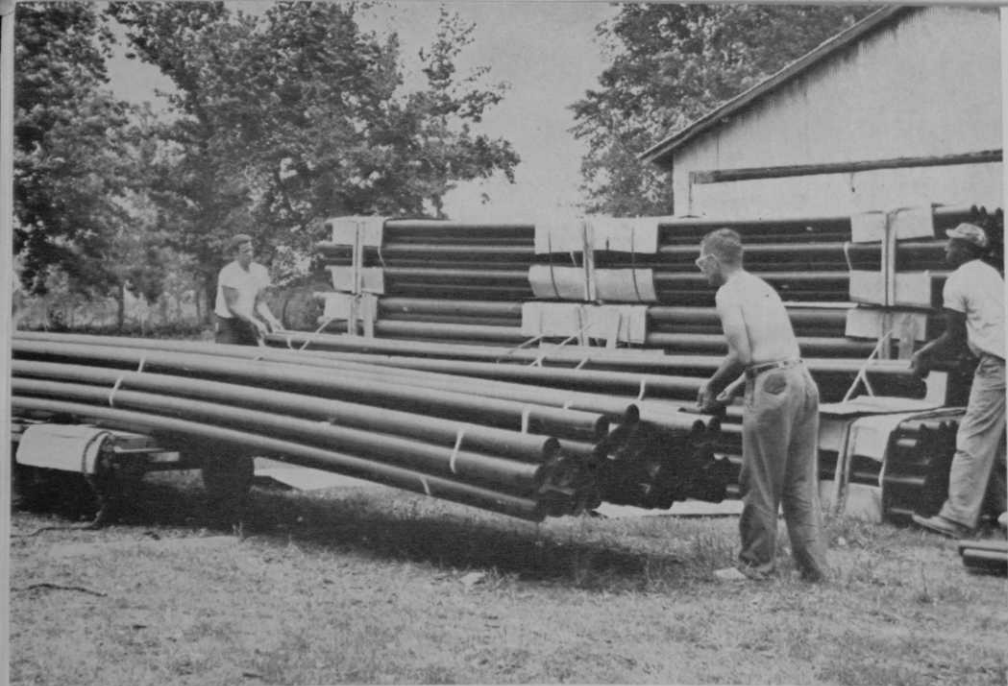
Delrin was not unknown to many club members of the southern Arkansas town, the petroleum center of the state and an important farm trade center for the area. The pipe had proved itself in the oil fields, but it was not, prior to its installation at El Dorado, known for golf course watering systems.

Installed were six miles of pipe, 200 quick-disconnect couplings on the fairways, and some 100 pop-up, permanent sprinkler heads at tees and greens.

## **Installed for \$46,000**

The total cost of the installation was \$46,000. While the committee was interested in a low cost irrigation system, the final decision was based on its long range prospects, versatility, and ease of installation.

Surge resistance of Delrin was an important consideration. A course system, always under high water pressure, can develop large pressure surges, particularly when a sprinkler is disconnected from a



Two men handled three 20-foot sections of light-weight 4-inch pipe at one time when El Dorado installation was made. Pipe was hauled to installation site on small trailers.

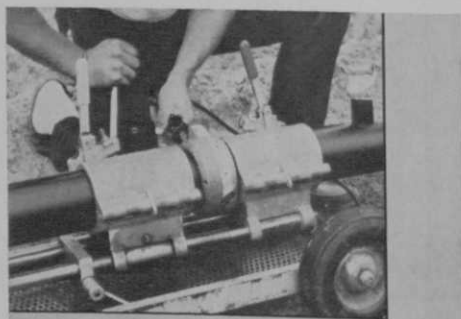
quick coupler. Automatically operated valves for green and tee watering also cause pressure changes because of their quick closing action. The resulting pressure surge and water hammer can be destructive if sufficiently strong pipe is not used.

At El Dorado, automatic watering of tees and greens is done from one to four remotely controlled sprinkler heads. A station near the clubhouse contains electrically driven timers set to water any green or tee through a pre-set sequence. The time of day and duration of watering can be pre-set and varied according to conditions. Water flow is controlled by hydraulically operated valves upstream of the sprinkler head.

#### Use Five Segments

The system is broken into five segments for operating efficiency. The control unit shifts segments automatically, but does not water adjacent segments in sequence. This avoids overlapping that can lay down too much water if time for absorption is not considered. Three, 300-gallon-a-minute connections supply the system.

*(Continued on page 103)*



(Above) First stage in fusing Delrin pipe. Hand held heating unit is operated with power from a portable generator. (Below) Second stage in joining pipe. The pipe is ready for testing at rated pressure within 30 seconds of second stage fusion.

## Irrigation at El Dorado

(Continued from page 38)

These tie into the course mains at widely separated points.

The entire course can be watered in less than three eight-hour shifts. The fairway water pressure is 60 pounds a square inch at each head. Five hundred gallons of water a minute can be supplied with uniform pressure at the heads. Delrin pipe, widely used in oil gathering systems, has outstanding resistance to corrosion, both internal and external. In the presence of oils, hydrocarbons, salt water, and typical agricultural sprays and chemicals, the plastic pipe exhibits excellent retention of properties.

### Joined by Heat Fusion

A big factor contributing to the economy of using the Du Pont pipe is the ease and low cost of installation. It is shipped in 20-foot sections with couplings attached to one end. These are joined easily on the job by heat fusion. The joint is ready for full pressure in less than 25 seconds with the strength of the joint equal to that of the pipe itself. In previous installations in oil fields, Delrin has been joined at a rate of 600 feet an hour. Joined at one location, the pipe can be dragged along the line of installation with no trouble. In fact, one man can drag 200 feet of 2-inch pipe as it weighs only 47 pounds a hundred feet. The pipe at El Dorado was buried 18 inches, well below the 7-inch frostline.

It is not necessary to install the pipe in straight or even level trenches. Moderate curves can be handled without pre-bending. Heavy vehicles and handling equipment are not necessary, thus minimizing damage to turf. No anchor fittings are needed and, after joining and ditching, the trench is filled in immediately because no time is required for joints to set or solvents to evaporate. Testing gets underway as soon as the last joint is made. The part of the course under installation need be closed for a short time only.

### Here Is Cost Breakdown

Costs at El Dorado, rounded out to the nearest \$50 follow: for the tees and greens for 6,900 feet of 4-inch Delrin pipe at

## Quality blended wetting agent



**AQUA-GRO**

NON-IONIC ORGANIC WETTING AGENT

CONTENTS: Blended non-ionic organic wetting agents, 100% 100% active ingredients.

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CONTAINS: 2.5 G. [Small text]

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**AQUATROLS' - PMA**

**LIQUID TURF FUNGICIDE**

ACTIVE INGREDIENT: Phenyl Mercuroyl Acetate 10%  
INERT INGREDIENTS 90%

**POISON: Antidotes**  
Extremely if swallowed, get medical attention and water. If inhaled, get fresh air. If on skin, wash with water. If in eyes, flush with water. If on clothing, remove clothing. If on hands, wash with soap and water. Call a physician for advice.

WARNING: If spilled on face, flush off at once with cold water to prevent severe eye burns. Do not breathe spray and do not get on eyes. Do not get on clothing. Keep away from children and animals. They produce delayed chemical burns! Wear protective gear handling.

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## Low cost wetting agent



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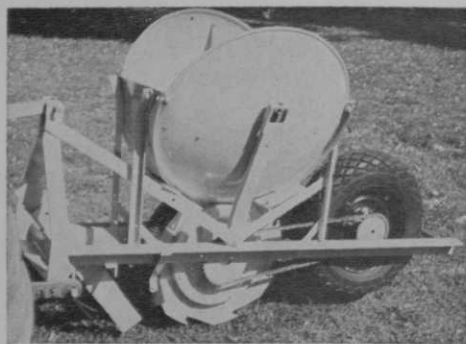
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## NEW SPRIG PLANTER

FOR ZOYSIA, BERMUDA and Hybrid Bent grasses  
on Fairways and Tees!



Revolving discs keep sprigs in place for automatic feeding. One man operation.

Capacity: 2 bushels

PLANT: 3 acres a day at 18" centers

Equipped with:

THREE POINT HITCH  
SINGLE CHAIN DRIVE  
HARDENED STEEL  
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Write for details!



SPREADERS

WEST POINT, PENNSYLVANIA

\$1.15 a foot, installation, fittings, sprinkler tie-in arrangements, heat fusion equipment, and freight charges were \$17,800.

For the fairways, 11,650 feet of 4-inch pipe were used. Cost for this, as well as fittings, sprinkler tie-ins, fusion equipment, and freight was \$18,850.

Total cost for the job included contingencies and sprinkler equipment.

The automatic controls and sprinkler system were manufactured by Moist O'-Matic, Inc., a subsidiary of Toro Manufacturing Corp. of Riverside, Calif. The installation was made by Flemings, Inc. of Shreveport, La., which also furnished the sprinkler and automation equipment.

### Pacific Northwest GA Expands Membership

According to the annual report of Pacific Northwest Golf Association there was an increase in membership from 84 to 99 clubs in 1964. President Francis A. Heitkemper announced that the association rated 21 golf courses during the season and 15 clubs used the PNGA handicap-

ping system.

PNGA sent 12 boys to the USGA National Junior tournament and two girls to the National Junior Girls' tournament. The Evans scholarship program is currently aiding 12 men in college.

The Winner of the Men's Championship held in Portland was Mickey Shaw of Milwaukee, Ore. Dick Price of Longview, Wash. was runnerup. The Ladies' Championship was held in Seattle with Mrs. Edean Ihlanfeldt of Seattle winning the title and Sue Jennett of Lake Oswego, Ore. finishing as runnerup.

The 1964 Junior Boys' Championship was won by Doug Robb of Vancouver, B.C. Peggy Conley of Seattle, Wash., won the Girls' Junior.

### Named NCA Directors

Jerome F. Healy, Jr., president of the New York Athletic Club (NYC), and Icer Malouf, president of the Lakeside Golf Club of Hollywood (Calif.), have been named directors of the National Club Association.