

Hoseless Irrigation

Recent developments in automatic systems for watering golf turf show great saving in labor costs. Engineering features are interesting

BY WENDELL P. MILLER, *Consulting Engineer*

“THE old order changeth”—and many greenkeepers are welcoming the spread of hoseless irrigation. Fortunate indeed is the greenkeeper who enjoys complete hoseless irrigation and more fortunate will be the greenkeeper of the near future with his “pop-up” sprinklers concealed underground and controlled by automatic timing clocks.

The concealed sprinkler is already here. William Bell, Southern California architect, is installing 1100 “pop-ups” on the grounds of the Agua Caliente golf course at the famous race track in Mexico. The sprinklers are spaced eighty feet apart each way on a triangular arrangement.

The development of these concealed sprinklers for golf course has been very slow but now will go forward rapidly. Until recently the market has been confined to the so-called “commercial underground” irrigation companies whose efforts have been confined to private estates, large lawn, cemeteries and parks. There are several of these companies which have operated for some years and have made many installations—but none on golf courses. Perhaps their high prices and expensive method of distribution has kept them out of the golf course market. Also the same factors which have held back hoseless irrigation generally have prevented the introduction on golf courses of the lawn brands of concealed sprinklers.

Install Samples

THERE is one good way to spread the use of hoseless irrigation. Sample tees or greens which are entirely hoseless can be installed at very little expense, say perhaps one or two

hoseless tees in order to get an appropriation for the remaining tees. Then a hoseless green, and so forth. If these preliminary installations are carefully made according to good engineering practice, then the entire preliminary installation can be subsequently incorporated in a comprehensive fairway and water supply program.

Unfortunately, the cost of fairway irrigation is accentuated by the usual abandonment of existing tee and green systems which are almost invariably found wanting in some essential particularly when the time comes for fairway watering. The use of short lived steel pipe is the main cause of abandonment. Inadequacy is the next important cause. Everyone who installs hoseless tees and greens should see to it that only genuine wrought iron piping, or cast iron, or their equivalents of adequate size, is used.

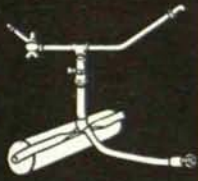
Hoseless Tee Irrigation

HOSELESS tee systems are of recent introduction. Various means have been adopted to secure individually controlled tee watering. For example, at Glenview, Chicago, ordinary lawn type sprays are permanently installed at each tee. Opening a valve starts the sprinklers. Nothing to handle but the valve and that takes only thirty seconds. This is labor saving to the Nth degree.

More recently the “pop-up” or concealed sprinkler has been introduced for tee irrigation. One pop-up is installed in the center or perhaps toward the windward side of the center of the tee. A gate valve is placed in the feed pipe, in a box just off the tee. Inch and



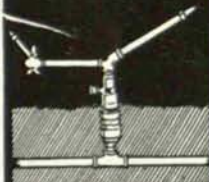
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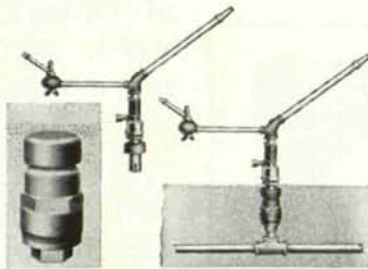
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one-quarter pipe is the smallest pipe desirable for a single pop-up. If two pop-ups are used on double tees, inch and one-half pipe will do. Where two or more pop-ups are used, one valve can be used to control all the leads though individual control is better.

In using pop-ups for tees, it is necessary to place an adjustment valve on the tee sprinkler if water is scarce or expensive. Through the use of an adjustment valve (which is placed underneath and directly attached to the pop-ups) the area sprinkled can be throttled down to the size of the tee. Recent installations of this character have been made at Pomonok Country Club, Flushing, Long Island; University of Michigan Golf Course, Ann Arbor, Michigan; Midlothian Country Club, Chicago and Cascade Hills Country Club, Grand Rapids, Michigan. These installations are of particular value for their even and accurate distribution of water and for the saving of labor.

The accompanying photographs illustrate the irrigation of both single and double tees by these underground, concealed or pop-up sprinklers. Working pressure in these installations runs from sixty-five to ninety pounds. The effective diameters are from sixty to eighty-five feet, except where throttled down as before explained. The quantity of water distribution ranges from ten to eighteen gallons per minute according to the sizes of nozzles used. Speed of rotation is about one and one-half turns per minute.

Installation Details

EACH concealed sprinkler is mounted on a vertical riser which, in turn, is connected to the supply pipe by means of a double swing joint consisting of two street ells, one screwed into the other. This "trick of the trade" provides a joint which will stand a jolt from passing equipment without breakage.

The sprinklers are set slightly below ground level, usually the thickness of your little finger below a straight edge laid across the hole. Each sprinkler is set in a length of ten inch drain tile, placed on end and filled with cut stone or gravel. The top of the tile comes just to the bottom of the sprinkler casing.

A circular piece of galvanized sheet iron, with a hole in the center to receive the sprinkler casing is used as a cap for the tile, to keep the dirt away from the gravel chamber.

Winter drainage is provided by laying the feed line uphill from the main, or if this is not possible, by hand valve, ball and socket, cross-tee wells, or other types of drains. The sprinklers and casings are self-draining.

Underground concealed sprinklers are here to stay, very definitely so, and it behooves every greenkeeper who wishes to be up to date to acquaint himself by testing sample sprinklers and making trial installations. Any manufacturer of such equipment should be glad of the opportunity to send any responsible Green chairman or greenkeeper on or more sample sprinklers with blue print instructions covering their installation.

Hoseless Green Systems

HOSELESS green irrigation is not new. For several years the California irrigation systems have been used on the greens. The outlets were placed on the edges of the greens. Unfortunately this method is not adaptable to greens surrounded by sand traps, particularly on tight ground. Wet traps are not desirable on any course.

The recent introduction of satisfactory "half-circle" sprinklers adjustable to any arc, has facilitated the adoption of hoseless irrigation to greens regardless of size or shape, confining the water entirely within the irregular perimeter of the greens.

In a current installation at Cascade Hills Country Club, each of the eighteen greens is equipped with two to four "half-circle" sprinklers which are permanently mounted on fixed risers. Each sprinkler is adjusted to swing through the exact arc it is to irrigate. The radius covered is from thirty-five to fifty feet. By changing the setting of the automatic control of the pumping plant to a higher pressure, radii of fifty-five feet could be secured, but this distance is usually not necessary.

There is an objection to using these sprinklers on a portable basis in connection with snap valves where the contour of the green is very irregular. Each sprinkler is adjusted



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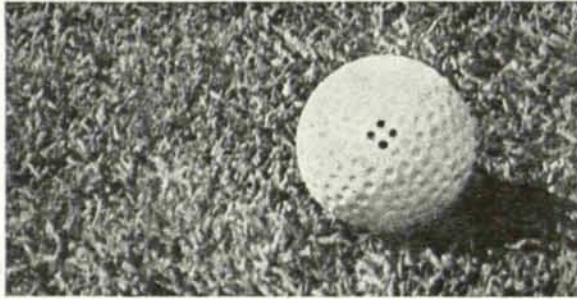
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to its own location. If the sprinklers are used as portables, then each sprinkler must be numbered and likewise each outlet and each evening every one of the sixty numbered sprinklers must be placed in its correct and correspondingly numbered outlet. Quite a job.

On the other hand perhaps there will be objections from the players to two, three and, in some cases, four fixed sprinklers standing ten inches high and just off the putting surface. True, none of the sprinklers interfere with direct approaches. A ground rule is necessary for the balls which come to rest close to the sprinklers or are stymied.

In the case of Cascade Hills Country Club, the Green committee does not anticipate objections from the players. Perhaps there is a psychological element involved. With the club going through the throes of a bond issue, followed by construction of a deep well, reservoir, pressure pumping plant, hoseless tees, and fairway hose irrigation, it is probable that the players will accept the fixed sprinklers around the greens as merely another innovation. Perhaps, if only the hoseless green sprinklers were installed, there might be plenty of objections.

Why not an underground half-circle sprinkler? So far there is none that has the necessary range combined with the necessary adjustability. Manufacturers are working on this development, with considerable hope.

Greenkeepers should appreciate the fact that most of the "lapping" in hoseless irrigation is imaginary rather than actual. All sprinklers "taper off" at the edges of their distribution areas. The distribution curves of the better sprinklers show a sharp falling off at the end of the "throw." For this reason some lapping is necessary in order to secure a good distribution.

We should add that we are using numbered portable half-circle sprinklers on several trial hoseless greens at Pomonok Country Club, Long Island. After the full season's operations conclusions can be drawn as to the relative merits of the fixed sprinklers and portable sprinklers for hoseless greens.

Rolling Stock vs. Underground Equipment

EASTERN greenkeepers are having some difficulty in accepting snap valve equipment; "it leaks"—"the couplers break"—"the tractors wreck it." One greenkeeper whom we encountered in our travels objects to snap valves and concealed sprinklers because the lugs one and one-half inches long on his tractors play havoc with the valves and sprinklers. Some day this estimable gentleman will wake up and announce to his tractor men that running the lugged drive wheels over valves or sprinklers constitutes automatic walking papers.

The trouble with snap valve and concealed sprinkler equipment lies not in the equipment but in the greenkeepers who are not familiar with the newer equipment. Pacific Coast greenkeepers laugh at the fuss our Eastern greenkeepers make about the underground equipment; say that the Easterners are not "snap-valve minded." Of course the California courses, with nearly one hundred thousand pieces of concealed irrigation equipment of all kinds, are in a position to appreciate the advantages of such equipment.

You could not induce any California greenkeeper to go back to their methods of ten years ago, any more than you could get a resident of Southern California who come from say, "Hoosierland" or "Ioway," to go back to Indiana or Iowa to live.

The use of concealed irrigation equipment East of the Sierras is increasing by leaps and bounds. Many of our greenkeepers are not familiar with its care and use and of course have minor troubles with it; but as their familiarity increases so will their appreciation of these labor-saving, time-saving conveniences increase.

Concealed equipment is with us permanently—it is rapidly being accepted by all forms and conditions of golf course owners, and it is our firm belief and recommendation that all of us who are interested in fine turf should do all we can to familiarize ourselves with these money and disposition savers, make every effort to popularize their use, and induce our own clubs to get the irrigation equipment on an automatic underground basis



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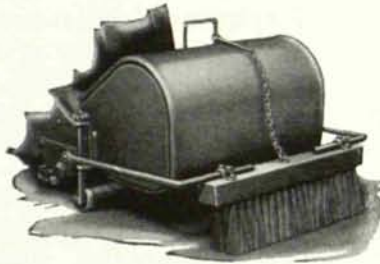


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The clubs will gradually become educated to these installations as sound investments which permit the greenkeeper to devote his entire energies to duties other than irrigation, maintain the course at uniform playing length (playing condition) throughout the season, permit the players fullest enjoyment of their game, prevent assessments and hold the membership intact.

Hose is doomed on large turfed areas and while it will be some years in passing, the greenkeepers of America can read the handwriting on the wall, and will govern themselves accordingly.

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