

other words there are no dead ends. There are several reasons for this. In the first place dead ends tend toward the accumulation of whatever dirt gets into the system, and second, with the loop plan the water comes simultaneously through several lines to whichever outlet is being used and consequently a greater volume and pressure can be secured with a smaller size pipe. Our main distribution system is six-inch and four-inch cast iron pipe. Those sections which are kept alive the year around are laid at least five feet deep, and the balance about a two-foot depth. The pipe leading to the individual sprinkling outfits themselves is two-inch and one and one-half inch galvanized iron.

Our fairways are watered from fixed outlets by means of portable sprinklers. The piping layout is an adaptation of the Buckner California hoseless system to eastern needs, with all the fairway area from 125 yards in front of the tee to the green being served by the fixed sprinkler outlets. The outlets are placed in two rows, through the fairway on a triangular plane, all outlets being 80 feet apart. Our fairway outlets are laid out in batteries of five to seven each, according to the slope and size of the fairways, with the valves placed close to the distribution mains at the edge of the fairways. We installed unions at all valves so that in case of repairs becoming necessary the valves can be easily removed without cutting the pipe.

### Outlets at Greens and Tees

The outlets of the greens are at the back slope and the water is carried to the sprinklers through one-inch hose. We originally installed sled type sprinklers on our greens but we found that the green surface was marred in moving them during sprinkling so we changed to a sprinkler with a roller base which has proven very satisfactory. The outlet at the tees are in the center of the tee and although our tees vary greatly in size, the proper distribution is obtained by adjusting the valve so that the pressure at the sprinkler is just sufficient to throw the water to the far corners of the tee. All of our outlets are of the quick coupling clamp type and are far superior to the old screw connections both in time saved and ease of operation. Our sprinklers are Golf King Number Six.

Our greens and tees are watered every day except when it rains and our fairways are done whenever they start to get dry. We water in the late afternoon and early evening. This is done for several reasons. First, it causes less interference with the play; second, the evaporation is much less when the sun is going down and consequently a greater percentage of the water soaks in and serves the proper purpose. The saving on this score is quite material when watering fairways; lastly, there are some grasses which sunburn when water is applied in the middle of the day due to the magnifying effect of the globules of water on the individual grass blades.

Our system has been in use for two years and has worked out most satisfactorily and we have found it unnecessary to make any changes whatever. We always have plenty of water at the proper pressure, even at the most distant outlets. This is in favorable contrast to our old system where the water would barely trickle out of the sprinklers on some of the far greens.

In conclusion let me repeat, get expert advice on the design of your system and do not be deluded into adopting the plans of some amateur who thinks he knows what is required.

### "No Free Tees" Policy Works O. K.

L. H. GERSON, green chairman of the L. Oakwood Golf club (Cleveland district), cites that club's experience with the free tee proposition in a letter to Wm. Lowell, jr., to furnish evidence that sand may be dispensed with at the tees without the club going to the expense of furnishing free tees to the members.

Gerson tells Lowell:

"We decided to eliminate the tee boxes and further decided not to supply the members with tees gratis.

"We are very glad that we did so, as we find that the whole proposition works out very well. The members are purchasing their tees, and we haven't had a single complaint. We have saved the labor of placing the sand and water in the tee boxes together with repairs and painting.

"We are very much pleased with the whole situation."