

Watering the Fairways

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The most valuable property-right in all of the Rocky Mountain region has always been water. Popular opinion would give the palm to mining or oil for the reason that to these is attached the halo of speculative or get-rich-quick romance, but in reality the backbone of the prosperity of all this vast region is its farm crop and livestock industries, and the fundamental requisite for the successful carrying on of either of these is sufficient water. It is in connection with the appropriation, distribution, and use of water that the tragic, romantic, and substantial history of this part of the country has been written. If it were not for the beneficial use of water in all of the many and varied ways that have been devised for its application, the entire western part of the continent would indeed be the desert waste it was formerly declared to be.

What is true in general as to the importance of water to the West applies equally when the subject of golf is involved. If a turfed course is contemplated, the first question to be asked is, How much water is available? And it is far more important that this question be answered satisfactorily than the customary questions regarding soil, adaptability, conformation, and the like.

When the location of the present course of the Denver Country Club came to be determined, much controversy arose for the reason that most of the tract selected was apparently a sandy waste. It had never been cultivated, and many doubted whether grass could ever be made to grow upon it, but careful investigation had proved that the soil, though very light and sandy, contained ample nutritive ingredients to produce a good turf *if sufficient water was applied*. The needed water was developed by sinking cribs some ten or twelve feet below the surface in the bed of Cherry Creek about a mile above the club grounds. These cribs collect part of the underground flow of this stream, which is then conducted by a 24-inch pipe line on the club's property at its highest point. This flow continues uninterruptedly the year round. Cherry Creek, for nine months of the year, may apparently be dry as a bone, but the underground flow goes merrily on, varying somewhat with the dryness of the season but sufficient at all times to provide water enough to maintain good fairways. Some of the members of the club contend that this has given Denver the best fairways of any golf club in the country. This view may be a trifle over-enthusiastic, but it is true that throughout the year they are green and carpet-like and have all the good points of an ideal playing surface. When it is realized that every growing thing upon the course—shrubs, trees, flowers, and every blade of grass on teeing grounds, putting-greens, fairways, and even rough—must be regularly and frequently watered, the vital importance of this necessary element in our equipment will be appreciated.

Distributing mains are laid so as to carry this water to every part of the course. These mains are 8-inch tile pipes with cemented joints. At various points, say, every 500 feet, outlets are arranged with shut-off valves. The mains run down between courses and the outlets are in the rough; consequently no obstacles are put in the way of play. The flow is entirely by gravity and the "head" is low, at no point being greater than three and

one-half feet; consequently the pressure is very slight and the force of the water, as it flows over the surface, is not great enough to "wash" the soil or produce cuppy lies. The great advantage of this plan is that it enables us to get the water to the roots of the grass; whereas, with sprinkling, much of the water blows away or evaporates in this arid climate. The soil is so absorbent that irrigating can proceed during play with very little inconvenience, for in a few minutes all surface water has disappeared and the sandy nature of the soil tends to minimize muddy conditions.

The method by which this water is applied at the Denver Country Club often strikes the eastern visitor as unique and remarkable, but it is merely the old irrigation method, long used in this part of the country, slightly modified to suit the peculiar circumstances.

The method is to flood the entire course instead of sprinkling it. As it is expressed here, we "irrigate" the entire fairway system and all of the rough. This is done through 8-inch hose made of heavy duck canvas in twenty-foot lengths. There are no couplings. The end of each length of hose is overlapped into the end of the next length. This overlap amounts to from ten to fourteen inches. The end nearest the outlet valve is stuck into the end of the next length, and this process is continued until a "line" of hose has been "laid" in whatever direction is desired and to the required distance, usually one or two hundred yards. The water is then turned on. The flow from the extreme end will gently spread a sheet of water, one-half or three-quarters of an inch thick, over several hundred square feet of surface. The irrigator will then break the "line" at the next joint by merely pulling it apart. The water will then flow from this point over the ground down to the place where the irrigating began, and gradually, by breaking each joint in turn, the whole area from the end of the "line" back to the outlet will receive a thorough soaking.

In ordinary weather it requires about four days to go over the entire course in this way, using two men working at different points on the grounds. In the hottest part of the summer this force is doubled, two men working day-times and two at night; and, of course, the hotter the weather, the more water is applied.

The system works easily and economically. The first cost of the installation of cribs, pipe line, and distributing system represents the capital investment. The current cost is represented by labor and replacement of hose. About two thousand feet of this hose is used annually. Its life is rarely more than one season.

The quantity of water required to irrigate fairways by this method would vary with conditions of soil and climate. One of the eastern courses that waters its fairways as well as its putting-greens, is very proud of a pumping plant that delivers 600 gallons per minute. To the layman that sounds like a lot of water, but great quantities are required; and in the language of irrigation the standard of measurement is not gallons, but feet and inches. The quantity of water used for the fairways at the Denver Country Club is $3\frac{1}{2}$ second feet; or in terms of gallons, 1,600 per minute.

There is always one danger connected with writing for general distribution about methods employed at any golf club, and that is that the same methods may be attempted elsewhere, under conditions that are in nowise similar, with the result that failure follows and waste occurs. The wonderfully favorable results that have attended the wholesale watering plans

in vogue at the Denver Country Club have, however, led to the query, Why would not other clubs profit equally if similar plans should be followed, modified, of course, where necessary to conform to conditions prevailing elsewhere?

Summer visitors in Denver exclaim in wondering envy about the constant greenness, springiness, and splendid condition of our fairways, even in the hottest, most scorching weather. They say, "at home everything is brown, dry, and baked to a crisp. Why can't we get fairways like this?" Well, they could with a little extra enterprise on the part of their greenkeeping organization. The importance of watering fairways has not been sufficiently realized. It is, however, coming more and more to be appreciated. If golf courses are to be kept up in really first-class condition, it is obvious that they should not be allowed to dry up and become baked and blistered during a considerable portion of every playing season. The time to plan for the watering of fairways is, of course, when the course is being originally laid out, as the equipment can then be installed with a minimum of expense, but most players will agree that the added pleasure of playing over green, resilient fairways at all times warrants a considerable outlay in the installation of some system for the watering when needed of all the "pretty" on the course.

It must not be forgotten also that the constant irrigation of turf is in itself a method of fertilization, for the reason that water, thus gently flowing over turf, deposits fine particles of silt, organic matter, and other forms of nutrition that aid materially in maintaining a healthy sod.

When the rainfall is so slight or the climate so dry as to necessitate irrigation of fairways, studies could profitably be made of systems employed both in Colorado and California. In fact, the latter State has developed the science and technique of irrigation more elaborately than any other section of the country. In general, the following are the necessary things that must be remembered and provided for:

(1) Secure an ample supply of water so as to enable a large quantity to be applied quickly.

(2) Arrange a distribution system for this water to reach every point and with frequent outlets so that the surface connections required will be as short as possible.

(3) Do not figure on high pressure lines for irrigation. Water in quantity can not safely be applied to turf under much of a "head." The flow secured must be very gentle; otherwise washing of the soil, uneven surface, and cuppy lies will result.

(4) Irrigation can never be employed on newly-seeded ground. It is not safe to begin to use this method until a good thick stand of turf has become well rooted.

What is a proper green fee, and why?—It is obvious that it costs a club money in the way of locker service to take care of guests, and a green fee should be charged that will cover costs and leave something to be credited to the green committee.

Keep the men busy.—It is considered good practice not to "dock" men for parts of days lost on account of rain. This keeps them on the place ready to go to work if it clears up. There should be plenty to do under shelter—nice rainy-day jobs.