

the ability of Bob Ervine. Greens and tees were in fine condition and the fairways were superb. Bob, like many another golf-course superintendent, has enabled his club to present a championship

golf course, groomed to championship standards in spite of obstacles which would have spelled doom had the responsibility of the course been in the hands of a less capable man.

## HIGH SALT CONTENT OF WATER NECESSITATES PERFECT DRAINAGE

The water table has been receding steadily in parts of the western states for the past several years. The soils of this area are generally alkaline and some of them contain quite high amounts of soluble salts, such as chlorides. As the water tables have receded, the water from wells as well as from rivers has become higher in its soluble salt content. Putting greens that once did fairly well under the conditions prevailing at the time they were planted are now becoming poor because salts have begun to accumulate in the soil underlying them.

The accumulation of salts accentuates the necessity for perfect drainage in putting greens irrigated with water of high salt content. If the soil underlying a putting green is porous and water drains through it rapidly, the salt contained in the water will be carried on through the soil and much of it will be carried away as water drains out. However, if the sub-soil does not drain well and water stays in the soil for a long period of time, much of the salt may remain in the soil.

The method of watering which is practiced has much to do with whether or not salt accumulates in the soil. If water is applied frequently and at light rates, the soil is never saturated sufficiently to allow gravitational water, or excess water, to percolate down through the soil and therefore none of the salt is ever leached out. Each irrigation adds a little more salt, the water is used by the plant or it evaporates and salt is left in the soil. On

the other hand, when water is applied in rather large amounts but is applied infrequently, the salt that was left in the soil by the previous irrigation will be washed out and salt will not accumulate nearly so rapidly.

Good drainage and proper watering practices will do much to permit the use of water that would be entirely too salty under the practices of some golf-course superintendents. Infrequent, heavy waterings will tend to prevent the accumulation of salt in the soil. Frequent, light waterings will invite trouble. Not only is more salt accumulated but roots tend to become more shallow and the stress of high salt content becomes even more pronounced.

Where water is salty, good drainage and proper methods of water application are absolutely necessary for the growing of good turf.

This discussion should not be interpreted to mean that light sprinkling should never be practiced. It is necessary in a great many cases to syringe putting greens lightly during the heat of the day in midsummer to prevent wilting. Greens may be lost by neglecting this practice. But putting greens should not be given a small amount of water each night and syringed the next afternoon. They should be wet thoroughly and then except for syringing to prevent wilting in the heat of the day, the soil should be allowed to become nearly dry before more water is applied. A more extensive root system will be built, a healthier turf will result and less water will be required.