VITAL FEATURES OF LAYOUT OF watering system SHOULD BE STUDIED AT START

By H. L. BOYER*

IF WE are going to have a course fit to play on, and on which each of us will benefit by the advantages of good turf—both on greens and fairways—there is one prime essential which should be available in abundance at all times—water.

In the writer's experience, one fact in connection with golf course watering stands out rather prominently, i. e., too little attention has been paid to the details of equipment necessary to supply water to the several places on the course, and the best evidences of this are the numerous golf courses in the country inadequately watered. There might be some excuse for scorched fairways but none at all for that condition on the greens, particularly when it could have been avoided when originally installing the watering equipment.

This article then, will attempt to explain in some detail the several points mainly to be considered.

First—It is essential to have a sketch of the course showing the position and size of the greens; the vertical elevation from where the pump will be placed to the highest spot on the course where water will be required; the horizontal distance between the pump and the nearest green; the distances between greens, and the length and width of fairways if these are to be watered.

Second—The next point is the source of supply, whether lake, stream, spring,

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shallow or deep well. The source of supply determines largely the type of pump which can be used. Obviously, it is important that the supply of water should be adequate for the service required, which depends on whether the water system for the course will be expected to take care of service in the clubhouse, such as showers, toilets, etc., and also for drinking and cooking.

Third—Type and size of pump—As has been noted under the second point above, the type of pump to be used is determined by the source of supply. If the lowest water level of the supply is not more than 25 feet below the point where the pump will be placed, a shallow well or suction power force pump may be used. If, however, the source of supply is a deep well, a power deep-well pumping head, situated directly over the well will be required, with a cylinder of sufficient size for the requirements, placed in the well at a suitable depth to get the water, and connected to the power deep-well head by means of drop pipe and sucker rod. The majority of cases, however, will require a shallow well or suction power force pump.

Size Factors

The size of pump required is based on two factors—the capacity needed in gallons per minute, and the maximum pounds pressure against which the pump must operate. The amount of water necessary per minute for each green depends on the size of the green, the character of the soil and consideration of the average rainfall in that particular section. An average of five to eight gallons per minute for each green is fair for many sections of the country, and it is only necessary to multiply this gallonage by the number of greens to be watered at one time to find the capacity of the pump required. Some courses water three, four, or five greens at a time; other courses water all greens at one time; a correspondingly larger pump is required for this latter service.

The maximum pounds pressure against which the pump must operate is based on three factors; the pressure desired at the highest green on the course (usually 20 to 30 pounds); the vertical elevation in feet from where the pump will be placed to the highest required point on the course; and the friction loss in the pipe lines. Obviously the pipe lines near the pump are much larger than those at the extreme distances from the pump. This is necessary to reduce the friction loss.

Pipe lines may be laid six inches or so underground or on top of the ground, partly submerged in places. Adequate valves and hose connections should be available at each green, and such other places on the course as necessary.

Types of design of nozzles for greens use on sprinklers are as many as they are varied. One point must be remembered—the size of the orifice of whatever type of nozzle is used has a direct bearing on the volume of water delivered and the pressure available.

Planning for Fairway Watering

Watering of fairways may be done by placing lines of pipe in each fairway, sufficiently distanced, based on width of fairway. The width of spray from the nozzle at a given pressure determines how far apart the lines should be spaced. And, if watering of the fairways is a consideration likely to be important some time in the future after an installation has been made to care for the greens only, it is more economical to provide the proper size pump in the first place to care for this additional consideration, even though the actual watering of the fairways may be delayed indefinitely.

Fourth—Storage Tanks.—Two methods are used for storage of water. Pneumatic tanks and open tanks. Pneumatic tanks combine the use of air and water and produce pressure on the pipe lines and should have an adequate supply of air. Pumps, of course, can be equipped to supply both air and water to this tank at one and the same time. Tanks of at least five hundred gallon capacity, preferably larger, should be used, and if the tank will be an eye sore above ground, it can be buried.

Open tanks should be elevated as much higher than the highest green on the course as will equal the pounds pressure desired at that highest green. Sometimes an open tank in the form of an open reservoir situated on top of a high hill is used, and then the water flows by gravity to the several points on the course.

If an electric motor is used to drive the pump, regardless of what type of storage tank is used, the whole outfit can be made automatic by means of either a pressure or float-switch. If the water supply for the course is to be used in the clubhouse and is not fit for drinking or cooking, it will, of course, be necessary to arrange for a separate supply for this service.

In conclusion, much time, money and

effort have been wasted in installing equipment entirely inadequate. We must have golf courses and we must have water for them. Let us give the turf a chance by supplying sufficient water at all times, and let us go about the job with intelligence so that once we have made the installation, we have the job licked for all time.

How I Make and Use Our Compost

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MY early experience on the edge of the market garden district of Bedfordshire, which supplies London with a large proportion of its vegetables and where perhaps more fertilizer, both manure and commercial, per acre is used than in any other part of the world, has led me to look upon organic matter as the main source from which to obtain this fertility. In this early training I was taught to look upon the quick acting chemical fertilizers as stimulants, pure and simple. Nitro soda was then the chief one used. Its use meant large yields, but, if used alone, the soil would be impoverished and left in bad physical condition. On heavier soils its action is to make them sad, to "plow like liver" as we called it, instead of the mellow granular condition Mr. Noer lays great stress upon.

Writers on the soil seem agreed that even with fully qualified chemists it is difficult, if not impossible, to maintain soil fertility by chemical means alone. The beneficial effect of organic matter is needed.

As our club is still in the happy position of being able to obtain stable manure, I have made use of this for the organic supply, trusting to the compost heap for humus, phosphorus and potash, supplemented with ammonium sulphate for a greater nitrogen supply.

Compost Method

My method of composting is to use the manure fresh, as hauled from the stable. It saves handling; the truck, a Ford with Jumbo gear shift, backs up onto the pile and dumps. Soil is handled the same way, the front of the pile being kept low, and the back, high. The layers of manure are about 18 in. thick, and the dirt, about 6 in. The manure will compress to 3 or 4 in. Putting the manure on thick allows heating and fermentation to kill some of the weed seed.