

Water According to Turf's Needs

By John Monteith, Jr.

ONE of the most perplexing details of budgeting is that of watering. Forecasting of water requirements with anything like precision is impossible, of course. However, an acquaintance with the fundamentals of course watering is necessary to insure water use with maximum effectiveness and economy.

According to Welton's figures an average green in summer would require 15,000 gal. per month—or 135,000 for 9 greens. Average rainfall for North Central states, May to September, is 3.42 in., which equals 92,860 gal. per acre. This is approximately the area of 9 greens, therefore a deficit of 42,140 gals. for the season.

For fairways Welton's estimate is 3,500 gals. a day per acre. For 80 acres (18 fairways) 280,000 per day, 8,400,000 per month. Subtracting average rainfall of 92,860 gals., 7,429,280 gals. per 18 fairways per month, you have a deficit of 970,720 gals. per 80 acres of fairway per month. Add the 18 greens and you have the answer to normal requirements in the North Central sector (if the requirements ever are normal).

The old question as to whether greens are watered too much or too little is always most freely discussed in late summer—after the damage from misuse of water has been done. Laudable resolutions to do better next year are forgotten or changed by new officials long before next season is well under way.

No Definite Quotas

Perhaps one of the principal difficulties in settling the watering question is the absence of any specific figures on the amount of water best for greens. Our public is so accustomed to figures in business, politics and general advertising that we have come to look for figures in everything. It is true we may not comprehend the figures and may not recognize when they are juggled before our eyes, but we nevertheless expect to see figures. Therefore when a greenkeeper cannot give exact figures for watering his greens he is apt to be scored down at the start of any argument.

A new chairman of the green-committee of a large club expressed this point of view as follows: "It strikes me our greenkeeper

like most greenkeepers with whom I have talked, is not sure enough of his maintenance program. I want to work out a definite schedule for our maintenance staff like you find in any modern business organization. It strikes me in this day and age we should be able to get this greenkeeping work down to more definite terms. I want a schedule for our Directors to show just what we are planning to do week by week."

He readily brushed aside any explanation about varying weather conditions and continued: "Take the question of watering greens, for instance. Our greens are a definite size. There must be some definite amount of water which is best for growing grass. By combining such definite figures why can't we give our Directors a definite schedule of watering greens, the first week in August let us say."

It was obvious that arguments were futile so we proposed to work out a definite watering schedule for his selected week as a starter. He, however, was to furnish us with all information that would affect the program. He would gladly do that and an engineer or his committee would gladly check figures dealing with water output.

He was obviously delighted at the prospect of being the pioneer in a new system of "planned greenkeeping." He would jot down the items on which he was to furnish information. 1. water pressure? 2. size of pipe? 3. type of sprinkler? "Yes, our engineer member can double check those." 4. rainfall for July? "Well, yes, that would affect it, wouldn't it." 5. wind velocity and direction for the period? "Well, yes, that also would influence evaporation, wouldn't it." . . . About then a foursome stepped off the eighteenth green and we discussed other matters. This case it must be admitted is extreme. On the other hand it is perhaps not as extreme as it is an obvious one.

Minor Variations Unnoticed

The variations in rainfall that make newspaper headlines are apparent to anyone. However, the average city man pays little or no attention to the usual minor variations from normal rainfall. The extremes between last summer's floods and this season's record-breaking drought in some parts of the East cannot be overlook-



This newly invented Willmore tree mover handles big trees with the greatest of ease. The mover, which was invented by Charles Willmore, of Green Bowers Nursery, near Denver, is shown lifting a large Ponderosa pine on the grounds of the Denver CC, during a recent transplanting job. This machine efficiently moves trees that have earth balls of eight or more feet in diameter, without injuring or disturbing the ball.

ed. On the other hand the difference between a 3-inch monthly rainfall that comes in 2 or 3 quick downpours and an evenly distributed rainfall of 4 or 5 inches is naturally of no particular interest to those who work in offices and is consequently not noticed by them. Therefore, it is not surprising that the greenkeeper and the average club member cannot think of watering in the same terms.

Reasoning Must Back Variation

While varying conditions justify extreme variation in watering schedules there seems to be little excuse for the seemingly aimless application of water that one finds on many courses. Fluctuations in water requirements instead of serving as a justification for no system at all should serve to stimulate a more critical attitude which will develop an even more flexible system based on actual requirements of different greens or even small portions of any green.

Grass is influenced by the amount of water it has available to it rather than by the amount it has received either naturally or artificially. The amount of water that escapes by run-off, drainage, evaporation and transpiration therefore must be considered along with rainfall and sprinkling. This makes it sound complicated, as indeed it is. Fortunately, however, there is an extremely simple way to figure out the effect of these interlocking factors on the availability of water.

The simple method of looking at soil under grass tells the story. Obvious as this

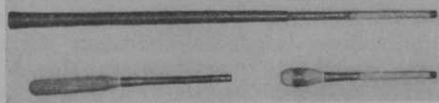
solution may be it is amazing how few greenkeepers ever see the soil under their turf.

After all, grass must get its water from the soil in which its roots are functioning. If the root system is shallow it has a more limited reservoir to draw from than if the roots penetrate several inches deeper. If the soil is examined frequently, especially before watering, it will be possible to avoid many of the injuries from over- or under-watering. Many of the dry spots on greens that are neglected or treated as if they were brown patch will be recognized and may be remedied before severe damage develops.

How to Examine Soil

There are many ways to examine soil for moisture. Americans like special gadgets. A simple and highly efficient sampler may be made in any workshop from a piece of tapered steel tubing. A discarded steel golf shaft serves the purpose well but a tube of the common tubular tined fork will prove somewhat more durable.

A piece of the tubing is cut away as shown in the accompanying illustration. A



short piece at the bottom of the tube left uncut prevents spreading of the sides. The tube is pushed a few inches into the turf

and the tapered sides of the tube enables the core to slide up readily inside. The sample can be thrown out of the tube through the side opening for examination. One distinct advantage of this sampler is that the core is so small it need not be replaced and leaves no bad scar due to drying out of larger samples that are replaced after removal with a knife or other sampler.

By frequent use of a sampler a greenkeeper or his watering man can readily detect dry spots in a green. When he takes out cores from which he can readily

squeeze out water he is warned that there is too much water for the welfare of his grass.

This sampler may also prove to be a useful way for a green-committee chairman to use some of his discarded shafts. A club of this design for special divot digging purposes would not be counted as exceeding the legal bag limit and it might be handy in convincing some complaining members that just because the surface of a green may look somewhat brown and dry the greenkeeping staff is not really "letting everything burn up."

Here Are Short Course Dates

AS GOLFDOM goes to press, those schools that have announced dates for their annual greenkeeping short courses and turf conferences are Massachusetts State College, Rutgers, Penn State, Michigan State, and Maryland State College. Only tentative dates were given for Md.'s course.

Fourteenth annual winter school for greenkeepers at Massachusetts State College, Amherst, is scheduled to get under way January 2 and close with the golf course maintenance conference and exhibition March 14-16. The course is divided into two terms, the first from Jan. 2 through Feb. 6, and the second from Feb. 7 through March 15. The second term continues the work of the first, and certificates are given only at the completion of the full 10 weeks' course. However, one may take the first term in 1940 and the second at some later period, if desired.

Applications for the 1940 course indicate there will be another fine group taking the course. Full information may be obtained by addressing R. H. Verbeck, short course division, MSC, or Prof. Lawrence S. Dickinson, chief of the section of agrostology at MSC, and who is in personal charge of the course.

Penn State College, State College, Pa., will hold its twelfth annual Fine Turf Conference Feb. 21-23. H. B. Musser, associate professor in experimental agronomy at the college, is general chairman of the course, and he is given most capable assistance by Fred Grau, also of the Penn State College staff. Further information may be obtained by writing either Musser or Grau at the college.

Annual turf short course at Rutgers University college of agriculture, New

Brunswick, N. J., will be held Feb. 12-17. This is the twelfth annual greens short course held at the school. For applications and further information, write Prof. Frank Helyar, director of resident instruction, Rutgers U., New Brunswick.

Michigan State College, East Lansing, will hold its annual greenkeeping conference March 7-8. Range of subjects to be covered includes nature and properties of soils, suitability of soils to construction and maintenance, fertilization, insect control, turf diseases, and study of various grasses. Write Director of Short Courses, Michigan State College, for further details.

Second annual short course for greenkeepers at the University of Maryland, College Park, Md., will be held the latter part of January, probably the last week of the month, according to an announcement. Applications and further information concerning the course can be obtained by writing Prof. Ernest N. Cory, director of course, College Park, Md.

200 Attend Turf Field Day—More than 200 greenkeepers and others interested in the growing of fine turf met on September 13 at the F. H. Woodruff & Sons, Inc. test plots at Milford, Conn., for the annual Woodruff Field Day. C. W. Baker of the Woodruff company led those present in a personally conducted tour of the plots; F. H. Lindley, vice-pres., welcomed the group and told that the company was planning a bulb display next spring at the gardens adjacent to the turf plots that would contain over 150,000 bulbs. A display in the registration tent of various methods of merchandising seed mixtures was of considerable interest to the greensmen.