

scure and not clearly understood.

The classic recommendation for deep roots is to water generously at infrequent intervals. The advice is sound when the soil is good and the water infiltration rate is rapid. The axiom fails for waterlogged or overly wet soil. Roots die under these conditions for want of soil air. They drown, so to speak. After the root system is gone, light frequent daytime watering seven days a week is the only way to keep the grass alive until new roots form. Wilting determines how often to water. Once at midday may suffice, but at other times more often may be the only way to revive the grass.

Thinning of the turf on overly wet greens is inevitable because the condition is an unhealthy one and is aggravated by leaf spot, brown patch, pythium, and other diseases. Clover, crabgrass, and other weeds appear and flourish because an open turf offers no opposition.

A green scum of algae often appears on overwatered greens after the turf becomes so thin that the soil is exposed. Algae require sunlight and plentiful moisture. Algae can be stopped by using a little hydrated lime, but the best way is to prevent its growth by keeping a dense turf which shades the soil below.

Turf diseases are caused by mold-like fungi. A moist medium is necessary for their development. Dry stale bread never molds. The difference between it and moldy bread is moisture. Damp or wet grass aggravates disease, whether it be from overwatering, from dew or gutated water. The latter is droplet water expelled by the leaves. Troubles from overwet grass during the night are in the humid rather than the dry regions.

Leaf spot is aggravated by overwatering. This is true of the fine textured Bermuda as well as the bent grasses. Fine Bermudas must be watered differently than common Bermudas.

#### **Turf Collapse Mystifies**

Iron chlorosis is becoming more common on putting greens. It is associated with wetness and a high content of soil organic matter. A high soil reaction, the use of too much lime and phosphate make it worse. Overwatering is one reason for its prevalence on velvet bent greens. The unusually tight turf retards soil water loss by direct evaporation. That is why velvet should be watered less frequently than creeping bent.

The sudden collapse of turf on greens during or following downpouring rains in

hot weather is hard to explain. It may be disease, or it may be due to toxicity from decomposition products produced under waterlogged conditions. The fact that troubles of this kind are most common on thatched greens, and the further fact that there is a marked response to light doses of hydrated lime lends support to the toxicity theory.

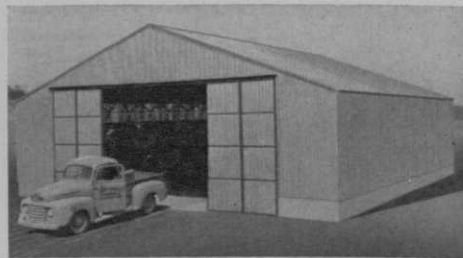
To stop watering abruptly where overwatering has been practiced is not sensible. The toll of grass may be terrific. The better plan is to change gradually and let the grass adjust itself to the new and better practice.

Underwatering presents fewer problems. The chief difficulty is to rewet bone dry soil. It cannot be accomplished with sprinklers only. Water does not penetrate deeper than an inch. This makes the soil too wet because it is too dry. The top inch is waterlogged because the amount of water was sufficient to wet the soil to a depth of 8 to 10 inches. There are several ways to restore soil moisture. One is to fork the dry areas, or aerify if possible, and drench with water several times. Water retained in the holes gradually seeps into the dry soil. Once soil becomes moist water will be absorbed in a normal manner. The use of a tree sub-irrigator to rewet dry soil is common practice.

#### **Thatch Prevents Water Absorption**

In other countries grass is used instead of shingles on many buildings. A surface

### **SOLVES KLONTZ PROBLEM**



Herb Klontz, supt., Ellis Park course at Cedar Rapids, Ia., and Pres., Iowa Golf Course Supts.' Assn., says in his years in charge of golf courses one of the biggest problems has been lack of room for machinery, machine repair equipment and topdressing and fertilizer storage. Last fall that problem was solved with the above 44 by 60 ft. building with 16 ft. doors on both ends permitting passage of fairway mowers and other large equipment. There is room enough to store 80 yds. of peat and 45 tons of fertilizer and have a constant stock of topdressing. During rainy days the men can work inside without losing time. Klontz plans to stock dirt and peat in August when it contains least moisture.