

If an area known to contain tile does not seem to drain well, that line should be examined. If no diagram of the tile system is available (which is the unfortunate case on many courses) it is possible to locate a line readily with a simple pointed rod commonly known as a "feeler." By systematically poking this feeler into wet soil until the tile is felt one can soon trace it across any area. When located, a chart should be made to permanently locate its position. The outlet of the tile should be examined to determine how much water is flowing from it. In wet weather a good flow of water may come from only a fraction of a tile line. When the soil is not well drained a section at the upper end of a suspected tile line may be removed and water from a hose



Samples of tile from a line that no longer drained. Do you wonder why?

may be flushed through the line to determine if it is open. If it is found to be clogged it may not be necessary to remove the entire line. A section removed here and there along the line will soon show the exact location of the clogging. In such a search one should first suspect trouble at intersections or areas where there appears to have been some settling of the soil.

Flow of Water

No Sign Tile Is OK

At times tiles do not function properly even though water flows through them readily. This is normally due to improper laying of the tile or a sealing of the joints with a sticky clay. When tile is laid and covered with heavy clay, especially when it is very wet, the tile may prove to be about as ineffective as if it were sealed in a thick layer of putty.

In laying tile every effort should be made to place the line in the most effective position and then to do a good job in laying it. One good tile line properly

placed is far better than half a dozen poor, inefficient lines.

In placing drains for seepage water it should be remembered that it is far better to intercept that water before it reaches an important piece of turf than it is to try to remove it directly from the affected area. It is also well to remember that unless the intercepting line is placed deep enough it may be ineffective if seepage water continues to creep along a shelf below the tile line. The tile must be placed below the surface of that ledge. All tiles should have ample fall and should be well covered with some open materials such as gravel, crushed rock or cinders. It cannot be too often urged whenever a new tile line is laid or an old one is located that a record should be made and filed which will make it possible to easily locate that tile in the future.

"An Introduction to Soil Science" Brings Fundamentals Up To Date

A NEW textbook, "An Introduction to Soil Science," by Benjamin Isgur, instructor in soils at the Massachusetts State college, has just been published by the Agricultural Scientific Publishing Co., 27 Beach St., Boston. This book, which sells for \$2.90, brings up to date the fundamentals of soil science.

Isgur has tried to make his work a practical handbook of soil culture and has more than succeeded in so doing. An important feature of this volume is a diagnostic table or key which any greensman can use to "run down" his soil troubles. Another important feature to the greenkeeper is a method of determining the relative value of peats in increasing the available water in the soil.

Main topics which are of especial importance and interest to greenkeepers and golf clubs for the maintenance of fine turf areas are: soil texture and soil structure (with an explanation of soil puddling); organic matter and peats; soil bacteria; soil acidity and liming (with an easily understandable explanation of the meaning of pH, and with explicit directions as to how much lime to apply to obtain suitable soil reactions); soil moisture and drainage systems; and a chapter on fertilizers with an easily understandable chart which shows what happens to fertilizers when they are applied to the soil under both favorable and unfavorable conditions.