

their lack of coherence. The sandy loams have large amounts of sand but possess some cohesiveness due to the presence of some silt and clay. Most difficulty arises in distinguishing between the loams, silt loams and clays. Silt loams have a floury feel, are almost devoid of gritty sand, and differ from clay by the absence of a slick, shiny surface when quickly rubbed between the thumb and forefinger. The presence of larger amounts of gritty sand usually serves to distinguish loam from silt loam.

ARRANGEMENT OF PARTICLES DETERMINES SOIL STRUCTURE

NEXT to texture, the arrangement of the soil grains is of great importance, for it influences the circulation of air and water, both of which are necessary to the normal development of turf. In a clean sand each particle is an individual unit and has but a chance arrangement in relation to the adjacent grains. Fertile soils possess marked structure. The individual grains are bunched and more or less bound into groups, usually spoken of as granules or crumbs.

Soil colloids are the principle cementing agent. The loams form crumbs readily, but in heavy clays the colloidal properties are so pronounced that the soil becomes sticky and impervious when wet and form hard clods on drying. Flocculation of the colloidal clay facilitates granulation while clay in the deflocculated condition has the opposite effect.

The word tilth is used to designate physical soil condition. A well granulated soil is referred to as in good tilth, whereas a sticky, lumpy soil is said to be in bad tilth.

The development of crumb structure is necessary in all soils, but is most essential in soils of fine texture, silt loams, clay loams and clays. The formation of compound granules permits these soils to function as though more or less coarse-grained. Obviously granulation promotes freer movement of water and air, and permits ready penetration of roots and root hairs. Without it the spaces between the particles may be so small that the soil is almost impervious to water.

A coarse, sandy soil usually disposes of excess water by percolation after a heavy rain within a couple of hours, but the finest clay without granular structure may require three months to free itself of a like amount of water in the same way. When the fine clay particles are held as constituents of

larger aggregate grains, excess water passes down through the soil quickly. Furthermore the compound granules act like tiny sponges, being charged with water and plant food elements which can be absorbed by the advancing root hairs.

(More next month)

Overcoming Cricket Moles

By HUGH C. MOORE, *Greenkeeper*
Sea Island Golf Club, New Brunswick, Ga.

FOR the past three summers I have been troubled very much by Porto Rican cricket moles and early this spring my fairways and tees were damaged very bad, in fact it had gotten to the point where something had to be done.

I suggested that we use arsenate of lead which I had previously suggested a year ago, after experimenting with same on a small plot. I have this past spring poisoned all my fairways and tees using one hundred and fifty pounds per acre where they were not so bad and two hundred pounds in more troubled places. The results from this poison has been most surprising. The turf has thickened up and once more the players seem to be happy.

In putting on this poison I bought a fertilizer spreader from the Holden Co., Inc. This machine fits on the back of a thirty-six inch wagon. I tried mixing this poison with topsoil, also with sand, but found that the raw material worked much better, picking calm days to keep same from blowing. Arsenate of lead does not kill the mole but the poison gets into the joints of the grass which the cricket mole survives on and as long as the flavor of the poison remains the mole will stay away.

It is almost impossible to kill this pest as they can fly and any poison that will kill the mole will kill the grass. Any greenkeeper that is troubled with this pest can take my word that arsenate of lead is the thing. This method is somewhat expensive but well worth doing.

Detroit Lakes, Minnesota

Assistant Attorney General A. D. Brattland, representing the Conservation Commission, recently started condemnation proceedings to acquire an additional 960 acres of land adjoining Itasca Park on the east and thus preserve for posterity more of this beautiful and primitive wilderness—the last remaining in Minnesota.