PROFILE STUDIES OF SOILS DERIVED FROM
BLACIAL, SANDSTONE AND SHALE MATERIALS
IN OHIO, PENNSYLVANIA AND NEW YORK.

By

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Soils derived from glacial sandstone and shale materials comprise a distinctive subregion of the brown forest region of the United States. They occur in a northeasterly and southwesterly belt, 10 to 100 miles wide and 500 miles long, between Central Ohio and Central New York.

The parent material of these soils is glacial till, lithologically ranging from sandstone to shale, but in more than 99 per cent of cases there is a mixture of sandstone and shale with a small amount of crystallines. Most of the sandstone is very fine grained, so that it weathers into a silty loam, but the shale weathers into silt loam, silty clay loam or silty clay.

These soils formed under a dense forest cover which was unfavorable for a heavy development of grass roots and for the accumulation of much organic matter, and are consequently prevailingly light in color. Throughout this subregion there is comparatively little difference in precipitation, averaging about 36 inches. This more than compensates the loss of moisture by evaporation, and in addition affords a supply for downward movement through the soil for a large part of the year. Carbonates, where they have been present, have been leached out to depths ranging from 3 to 6 feet in the heavier members, and to greater depths in the light-textured silt loams, loams and sandy loams. Probably 95 per cent or more of these soils have silt loam or silty clay loam textures, and the former is the more prevalent.

As silt loam is the most extensive texture of this subregion, and is particularly favorable for the development and retention of soil characteristics, I have selected three silt loam profiles, where the surface is smooth, the drainage is fairly good, and any influence from surface air drainage is almost nihil. Soil profile No. I has the more striking characteristics of the area in New York and Pennsylvania, No. 2 of northeastern Ohio, and No. 3 of central and north central Ohio.