Georgeville silt loam is confined to the Carolina Metamorphic Slate and Volcanic Belt, and the soil represents the mature profile development of this region. The rock formation is probably better known as the Carolina Slate Belt. It occurs largely in one belt extending southwestwardly across the middle portion of the state of North Carolina, but the belt crosses into Virginia and into South Carolina. This slate belt forms a part of the eastern Piedmont plateau and in North Carolina it occupies an area ranging from about eight miles to approximately fifty miles in width. The slate area is adjoined on the west by the Carolina Igneous Belt, consisting of granite, gneiss, mica schist, and various basic igneous rocks. It is bounded on the east in places by Triassic sandstone formations.

The rocks of the Carolina Slate Belt consist of (1) argillaceous, sericitic, and crystalline schists; (2) sedimentary pre-Juratrias slates; and (3) ancient volcanic rhyolites, quartz porphyries, and pyroclastic breccias, often sheared. Included in these three groups are altered andesites and rock belonging to more basic igneous types not yet differentiated. The general strike of the schistosity of the rocks is northeast and southwest, with a steep northeast dip. The several rock formations belong to the pre-Cambrian Age.

The rocks are mostly fine grained and they give rise to extensive areas of soil having a high percentage of silt throughout the solum. The silt content differentiates the normal soil from that of the Ceci series in the Carolina Igneous Belt. Georgeville silt loam is smooth in texture and is practically free of quartz sand, although quartz veins occur in the soil.

The topography of the region in which the soil occurs conforms to that of the rest of the Piedmont plateau and consists of narrow to rather broad comparatively smooth interstream areas and moderately steep to steep slopes near streams. Georgeville silt loam has its best development on the smoother country, but even here erosion has changed in many places the soil texture to silty clay loam or silty clay.

A profile description of Georgeville silt loam was obtained three miles west of Bonlee, Chatham County, North Carolina, near the eastern edge of the Carolina Slate Belt. The description is as follows: Horizon A1, 0 to one-half inch: Gray silt loam, having a small amount of organic matter from decayed leaves intermixed with the soil.

Horizon B1, fourteen to thirty-four inches: Red, friable silt loam which breaks into large angular lumps and these upon slight pressure break into smaller soil particles. Fine roots extend vertically in this horizon and there are definite drainage lines parallel to this horizon. When dry, surface exposures have a somewhat laced cracked appearance. In vertical basins the soil disintegrates and crumbles after freezing. This horizon is retentive of moisture. It is the zone of concentration and represents the heaviest layer of the entire profile.

Horizon B2, thirty-four to forty-five inches: Red, friable, crumbly silt clay. It is lighter in structure than the soil in B1 horizon.

Horizon C1, forty-five to sixty-five inches: Smooth, mellow pinkish-red with spots and streaks of very light gray and purple heavy silt loam, with a slaty structure of the underlying rock. Because of structure, moisture moves readily through the soil.

Laboratory examination of a sample of the silt loam collected from the same place of the foregoing description was made for stable aggregates and porosity based on the total weight of the soil. Tests were made for porosity, air capacity, and water capacity.

A fairly high state of aggregation is shown by the friability of the various horizons. It appears from the results of the laboratory tests that the aggregates that build up the micro-structure of the soil are somewhat dense. This condition is particularly true in the B1 horizon where the air capacity is 36.7 per cent, and the state of aggregation is 36.7 per cent.

The B1 horizon also shows the highest porosity in aggregates and the A2 horizon the lowest, or 10.7 per cent.

Horizons A2 and C1 have the greatest water capacity and 51.6 per cent respectively. The total porosity of B1 horizon is 48.7 per cent.

Air capacity is lowest in C1 horizon, being 8.3 per cent. The highest, 12 per cent is in A2 horizon.

The results regarding moisture capacity of the several horizons suggest a function of the C horizon. The water capacity is greatest in this horizon, 47.6 per cent, and next greatest in A2 horizon, or 45 per cent. The B1 horizon represents the important surface layering group, and its capacity varies on its really limited place.