the subsoil is often yellow or only slightly reddish yellow to a depth of 3 feet or more.

While most of the type is uniform there are a few variations. On slopes or on the tops of ridges where the surface has been eroded the silty loam surface soil is very shallow or has been entirely washed away, giving small areas of clay loam. In the cultivated fields these eroded spots are prominent by reason of their reddish color. These areas of clay loam are of but a few square feet to a few acres in extent, being too small to indicate on the map. Fragments of quartzite and sandstone are frequently present. In places these fragments are rather numerous. Small particles of quartz, quartzite, and sandstone, and a few stones, mainly quartzite and sandstone, upward of several inches thick, are disseminated throughout the soil section. Rounded quartzite boulders a foot or more in diameter are sometimes found on the surface. These are probably remnants of formations that have been largely removed by processes of erosion or represent fragments which have been brought in some way from the quartzite ridges. Where the Hagerstown loam adjoins the Berks shale loam some small fragments of the shale are present on the surface and in the soil.

When moisture conditions are favorable the Hagerstown loam is easily cultivated, working up with the ordinary tillage implements into a mellow and well-pulverized seed bed. If the soil is worked when wet, clods form on drying, but these are easily broken up by cultivation.

The Hagerstown loam is utilized almost entirely for general farming. It is considered the strongest and most productive upland soil in the county, and the general farm improvements indicate that it is the most valuable type. The original forest growth, consisting largely of white oak, has been cleared away, and practically all of the land is cultivated. The principal crops grown are corn, oats, wheat, some hay, and in certain sections potatoes. Dairying is also practiced to some extent. Corn produces 40 to 90 bushels per acre, averaging 50 to 60 bushels, oats 30 to 60 bushels, with an average of about 50 bushels, and wheat 20 to 35 bushels, probably averaging about 25 bushels per acre. From 1 1/2 to 2 tons of hay per acre are produced. Rye is grown to a slight extent, yields ranging from 15 to 25 bushels per acre. Potatoes are grown for market in some sections, and produce with fertilization 150 to 250 bushels, and possibly more, per acre. A small amount of alfalfa is grown, producing one-half ton to a ton per cutting, with three cuttings a season.

Hagerstown loam, gravelly phase.—The soil of the gravelly phase (due mainly to the admixture of glacial debris) is in most respects similar to that of the typical Hagerstown loam. The important difference is in the presence of water-rounded cobbles and gravel consisting of sandstone, quartzite, gneiss, limestone, and other rocks, and in its having a billowy surface such as might be described as hummocky or lumpy, with sink-hole depressions between the hummocks. There is not enough of the gravel and cobbles, however, to warrant the classification of this soil as a gravelly loam. There are many small patches of the Hagerstown clay loam on the slopes of the small ridges in this phase.

One area of this phase, about 2 square miles in extent, occurs just south of Mickelys. A variation of the phase extends westward from this area, and is similar to the gravelly phase in all respects except that there are very few rounded gravel in this soil, but numerous small, angular fragments of quartz, quartzite, and sandstone. This hummocky phase reaches from near Siple to Siegertsville in a strip a mile or more in width. Another body of this billowy variation extends southward from Walberts to East Texas in a body 2 or 3 miles wide. Agriculturally the variations are similar to the typical soil.

Hagerstown silt loam.—The silt loam phase of the Hagerstown loam is roughly coextensive with the argillaceous limestones of the Jacksonburg formation from which it has been mainly derived.

1 At present considerable alfalfa is grown. The potato yield has also been greatly increased.