

| System        | Series        | Group       | Formation  | Symbol                    | Section | Thickness in feet | Character of rocks   | Character of soil  |  |
|---------------|---------------|-------------|--|---------------------------|---------|-------------------|--|--|--|
| CARBONIFEROUS | Pennsylvanian |             | Pottsville conglomerate  | Cpy                       |         | 10+               | Coarse conglomeratic sandstone.  |  |  |
|               |               |             | Mauch Chunk shale  | Cmc                       |         | 30±               | Mostly green shale; some red shale.  |  |  |
| DEVONIAN      | Upper         |             | Pocono formation   | Cpo                       |         | 1,100             | Medium thick-bedded micaceous green sandstone above (Burgoon member); green shale, with some layers of red shale, and green micaceous sandstone in beds and layers of varying thickness.   | Plateau areas underlain by Burgoon member with gray sandy, stony soil of small thickness; lower part of Pocono on steep forested slopes covered with colluvial stony soil, in places bearing large blocks of conglomerate. |  |
|               |               |             | Catskill formation   | Dck                       |         | 1,600             | Predominantly red crumbling shale or mudrock and red and brown sandstone in alternating beds; less green shale and gray sandstone. Gray beds marine and slightly fossiliferous; red beds nonmarine and nonfossiliferous.   | Southeastern foothills of the Allegheny Front; mainly a deep, fertile, red loam, extensively cleared and cultivated.   |  |
|               |               |             | Chemung formation  | Dch                       |         | 2,800             | Upper 1,000 feet has much chocolate-brown shale and fine-grained thin-bedded fossiliferous sandstone. Most of the formation is green and gray shale and mudrock with beds and layers of fine-grained green or gray sandstone and a few thin beds of quartz-pebble conglomerate, generally with pebbles less than half an inch in diameter. Highly fossiliferous throughout; typical Chemung fauna. | Hilly surface covered with a gray, somewhat stony soil of moderate depth and fertility. Lower slopes and valleys cultivated; higher ground largely wooded.   |  |
|               |               |             | Brallier shale   | Db                        |         | 1,500             | Mainly siliceous, micaceous stiff, slightly crinkly green shale, some soft green clay shale, through all of which are intercalated thin layers of very fine grained even-bedded gray or greenish sandstone.  | Hilly surface covered with gray clayey soil full of small stones; largely cultivated.  |  |
|               |               |             | Harrell shale  | Dha                       |         | 300               | Soft gray, finely fissile clay shale.  | Steep slope covered with colluvial soil, not important for agriculture.  |  |
|               | Middle        |             |  | Burket black shale member | Dbk     |                   | 50   | Stiff, highly fissile densely black shale.   | Very narrow outcrop; soil not important.   |
|               |               |             |  | Hamilton formation        | Dh      |                   | 600  | Mainly olive-green shale; a few beds of sandstone; persistent fossiliferous limestone at top.  | Underlies Bald Eagle Valley; covered with creek alluvium.  |
|               |               |             |  | Marcellus shale           | Dm      |                   | 100  | Highly fissile densely black shale.  | Narrow outcrop; soil not important.  |
|               |               |             |  | Ridgeley sandstone        | Dc      |                   | 100  | Coarse brownish fossiliferous sandstone.   | Soil not important.  |
|               |               |             |  | Shriver formation         | Ds      |                   | 70   | Fine-grained laminated soft, slightly fossiliferous sandstone  |  |
| Lower         | Oriskany      |             | Helderberg limestone   | Dhb                       |         | 150               | Rather thick-bedded blue limestone; some cherty.   | Small areas, steep slope, colluvial soil, agriculturally unimportant.  |  |
|               |               |             | Tonoloway limestone  | Sto                       |         | 400               | Mostly rather thin bedded to laminated dark-bluish limestone.  |  |  |
| SILURIAN      | Cayuga        |             | Wills Creek shale  | Swc                       |         | 400               | Mostly calcareous yellowish fissile shale with thin layers of impure limestone. Red shale and sandstone (Bloomsburg member) at base.   | Steep northwest slope of Bald Eagle Mountain; colluvial soil.  |  |
|               |               |             | Bloomsburg redbeds   | Smb                       |         | 200               | Medium- or thin-bedded dark-grayish or bluish limestone, possibly with shale; some red (?).  |  |  |
|               |               |             | McKenzie limestone   | Smc                       |         | 200               | Medium- or thin-bedded dark-grayish or bluish limestone, possibly with shale; some red (?).  |  |  |
|               | Niagara       |             |  | Clinton formation         | Sc      |                   | 800  | Green shale with thin layers of fine-grained green sandstone; thin beds of fossil ore.   | Steep northwest slope of Bald Eagle Mountain; colluvial soil, generally full of and covered with boulders of the Tuscarora quartzite from the mountain crest.  |
|               |               |             |  | Tuscarora quartzite       | St      |                   | 400  | Light-gray or white quartzite.   | Crest of Bald Eagle Mountain. Source of ganister used for refractory brick and furnace linings.  |
|               |               |             |  | Juniata formation         | Oj      |                   | 1,000  | Mainly red shale and sandstone; some gray sandstone.   | Southeast slope of Bald Eagle Mountain just southeast of summit. Red fertile soil favorable for apple growing.   |
| ORDOVICIAN    | Upper         |             | Oswego sandstone   | Oo                        |         | 800               | Thick-bedded greenish-gray iron-speckled, somewhat arkosic sandstone; a little conglomerate.   | Wooded ridges; sandy, stony, sterile soil.   |  |
|               |               |             | Reedsville shale   | Or                        |         | 1,000             | Dark calcareous shale with thin layers of fossiliferous limestone. Thick-bedded calcareous sandstone at top, 40 feet thick, carrying <i>Orthorhynchula</i> and <i>Byssonichia</i> ; <i>Orthorhynchula</i> zone.  | Southeast slope of Bald Eagle Mountain; argillaceous soil of moderate fertility, free from residual rock fragments but sprinkled with boulders of Oswego sandstone from mountain crest.                                    |  |
|               |               |             | Trenton limestone  | Ot                        |         | 600               | Thin-bedded dark to black compact limestone.   | Clayey loam full of small fragments of limestone.  |  |
|               | Lower         | Beekmantown |  | Rodman limestone          | Ord     |                   | 10-50  | Dark, coarsely granular fragmental limestone.  | Narrow outcrop; soil not important.  |
|               |               |             |  | Lowville limestone        | Cl      |                   | 150  | Pure blue or dove-colored thick-bedded limestone. Quarried for lime.   | Limestone soil.  |
|               |               |             |  | Carlism limestone         | Oc      |                   | 400  | Lemon argillaceous limestone member, thick-bedded.   | Limestone soil.  |
|               |               |             |  | Bellefonte dolomite       | Ob      |                   | 1,500-2,200  | Thick-bedded light-gray dolomite, with bed of sandstone in upper part. Yields much dense gray chert. Sparingly fossiliferous.  | Tawny residual soil of good thickness and fertility. In places soil is shallow and limestone ledges are exposed or near surface, so as to impede tillage. Boulders and fragments of chert plentiful in soil. |
|               |               |             |  | Axemann limestone         | Oa      |                   | 360  | Pure blue thin-bedded limestone with some layers of dolomite. Either absent or in a dolomite facies locally.   | Limestone soil.  |
|               |               |             |  | Nittany dolomite          | On      |                   | 1,200  | Largely dark steely blue, coarsely crystalline dolomite, yielding much dense gray, sparingly fossiliferous chert. <i>Lecanospira</i> zone.   | Soil like that of the Bellefonte dolomite.   |
| CAMBRIAN      | Upper         |             | Stonehenge limestone (Larke dolomite, upper Cambrian present locally below Stonehenge ls.) | Os                        |         | 630               | Mainly medium-bedded blue limestone; layers of edgewise conglomerate common; locally massive steely blue dolomite; sparingly fossiliferous.  | Limestone soil.  |  |
|               |               |             | Mines dolomite <sup>a</sup>  | Em                        |         | 200               | Thick-bedded dark steely blue coarse-grained dolomite. Oolitic chert abundant.   | Narrow belts of very stony (cherty) soil.  |  |
|               |               |             | Gatesburg formation <sup>a</sup>   | Eg                        |         | 1,600             | Thick-bedded dark steely blue coarse-grained dolomite including many beds of sandstone 1 to 10 feet thick.   | Very sandy, somewhat stony and sterile soil, extensive areas of which, overgrown by scrub oak, are known as "barrens."   |  |
|               |               |             | Warrior limestone  | Ww                        |         | 600±              | Impure blue limestone and dolomite with thin partings of sandy rock; a little oolitic limestone; sparingly fossiliferous (trilobites and thin beds of Cryptozoa).  | Limestone soil full of small sandy chips. In one small area only.  |  |

<sup>a</sup> Mines, Gatesburg, and Larke represent the Ozarkian system of E. O. Ulrich in this region

COLUMNAR GEOLOGIC SECTION IN THE BELLEFONTE QUADRANGLE, PENNSYLVANIA  
From Butts and Moore (1936)