# COLUMNAR SECTION

GENERALIZED SECTION OF THE ROCKS EXPOSED IN THE PAWPAW AND HANCOCK QUADRANGLES.

SCALE: 1 INCH = 1000 FEET.

| System. | Series or group. | Formation. | Symbol. | Section. | Thickness in feet. | Character of rocks. | Character of topography and soils. |
|---|---|---|---|---|---|---|---|
| CARBONIFEROUS | MISSISSIPPIAN SERIES POCONO GROUP | Pinkerton sandstone. | Cpk | | 125+ | Massive white sandstone and quartz conglomerate, in part cross-bedded, with a thin coal seam. | Wooded mountain tops. Stony soil with numerous rock outcrops. |
| | | Myers shale. | Cm | | 800+ | Largely bright-red crumbly sandy shale and thin argillaceous sandstones with thick cross-bedded dirty-gray gritty sandstone at base. | Wooded valleys and steep slopes. Sterile soil, in part covered by wash. |
| | | Hedges shale. | Ch | | 170 | Dark-gray to black carbonaceous shale containing thin seams of semianthracite coal. | Valleys. Largely covered by wash. |
| | | Pursiane sandstone. | Cp | | 180–310 | Massive hard coarse white sandstone and milky quartz conglomerate, alternating with softer cross-bedded sandstone with a little shale and thin coal seams. | Wooded mountain tops and steep slopes. Stony soil with numerous rock outcrops. |
| | | Rockwell formation. | Cr | | 500–540 | Soft arkosic sandstone, fine hard conglomerate, and buff hackly shale; crumbly dark-gray carbonaceous shale with thin coal seams near the base in western part of area. | Steep wooded slopes. Largely covered by wash. |
| DEVONIAN | | Catskill formation. | Dck | | 3000–4200 | Chiefly red micaceous sandstone and shale with some yellow, green, and gray sandstones and shales. Gray to buff soft arkosic sandstone in upper portion, becoming harder platy gray sandstone in western part of area. | Wooded uplands, deeply trenched by valleys generally having a northeast-southwest trend. Sandy soil, suitable for woodland and fruit culture. |
| | | Jennings-Catskill transition zone. | Djc | | (0–500) | In western part of area yellow sandy shale and sandstone containing a Chemung fauna occur above the lowest red strata of Catskill type. | |
| | | Jennings formation. (Contains Chemung and Portage faunas.) | Dj | | 4000–4800 | Upper part, buff sandy shales and soft sandstones with two prominent beds of conglomerate and hard sandstone; lower part, crumbly gray fossiliferous shale, with greenish to drab fissile shale and very thin beds of fine sandstone at the base. | Wooded uplands, deeply trenched by valleys generally having a northeast-southwest trend. Sandy and clayey soil, stony on the higher ridges. |
| | | (Parkhead sandstone member.) | (Dph) | | (600) | Fine quartz conglomerate and gray and red sandstone interbedded with buff shale. Thin band of dark-red shale just below. Lowest known occurrence of *Spirifer disjunctus* fauna, 200 feet above Parkhead sandstone member. | |
| | | Romney shale. (Contains Hamilton, Marcellus, and probably Onondaga faunas.) | Dr | | 1400 | Chiefly dark-gray shale, fissile in lower part, hackly and lighter gray in upper part, with two thick sandstones in upper part and a thin bed of fine white conglomerate below. | Rolling upland and broad valleys. Soft clayey soil suitable for light farming. |
| | | Oriskany sandstone. | Do | | 52–417 | Granular white quartzose sandstone with fine conglomerate at the top and shale locally at the base. Largely cherty and siliceous limestone in eastern part of area. | Rocky ridges. Sandy soil with numerous rock outcrops. |
| | | UNCONFORMITY | | | | | |
| | | Helderberg limestone. | Dh | | 270–380 | Massive dark-blue and thin-bedded gray limestones, weathering nodular, and calcareous shale; contains much chert at the top and a thick calcareous sandstone in eastern part of area. | Fertile slopes and valleys. Deep rich clay soil. |
| SILURIAN | CAYUGA GROUP | Tonoloway limestone. | Stw | | 400 | Finely laminated light-gray limestone and calcareous shale, generally more shaly toward the top. | Cultivated valleys with minor stony ridges. Clay soil, largely fertile. |
| | | Wills Creek shale. (Bloomsburg red sandstone member.) | Swc (Sb) | | 445 (60) | Soft light-gray calcareous papery shale and finely laminated impure limestones and cement rock; white sandstone bed, locally massive, generally present in upper part and red tough argillaceous sandstone and red mud rock at the base. | Valleys and low ridges. Deep clay soil in general. Barren soil over hills of Bloomsburg member. |
| | | McKenzie formation. (Keefer sandstone member.) | Smk (Sk) | | 170–300 (40) | Thin beds of gray crystalline limestone in gray shale, with hard white sandstone beds at the base. | Sharp rocky ridges and slopes. Clay soil, largely covered by sandstone débris. |
| | | Clinton shale. | Sc | | 550 | Drab to pink fissile argillaceous shale with rusty-colored sandy beds. Hard red ferruginous sandstone occurs near the top in eastern part of area. | Broad valleys. High rocky ridge in northeast corner of area. Generally deep clay soil, in part covered by wash, suitable for light farming. |
| | | Tuscarora sandstone. | St | | 200–270 | Massive and thin-bedded fine-grained hard white quartzose sandstone. | High rocky ridges. Stony soil, generally forested. |
| ORDOVICIAN | | Juniata formation. | Oj | | 200–400 | Soft red micaceous sandstone and shale in alternating thin beds. Thick bed of white sandstone, containing scattered pebbles, near the base. | Slopes of ridges. Stony soil, in part cultivated. |
| | | Martinsburg shale. | Om | | 1000+ | Soft buff shale generally breaking to blocky fragments but in part argillaceous and fissile. Somewhat calcareous and sandy toward the top. Black fissile argillaceous shale at base faulted out in the area. | Slopes and open valleys. Clay soil suitable for light farming. |
| | | | | SEQUENCE BROKEN | | | |
| | | Beekmantown limestone. | Ob | | 1000+ | Light-gray magnesian limestone and purer drab limestone. Calcareous shale and cherty limestone in upper part of exposure. Basal beds containing "edgewise" limestone conglomerates faulted out in the area. | Cultivated open valleys. Deep rich clay soil. |
| | | | | SEQUENCE BROKEN | | | |
| CAMBRIAN | UPPER CAMBRIAN SERIES | Conococheague limestone. | Cc | | 1250+ | Highly siliceous and argillaceous limestone, some beds finely laminated with the impurities, others weathering to hard shaly particles. Purer oolitic light-colored limestone at the top. Basal beds of calcareous sandstone containing limestone pebbles not exposed in the area. | Open valleys with low rolling hills. Rich clay soil, stony and shaly in places. |

# ILLUSTRATIONS I



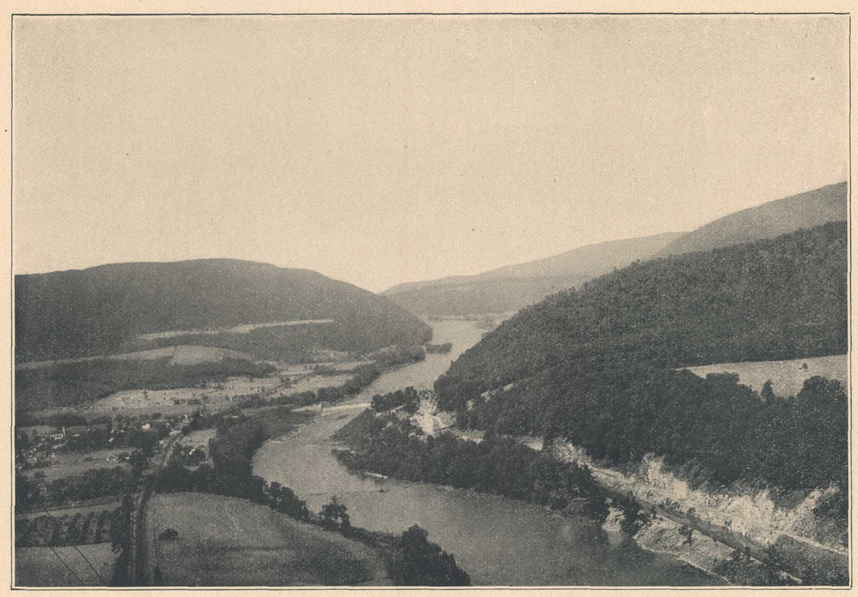

PLATE I.—POTOMAC RIVER ABOVE CACAPON MOUNTAIN.
Looking west from the Silica sand mine on Cacapon Mountain. Sideling Hill gap in the distance; Tonoloway Ridge on the right. High terraces shown on both sides of the river.

PLATE II.—POTOMAC RIVER GAP IN SIDELING HILL, FROM PROSPECT ROCK ON CACAPON MOUNTAIN.
A remnant of the Harrisburg peneplain forms the terrace to the left of the gap. Tonoloway Ridge on the left and long oxbow of Great Cacapon River in the middle foreground.

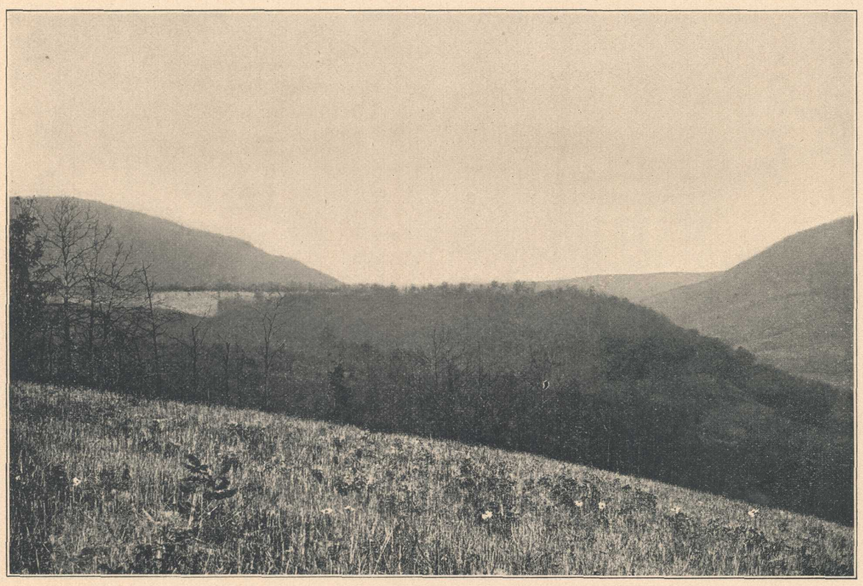

PLATE III.—THE 900-FOOT TERRACE WEST OF WOODMONT.
Looking west. Sideling Hill gap in the distance. The terrace is the remnant of the Harrisburg peneplain shown in Plate II.

PLATE IV.—POTOMAC RIVER AND LEVEL-TOPPED RIDGES NEAR MAGNOLIA, W. VA., FROM SIDELING HILL.
The ridges preserve remnants of the Harrisburg peneplain. Town Hill in the distance.

PLATE V.—WALL-LIKE OUTCROP OF KEEFER SANDSTONE MEMBER OF THE McKENZIE FORMATION.
Top of knoll at Fluted Rocks, east of Great Cacapon.

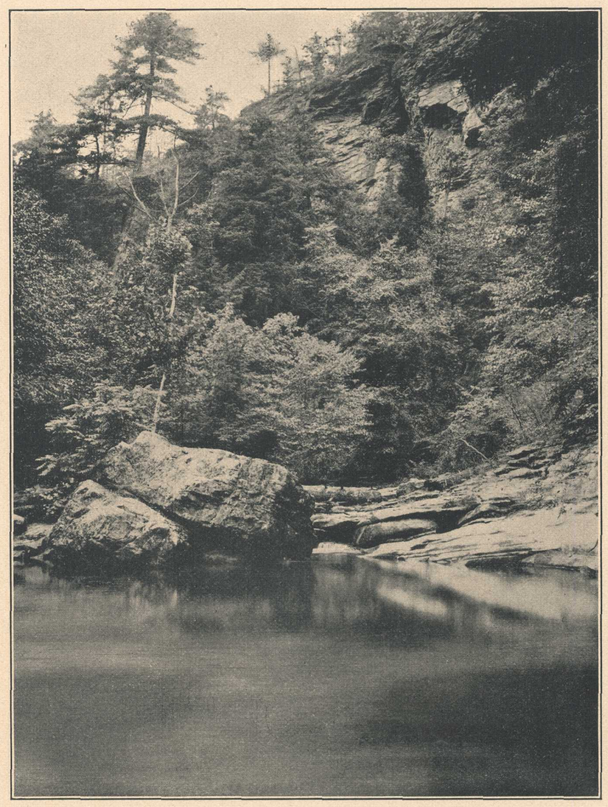

PLATE VI.—PURSLANE SANDSTONE CLIFFS, EXPOSED ON THE DEVILS NOSE BY MEADOW BRANCH NEAR NORTH END OF SLEEPY CREEK MOUNTAIN.
The beds are nearly horizontal in the bottom of the syncline.

PLATE VII.—DETAILS OF THE STRUCTURE IN THE TUSCARORA SANDSTONE CLIFF AT EADES FORT WEST OF CACAPON MOUNTAIN.
*Horizontal beds at the right connect the minor overturned anticline at the left with the major* anticline of Cacapon Mountain to the right of the view, as shown in Plate VIII.

PLATE VIII.—EADES FORT, ON GREAT CACAPON RIVER.
The river has cut into these hard sandstone rocks and separated this mass from the main body of Tuscarora sandstone forming Cacapon Mountain at the right. Details of structure shown in Plate VII.

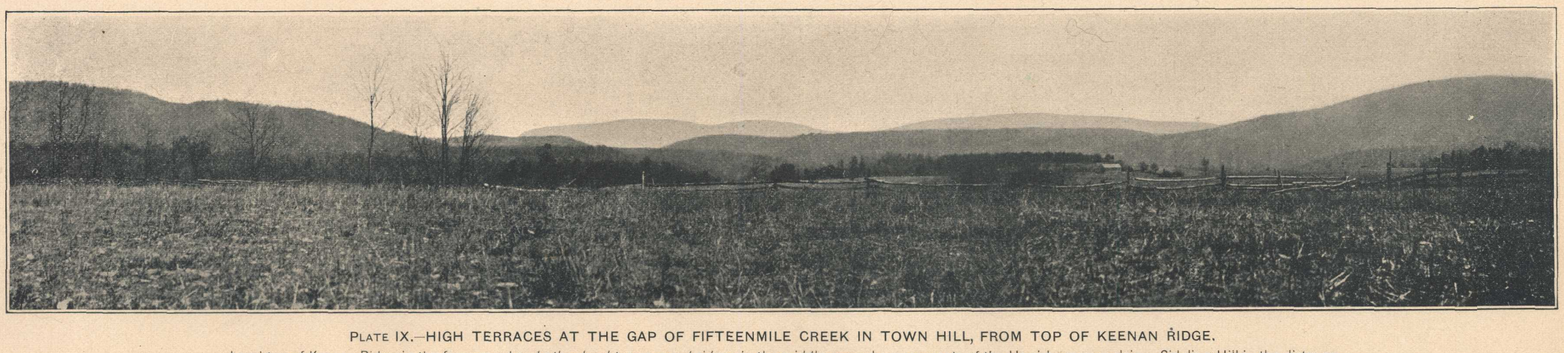

PLATE IX.—HIGH TERRACES AT THE GAP OF FIFTEENMILE CREEK IN TOWN HILL, FROM TOP OF KEENAN RIDGE.
Level top of Keenan Ridge in the foreground and other level terraces and ridges in the middle ground are remnants of the Harrisburg peneplain. Sideling Hill in the distance.

# ILLUSTRATIONS II



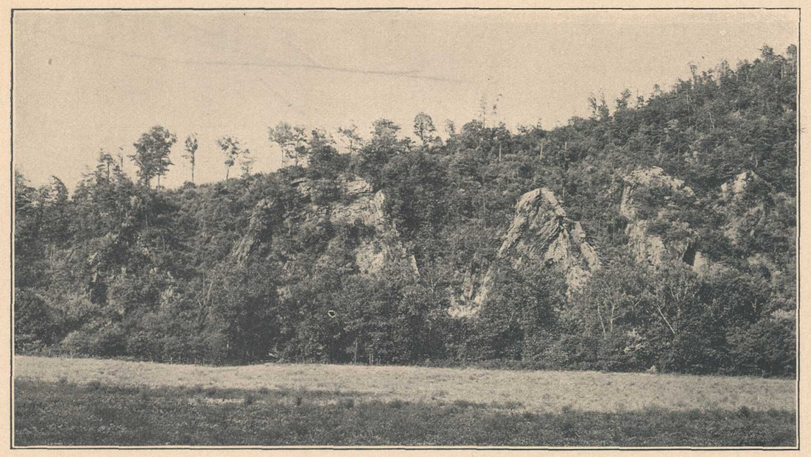

PLATE X.—GENERAL VIEW OF FLUTED ROCKS, NEAR MOUTH OF GREAT CACAPON RIVER.
Looking north. The resistant beds are the Keefer sandstone member of the McKenzie formation. The folds are largely concealed by summer foliage.

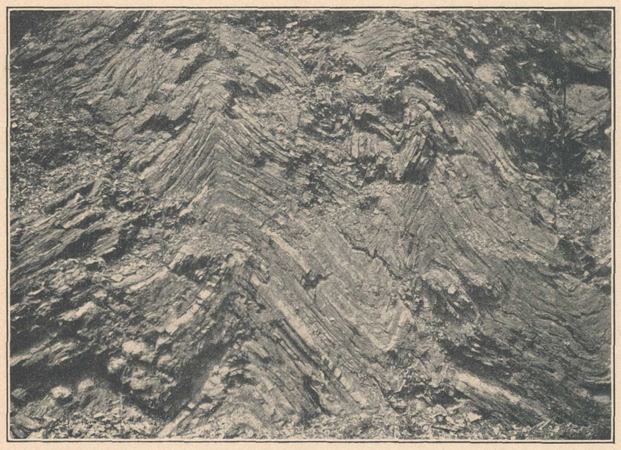

PLATE XII.—CLOSELY FOLDED THIN-BEDDED CRYSTALLINE LIMESTONE AND SHALE OF THE McKENZIE FORMATION.
In the Western Maryland Railway cut opposite Great Cacapon. Looking north.

PLATE XIII.—RECTILINEAR JOINTING IN SANDY SHALE OF THE JENNINGS FORMATION.
In southwestern part of Hancock quadrangle 1 1-2 miles west of Stotlers Crossroads. Looking down on the surface of a horizontal bed.

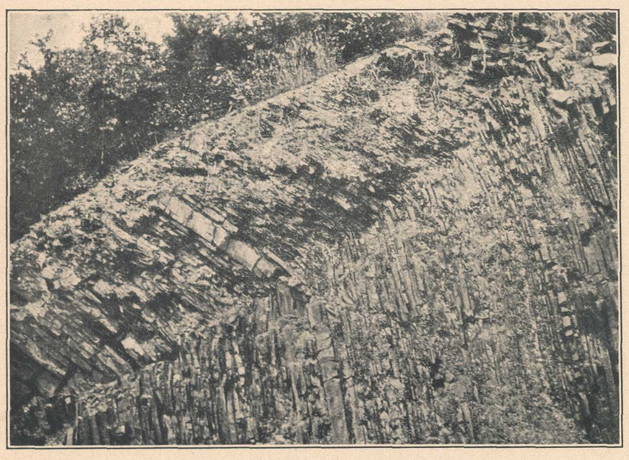

PLATE XV.—CREEP IN ROMNEY SHALE.
Exposed in Western Maryland Railway cut northwest of Great Cacapon. The nearly vertical beds have been bent to 45° E. dip by the creep of the surface layers down the westward slope.

PLATE XVIII.—PECULIAR MARKINGS RESEMBLING BURROWS IN THE FINE MUD ROCK OF THE WILLS CREEK SHALE.
Exposed in the Western Maryland Railway cut 1 mile east of Great Cacapon. Narrow light-colored bands or filled channels lead diagonally downward across the mud-rock layer to a knotty contorted calcareous layer.

PLATE XI.—DETAIL OF THE MOST PROMINENT ANTICLINE AND ADJACENT SYNCLINES OF THE FLUTED ROCKS ON GREAT CACAPON RIVER.

PLATE XIV.—DETAILS OF STRUCTURE OF THE FLUTED ROCKS, ON GREAT CACAPON RIVER, AS SEEN IN THE LATE FALL UNOBSCURED BY FOLIAGE.

PLATE XVI.—SUN-CRACKED CALCAREOUS BEDS OF THE WILLS CREEK SHALE.
At mouth of cement-rock tunnel, Potomac, Md., 20 miles west of this area.

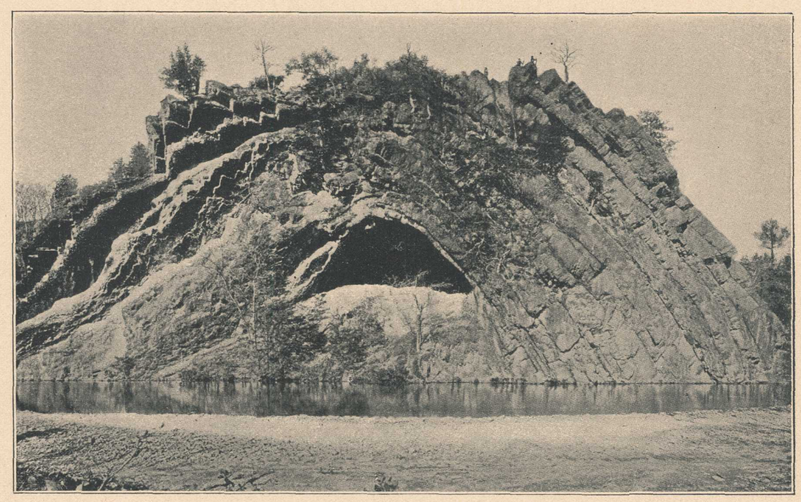

PLATE XVII.—SYMMETRICAL ANTICLINE OF BLOOMSBURG RED SANDSTONE MEMBER OF THE WILLS CREEK SHALE.
In bank of Chesapeake & Ohio Canal east of old cement works at Roundtop, Md. Looking north.

PLATE XIX.—CROSS-BEDDING IN THE SANDSTONES OF THE ROCKWELL FORMATION EXPOSED IN MEADOW BRANCH AT THE NORTH END OF SLEEPY CREEK MOUNTAIN.

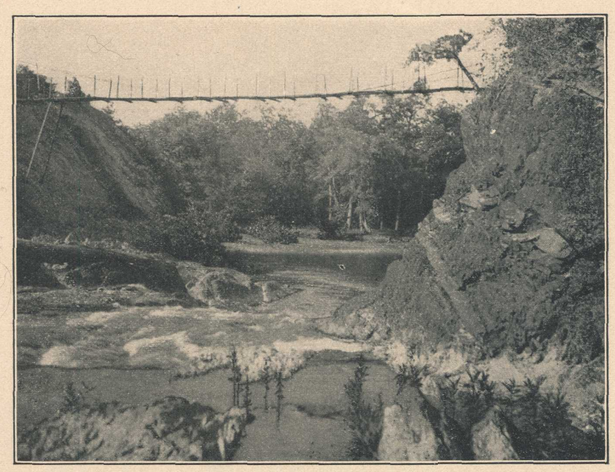

PLATE XX.—RECENTLY FORMED CUT-OFF ON SLEEPY CREEK AT JOHNSONS MILL.
Looking downstream through the rock cut over which the stream is now falling into the ponded waters of the old channel.