COLUMNAR SECTION

GENERALIZED SECTION OF THE ROCKS IN THE HOLLIDAYSBURG AND HUNTINGDON QUADRANGLES

SCALE: 1 INCH = 1000 FEET

System	Series	Group	Formation.	Symbol	Section	Thickness in Feet	Minor Divisions	Character of Members	General Character of Formations
CARBONIFEROUS	PENNSYLVANIAN		Allegheny formation.	Ca		50	Brookville coal member.	Probably 4 to 5 feet thick. Impure; inferior quality.	Shale and sandstone with workable coal beds.
							Homewood sandstone member Mercer shale member Connoquenessing sandstone member.	Coarse thick-bedded sandstone. Clay, coal, and shale Coarse thick-bedded sandstone.	
			Pottsville formation.	Cpv		130–300			Mainly coarse sandstone with shale, coal, and clay in middle.
			UNCONFORMITY						
	MISSISSIPPIAN		Mauch Chunk formation.	Cmc		180–1000			In Hollidaysburg quadrangle coarse, lumpy, red and green shale, mostly red; 80 feet of sandstone at bottom. In Huntingdon quadrangle a little yellowish-green sandstone in midst of red shale and at top; at bottom, Trough Creek limestone member, red and gray, coarsely crystalline.
			Loyalhanna limestone.	Cl		40			Siliceous cross-bedded limestone.
			Pocono formation.	(Cb) Cpo		(300–500) 990	Burgoon sandstone member Patton shale member.	Rather coarse micaceous, arkosic yellowish or greenish-gray thick-bedded sandstone. Red shale on Allegheny Front and westward.	Lower 700 feet in Hollidaysburg quadrangle, shale and sandstone, considerable red shale. Lower 900 feet in Huntingdon quadrangle, shale, sandstone. and conglomerate, very little red shale. Shale mostly stiff, imperfectly fissile, greenish.
DEVONIAN	UPPER DEVONIAN		Hampshire formation.	Dck		2000–2500			About 80 percent bright red shale, alternating with layers of reddish or brown sandstone, which is generally thick-bedded and medium-grained. Some laminated layers. The red shale is in places mottled with bright green, and there are many thin layers of bright green in the red shale. Beds of gray shale and sandstone occur throughout the formation; in these is a sparse marine fauna. No fossils have been found in the red parts.
			Chemung formation.	Dch		2400–3350			Shale and sandstone. Upper 1,000 feet largely chocolate-colored clay shale and fine-grained, thin-bedded chocolate-colored sandstone. Lower part gray and green shale, mostly gray clay shale, with sandstone. Sandstones from 1-inch layers of argillaceous sandstone to 50-foot beds of siliceous, medium-grained, moderately thick-bedded sandstone. Two thin local beds and two persistent beds of conglomerate and sandstone in the Huntingdon quadrangle; one conglomeratic sandstone bed in the middle in the Hollidaysburg quadrangle. *Fossils moderately plentiful throughout.*
		Portage	Brallier shale.	Db		1350–1800			Very fine-grained, sandy and micaceous stiff greenish-gray shale. Much of it thinly laminated, even-surfaced, with lamination cleavage dividing rock into large slaty plates, with weathered surfaces stained black with manganese oxide. Thin fine-grained greenish sandstone layers near top. Small fossils throughout but very scarce. Characteristic Portage (Naples) fauna.
			Harrell shale.	Dhr (Dbk)		250 (80)	Burket black shale member.	Black fissile shale in Hollidaysburg quadrangle. Small fossils.	Interbedded black and gray soft, very fissile (paper) clay shale in Huntingdon quadrangle. Soft brownish-gray shale above. Burket black shale member below in Hollidaysburg quadrangle. Small fossils throughout (Naples fauna).
	MIDDLE DEVONIAN		Hamilton formation.	Dh		750–1200		Olive-green hackly shale. Two persistent sandstone strata, 50 to 75 feet thick, at top and bottom of middle third in Huntingdon quadrangle.	Nearly all shale in Hollidaysburg quadrangle. Layers of very fine-grained sandstone up to 1 foot thick in middle part, characteristically jointed into straight-edged, smooth cuboidal or rhomboidal blocks; partly olive-green shale in upper part; finely laminated, dark shale below. A few feet of gray shale with thin layers of limestone at top crowded with fossils; olive shale, moderately fossiliferous; lower two-thirds almost barren of fossils in Hollidaysburg quadrangle.
			Marcellus shale.	Dm		150			Black fissile shale. Sparsely fossiliferous (*Leiorhynchus limitaris*).
			Onondaga formation.	Don		50			Dark and drab shale, thin limestone at top. Fossiliferous
	LOWER DEVON.	Oriskany	Ridgeley sandstone.	Dr		100			Calcareous sandstone, coarse siliceous sandstone, and fine conglomerate. Highly fossiliferous.
			Shriver limestone.	Ds		200			Thin-bedded siliceous limestone; black calcareous, fossiliferous shale in bottom. 10 feet (Oriskany fauna).
			Helderberg limestone.	Dhb		150±	New Scotland limestone member. Coeymans limestone member. Keyser limestone member.	Cherty limestone.	Thick- and thin-bedded, coarsely crystalline, fine-grained, bluish-gray limestone. Characteristic nodular, argillaceous layers everywhere in Keyser limestone member. Locally cherty layers near bottom of Keyser (Calico rock). Main quarry bed at bottom.
SILURIAN		Cayuga	Tonoloway limestone.	Stw		450			Thick-bedded, dark to black limestone at top, mostly thin-bedded and laminated, dark, fine-grained. A few fossils, mainly *Leperditia*.
			Wills Creek shale.	Swc		400±			Mostly drab fissile clay shale. Some green and dark shale. Probably calcareous. Thin limestone, especially near bottom. Fossils very scarce, mostly small *Leperditia*, a few brachiopods.
			Bloomsburg redbeds.	Sb		50±			Red shale and sandstone east of Tussey Mountain. Red shale and gray limestone in Hollidaysburg quadrangle.
			McKenzie formation.	Smk		400			Thin-bedded blue limestone. Highly fossiliferous; small ostracodes, mostly *Kloedinella*, very plentiful.
		Niagara	Clinton formation.	Sc		(10) 775±	Keefer sandstone member. Marklesburg ore. Frankstown ore. Block or Levant ore and "Iron sandstone."	Thin-bedded coarse ferrugineous sandstone east of Tussey Mountain. Siliceous rusty limestone west in Hollidaysburg region. Oolitic and "fossil ore" east of Tussey Mountain. *1 to 2 feet thick.* Oolitic and fossil ore in Hollidaysburg region. 1 to 2 feet thick. Hard red sandstone, locally an ore bed in lower part.	Predominantly shale; chocolate at top, greenish and gray in middle, with red layers in lower part; pink, fissile shale at very bottom. Thin limestone at top; rather thick limestone at bottom, interbedded with red shale. Thin impure, limy ore beds near top, and a workable bed in places near middle. Generally fossiliferous, especially so in upper part.
			Tuscarora quartzite.	St		400–600			Gray quartzitic sandstone and quartzite. Supplies the ganister of the region, which is extensively used for refractory brick and furnace linings.
ORDOVICIAN	UPPER ORDOVICIAN		Juniata formation.	Oj		850			Predominantly red shale and sandstone; sandstone medium-grained and much of it finely cross-laminated.
			Oswego sandstone.	Oo		800			Almost all gray, brown-speckled medium-grained thick-bedded sandstone; a few layers of red, gray, or green sandy shale.
			Reedsville shale.	Orv		1000	Black shale (Utica?).	Black fossiliferous shale with thin black limestone layers. Graptolites.	Olive-green clay shale in lower part, except about 20 feet at bottom, which is generally black. Upper part dark clay shale with many thin shell-limestone bands. Top 30 feet heavy calcareous sandstone with fossils in upper part. Fossils plentiful in the limestone bands in the upper part and in the black shale at the bottom; scarce in the olive-green shale of the lower part.
	MIDDLE ORDOVICIAN	Black River	Trenton limestone.	Ot		350			Thin-bedded dark-gray to black fine-grained or nongranular limestone. Sparingly fossiliferous
			Rodman limestone.	Or		30			Gray granular limestone. Fossiliferous.
			Lowville limestone.	Ol		180			Thick-bedded dark fine-grained to nongranular pure limestone. Moderately fossiliferous. Best quarry rock
			UNCONFORMITY						
			Carlim limestone.	Oc		180	Lemont argillaceous limestone member.	Highly argillaceous siliceous limestone. Abundantly fossiliferous. Not quarried for flux.	Thick-bedded dark limestone, mostly finely crystalline. Moderately fossiliferous. Quarry rock.
			UNCONFORMITY						
	LOWER ORDOVICIAN	Beekmantown	Bellefonte dolomite.	Ob		1000			Thick-bedded crystalline dolomite, mostly gray; more or less chert throughout, but especially in middle and lower parts. A few fossils in the chert.
			Axemann limestone.	Oa		150			Thin-bedded blue limestone. Fossils rather plentiful
			Nittany dolomite.	On		1000			Thick-bedded gray crystalline dolomite. Much dense chert in middle part and some chert throughout. Fossils in chert; *Lecanospira* zone.

COLUMNAR SECTION—Continued

SCALE: 1 INCH = 1000 FEET

System	Series	Group	Formation	Symbol	Section	Thickness in Feet.	Minor Divisions	Character of Members	General Character of Formations
ORD.	LOWER ORDOVICIAN	Beekmantown	Larke dolomite.	Ola		250			Thick-bedded dolomite, without sandstone, and in most of its area without notable development of chert. Locally, yields abundant heavy chert, which is sparingly fossiliferous.
			Mines dolomite.	Om		250			Thick-bedded dolomite like that of the Gatesburg. No sandstone. Abundant development of platy scoriaceous oolitic chert with Cryptozoa, but without other fossils. Basal layer of dolomite locally full of gastropods (*Sinuopea*).
CAMBRIAN	UPPER CAMBRIAN		Gatesburg formation.	(Ꞓo) Ꞓg (Ꞓs)		(100) 1750 (600)	Ore Hill limestone member. Stacy dolomite member.	Thin-bedded limestone, bluish, fine- or medium-grained. Some thin layers with fossils, including several genera and species of trilobites, mostly undescribed, a few gastropods and brachiopods. Thick-bedded dolomite as in Gatesburg generally but with no or very little quartzite.	Thick-bedded bluish coarsely crystalline dolomite and fine-grained dolomite with argillaceous bandings giving striped appearance to weathered surfaces. Many interbedded layers of quartzite from a few inches up to 10 feet thick. Makes ridges which are covered with quartz boulders and sand, suggesting only sandstone beneath. Sand in places 40 feet deep, utilized to a considerable extent.
			Warrior limestone.	Ꞓw		1250			Generally thin- to thick-bedded, blue to dark bluish-gray, mostly fine-grained limestone, much of which is probably magnesian. Fossils, mainly small trilobites, sparingly distributed at several horizons. A few thin quartzite bands and thicker layers of perfectly rounded grains of quartz, generally 5 millimeters or less in diameter.
	MIDDLE CAMBRIAN		Pleasant Hill limestone.	Ꞓph		(200±) 600			Upper 200± feet thick-bedded dark gray pure limestone, with oolitic and conglomeratic layers containing trilobites and other fossils; lower 400 feet thin-bedded and argillaceous, yielding shaly debris on weathered outcrop.
	LOWER CAMBRIAN		Waynesboro formation.	Ꞓwb		250+			Green and red shale above; sandstone, quartzite, and conglomerate below. Not all exposed, and thickness unknown.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ILLUSTRATIONS I

PENNSYLVANIA
HOLLIDAYSBURG AND HUNTINGDON QUADRANGLES

PLATE 1.—VIEW WEST ACROSS LOGAN VALLEY
From a point near the crest of Dunning Mountain, 1 mile south of Claysburg in the southwestern part of the Hollidaysburg quadrangle. Outlying part of Allegheny Front in the distance, the highest point of which is 3,136 feet above sea level, and more than 1,900 feet above the bottom of the valley.

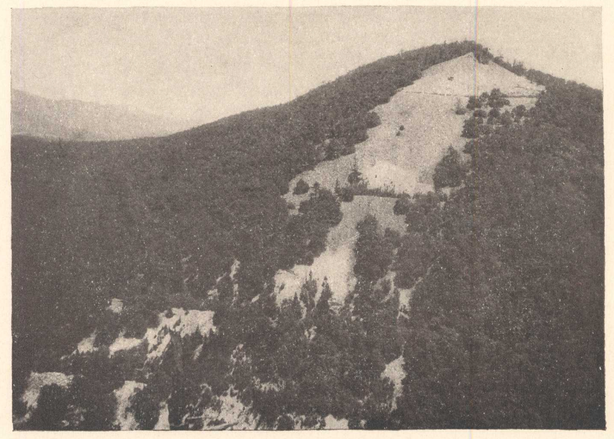

PLATE 2.—POINT VIEW KNOB
In the northwest corner of the Huntingdon quadrangle. View northeast across the valley of Frankstown Branch of Juniata River. Crest of Canoe Mountain in left distance. The white areas are talus of quartzite slide rock from the Tuscarora quartzite, which crops out on the crest of the knob. The horizontal lines are the sites of old tram tracks used in collecting ganister (see p. 18)

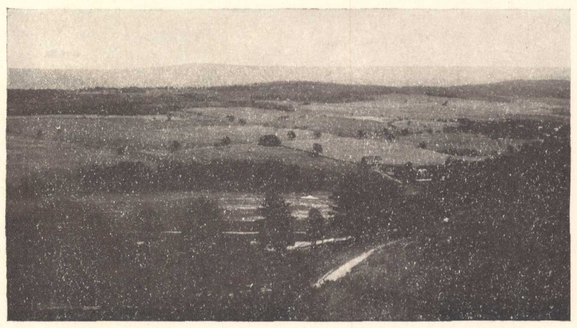

PLATE 3.—MORRISONS COVE
View east across limestone valley to Tussey Mountain from crest of Dunning Mountain, west of Royer and 6 miles east of Hollidaysburg. The low wooded ridge in middle distance is on the outcrop of the Gatesburg formation. The gentle slope occupied by cultivated land is on the Nittany and Bellefonte dolomites, and the valley at the foot of the ridge is on the outcrop of the Carlim, Lowville, and Trenton limestones, all of which dip west toward the observer.

PLATE 4.—BROAD TOP MOUNTAIN FROM A POINT ABOUT 3 MILES SOUTHWEST OF CASSVILLE
View west across south end of Trough Creek Valley. Round Mountain in distance on the right. Bunns Mountain to the left of Round Mountain.

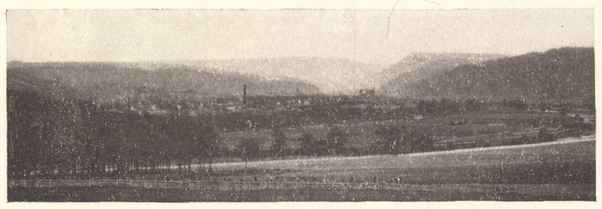

PLATE 5.—VIEW SOUTHEAST DOWN JUNIATA RIVER VALLEY ACROSS HUNTINGDON
High point in distance on right formed by the convergence of Terrace Mountain and Sideling Hill on the axis of the Trough Creek syncline. Crest of Jacks Mountain on left.

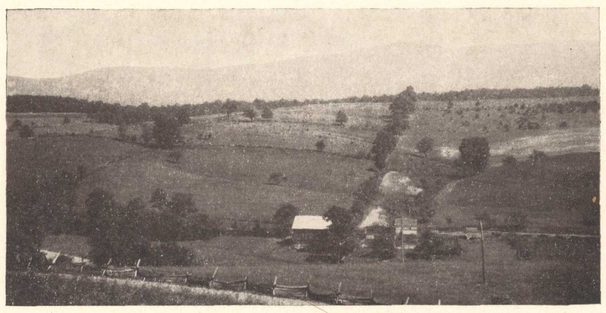

PLATE 6.—VIEW EAST ACROSS SMITH AND HARES VALLEYS AND CLEAR RIDGE MAINLY ON DEVONIAN ROCKS, TO JACKS MOUNTAIN
From a point on Sideling Hill 3 miles northeast of Cassville. Jacks Mountain formed by Tuscarora quartzite, the same as Tussey Mountain.

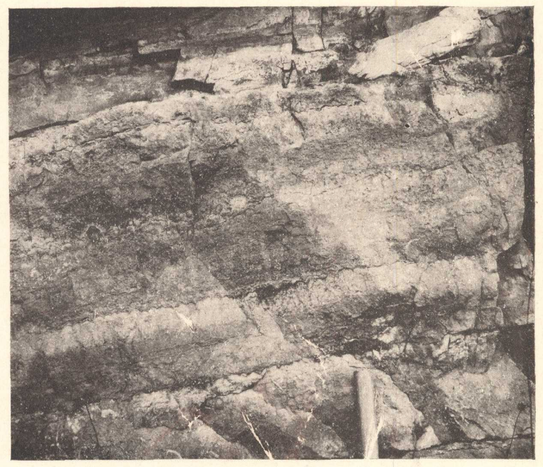

PLATE 7.—LAYERS OF WARRIOR LIMESTONE COMPOSED OF *CRYPTOZOON UNDULATUM* BASSLER
Five layers of cryptozoons in about 3 feet of thickness. Quarry at Bakers Summit in the southwestern part of the Hollidaysburg quadrangle. Looking southeast.

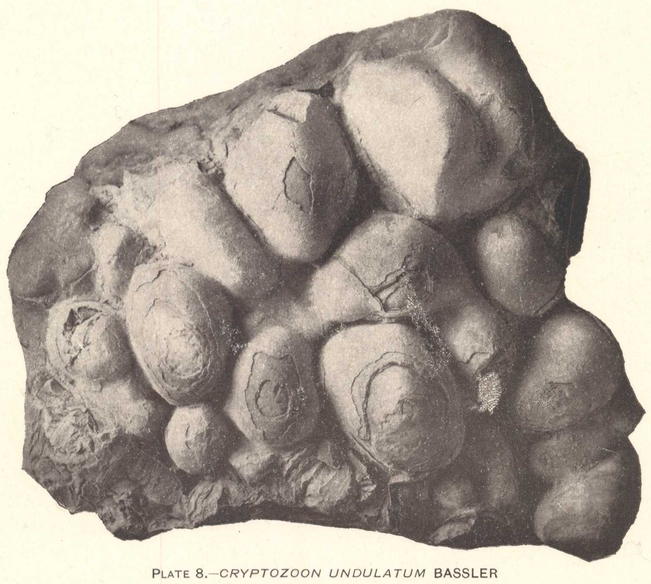

PLATE 8.—*CRYPTOZOON UNDULATUM* BASSLER
Top surface of layer of the Warrior limestone. One-fourth mile east of Bakers summit.

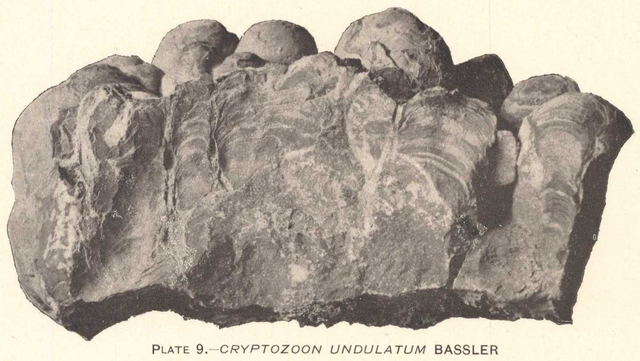

PLATE 9.—*CRYPTOZOON UNDULATUM* BASSLER
Same as plate 8. Sectional view showing manner of growth.

ILLUSTRATIONS II

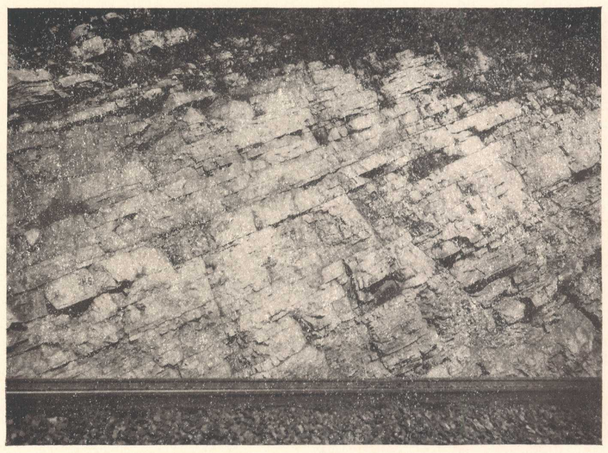

PLATE 10.—DOLOMITE ALONG PENNSYLVANIA RAILROAD ABOUT 1 MILE EAST OF UNION FURNACE

Looking north. This is a part of the Beekmantown group and is believed to be Nittany dolomite.

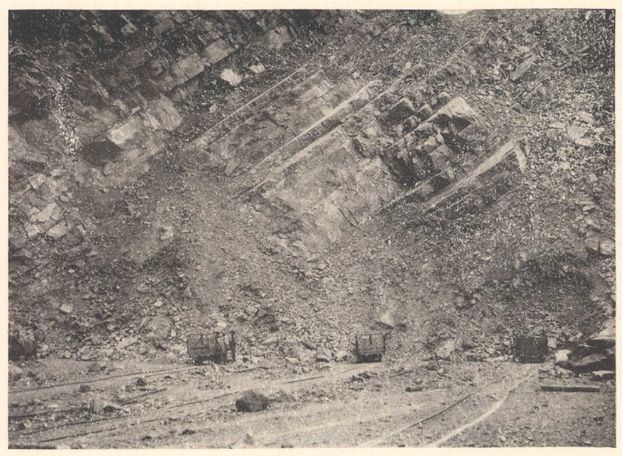

PLATE 11.—LOWVILLE LIMESTONE IN QUARRY OF ST. CLAIR LIMESTONE CO., AT GANISTER

Looking northeast. Layer of limestone near bottom crowded with fucoids (fossil seaweeds).

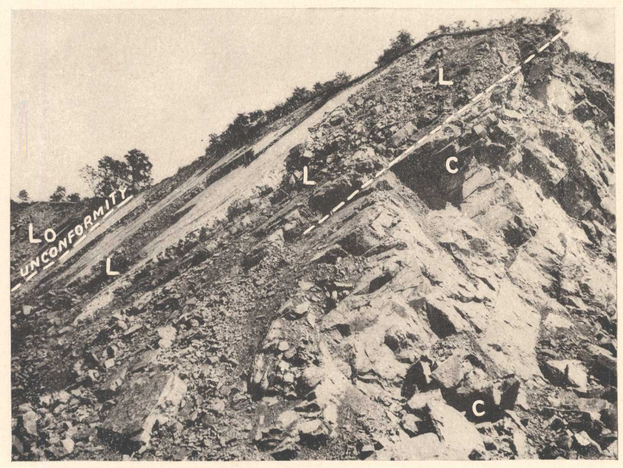

PLATE 12.—VIEW IN QUARRY AT GANISTER SHOWING BEDS JUST BELOW LOWVILLE LIMESTONE

Lo, Lowville limestone; L, Lemont argillaceous limestone member of Carlim limestone; C, lower part of Carlim limestone. Between the Lemont member and the Lowville is a great stratigraphic hiatus due to the absence of formations that in east Tennessee are several thousand feet thick (see p. 4).

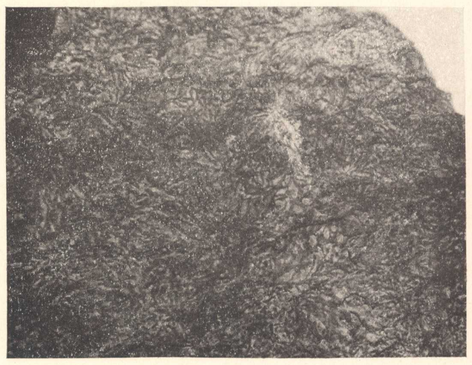

PLATE 13.—FUCOIDS IN BED AT OR NEAR BOTTOM OF LOWVILLE LIMESTONE

Top of a layer 5 feet thick crowded throughout with these forms. Stems one-eighth inch in diameter. On weathering the dark material dissolves out, leaving a honeycombed rock. Quarry at Ganister.

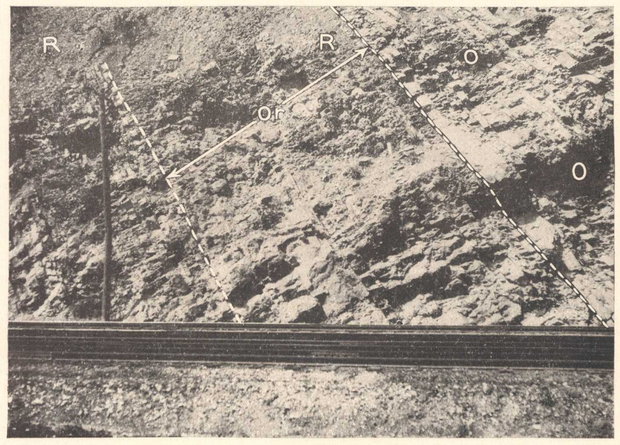

PLATE 14—TOP OF REEDSVILLE SHALE (R), WITH THICK-BEDDED PART (Or) OF MAYSVILLE AGE, CARRYING *ORTHORHYNCULA* AND *BYSSONICHIA*, AND BOTTOM OF OSWEGO SANDSTONE (O)

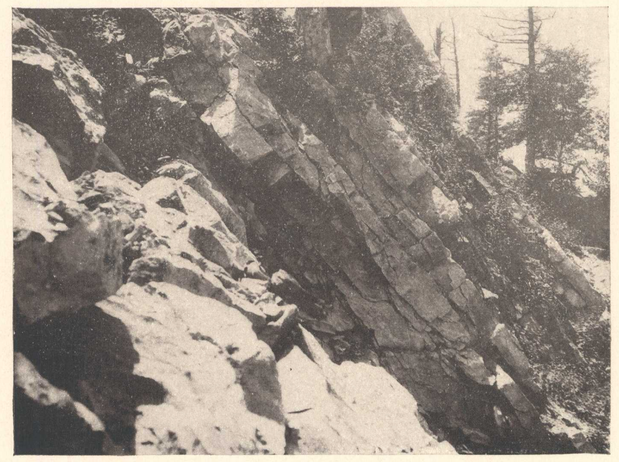

PLATE 15.—TUSCARORA QUARTZITE

North end of Lock Mountain at Point View. Looking south.

PLATE 16.—SHRIVER LIMESTONE

Railroad cut at south end of Bald Hill 1 mile east of Hollidaysburg. Looking northeast.

PLATE 17.—THICK-BEDDED BUT LAMINATED LIMESTONE IN UPPER PART OF KEYSER MEMBER OF HELDERBERG LIMESTONE

Cut at south end of Bald Hill 1 mile east of Hollidaysburg. Looking northeast. Shriver limestone at far end of cut (see pl. 16).

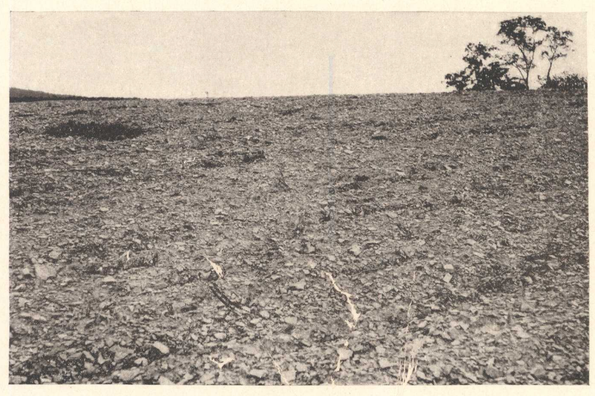

PLATE 18.—VIEW OF PLOWED FIELD COVERED WITH SMALL STONES FROM THE UNDERLYING SHRIVER LIMESTONE

North of Cove, in the southwest corner of the Huntingdon quadrangle. Looking east. Characteristic feature of the Shriver throughout the region.

PLATE 19.—CHARACTERISTIC HACKLY FOSSILIFEROUS SHALE IN THE TOP OF THE HAMILTON FORMATION SOUTH OF HUNTINGDON

Looking northeast.

PLATE 20.—BRALLIER SHALE

These thick beds are thinly laminated and break down into thin chips on weathering. Cut on Pennsylvania Railroad about half a mile east of Huntingdon. Looking north.

PLATE 21.—CHEMUNG FORMATION, SHOWING ALTERNATING THIN SHALE AND SANDSTONE LAYERS

Along road a short distance north of Hawn Bridge, in the northwestern part of the Huntingdon quadrangle. Looking northeast.

ILLUSTRATIONS III

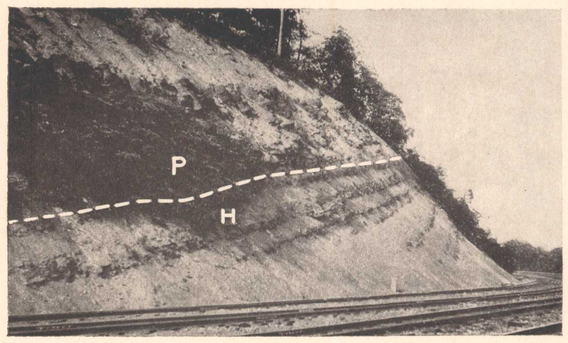

PLATE 22.—HAMPSHIRE-POCONO BOUNDARY
Curve on Pennsylvania Railroad at entrance to gorge of Sugar Run, about 2 miles south of Kittanning Point. P, Pocono; H, Hampshire.

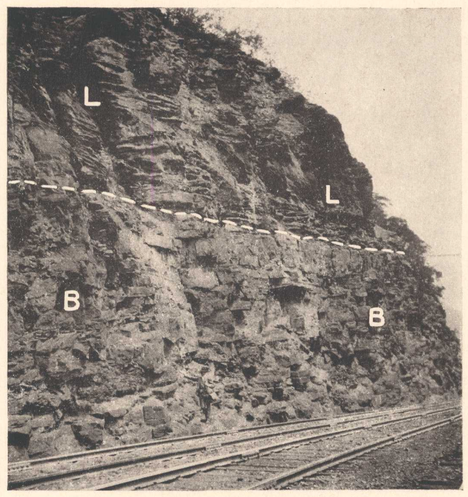

PLATE 23.—LOYALHANNA LIMESTONE (L) OVERLYING BURGOON SANDSTONE (B)
Pennsylvania Railroad on Allegheny Front near old Allegrippis Station. Looking northeast.

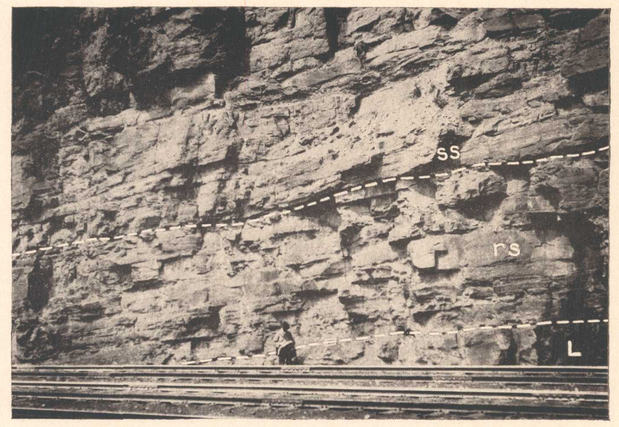

PLATE 24.—SANDSTONE FORMING THE LOWER PART OF THE MAUCH CHUNK FORMATION ON THE ALLEGHENY FRONT
Cut on Pennsylvania Railroad in gorge of Sugar Creek. Looking north. ss, Sandstone in bottom of Mauch Chunk formation; rs, red shale; L, Loyalhanna limestone.

PLATE 25.—VIEW OF CLOVER CREEK QUARRY AT SPARR
Mainly in Carlim limestone. Beekmantown dolomite at bottom. Looking southwest.

PLATE 26.—VIEW OF QUARRY JUST SOUTH OF GANISTER
Looking northwest. Trenton limestone on slope above. Lock Mountain in distance. Rodman limestone at top margin of quarry.

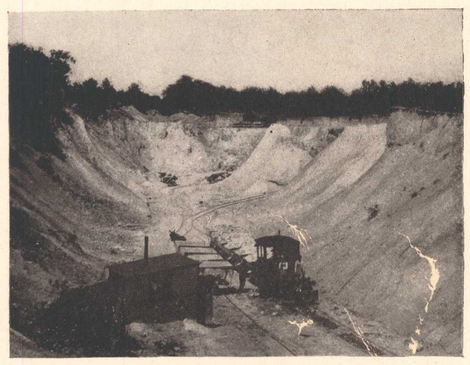

PLATE 27.—CLAY PIT 1 MILE SOUTH OF OREMINIA (MINES)
Residual clay accumulated on the outcrop of the Mines dolomite. Looking north.