STRUCTURE SECTIONS

STATE OF PENNSYLVANIA
REPRESENTED BY THE
DEPARTMENT OF INTERNAL AFFAIRS
TOPOGRAPHIC AND GEOLOGIC SURVEY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PENNSYLVANIA
HOLLIDAYSBURG QUADRANGLE

EXPLANATION
SEDIMENTARY ROCKS

SHEET SYMBOL — SECTION SYMBOL

QUATERNARY

Recent

Alluvium (Qal)
(silt, sand, and gravel constituting the flood plains of present streams)

CARBONIFEROUS

Pennsylvanian

Allegheny formation (Ca)
(shale and sandstone with beds of coal and clay)

Pottsville formation (Cpv)
(sandstone, conglomerate, shale, and coal; Homewood sandstone member at top; Mercer shale member in middle; Connoquenessing sandstone member, coarse, thick-bedded sandstone and conglomerate, at bottom)

UNCONFORMITY

Mississippian

Mauch Chunk formation (Cmc)
(upper part mostly red shale and some green; lower part thick-bedded green sandstone)

Loyalhanna limestone (Cl)
(siliceous limestone weathering to highly pitted and strongly cross-bedded sandstone)

Pocono formation (Cb, Cpo)
(lower part red, gray, and olive-green shale with gray sandstone layers; Burgoon sandstone member, Cb, at top, underlain by Patton shale member, sparingly fossiliferous)

DEVONIAN

Upper Devonian

Hampshire formation (Dha)
(predominantly red lumpy shale or mud rock and red sandstone; some gray and green shale and sandstone)

Chemung formation (Dsx, Dch)
(chiefly green, gray, and chocolate-colored shale and thin beds of argillaceous fine-grained sandstone; fossiliferous throughout; includes Saxton conglomerate member, Dsx; upper part largely chocolate-colored)

Portage group

Brallier shale (Db)
(micaceous, siliceous slaty green shale with some thin beds of fine-grained sandstone; sparsely fossiliferous throughout, mainly pelecypods of Gardeau type)

Harrell shale (Dhr, Dbk)
(soft gray shale in upper part; Burket black shale member, Dbk, in lower part; highly fossiliferous, small pelecypods and cephalopods of the Naples fauna)

Middle Devonian

Hamilton formation (Dh)
(principally olive-green shale with even-layered blocky-jointed sandstone and thin limestone at top; ridge-making sandstone at two horizons; sparingly fossiliferous; locally a foot or two of limestone at top with Tully fauna)

Marcellus shale (Dm)
(black fissile clay shale, grading upward into olive-green shale)

Onondaga formation (Do)
(gray shale, probably calcareous, and thin argillaceous limestone)

Lower Devonian

Oriskany group

Ridgeley sandstone (Dr)
(thick-bedded calcareous sandstone weathering to coarse friable sandstone; locally a fine conglomerate at top with quartz pebbles, highly fossiliferous)

Shriver limestone (Ds)
(thin-bedded siliceous limestone, weathering to fine-grained sandstone; black calcareous shale at bottom; sparingly fossiliferous)

Helderberg limestone (Dhb)
(lower part is thick-bedded gray limestone with thin gray chert at top, chiefly Keyser limestone member; overlying Coeymans and New Scotland limestone members thin and locally absent; contains valuable quarry rock, called "calico rock"; fossiliferous throughout)

SILURIAN

Cayuga group

Tonoloway limestone (Stw)
(thin-bedded finely laminated dark limestone; sparingly fossiliferous, chiefly Leperditia)

Wills Creek shale (Swc)
(chiefly gray calcareous shale and some greenish limestone; fossils scarce)

Bloomsburg redbeds (Sb)
(lumpy red shale and thick-bedded ridge-making red sandstone)

McKenzie formation (Smk)
(blue thin-bedded fossiliferous limestone and soft gray and green shale; thin red shale east of Tussey Mountain and a little red shale west of Lock Mountain)

Niagara group

Clinton formation (Sk, Sc, Scs)
(mainly green and blue shale, weathering purplish, and thin fine-grained green sandstone in middle; Keefer sandstone member, Sk, near top; shale with thin limestone layers above Keefer sandstone member represent Rochester shale; Marklesburg iron-ore bed just beneath Keefer sandstone member; Frankstown iron-ore bed in lower half; hard quartzitic sandstone, red sandstone, and Levant Block iron ore, Scs, at base; generally fossiliferous)

Tuscarora quartzite (St)
(hard white quartzite and sandstone, largely thick-bedded; quartzite extensively quarried for ganister; contains scolithus worm tubes and Arthrophycus at top)

EXPLANATION
CONTINUED

SHEET SYMBOL — SECTION SYMBOL

ORDOVICIAN

Upper Ordovician

Juniata formation (Oj)
(chiefly red and some green fine-grained cross-bedded sandstone and red lumpy mud rock; nonfossiliferous)

Oswego sandstone (Oo)
(gray fine-grained thick-bedded cross-laminated sandstone; contains a few small quartz pebbles in lower part; nonfossiliferous)

Reedsville shale (Orv)
(chiefly olive-green shale, weathering to small slivers, upper part containing argillaceous and ferruginous limestone layers; thick-bedded dark sandstone with abundant brachiopods of the Orthorhyncula zone at top, and a few feet of black shale containing graptolites at base)

Middle Ordovician

Black River group

Trenton limestone (Ot)
(thin-bedded black argillaceous limestone weathering to small flat residual pieces; sparsely fossiliferous)

Rodman limestone (Or)
(thick- and thin-bedded dark crystalline limestone, weathering granular; fossiliferous)

Lowville limestone (Ol)
(thick-bedded dark, fine, even-grained limestone, with conchoidal fracture; mostly high-grade limestone, the upper quarry rock)

UNCONFORMITY

Carlim limestone (Oc)
(thick-bedded, mainly fine-grained dark limestone, the lower quarry rock; sparsely fossiliferous, Lemont argillaceous limestone member, generally highly fossiliferous (Maclurea magna zone) at top, and separating the two quarry beds)

UNCONFORMITY

Lower Ordovician

Beekmantown group

Bellefonte dolomite (Ob)
(dark fine-grained dolomite, thick-bedded in lower part, dark shaly layers in upper part; contains heavy chert locally; sparingly fossiliferous)

Axemann limestone (Oa)
(thin-bedded blue limestone with a few dolomite layers; abundantly fossiliferous)

Nittany dolomite (On)
(thick-bedded light-gray fine-grained dolomite with some chert layers which weather to heavy chert at surface; chert commonly fossiliferous; a thin limestone, possibly Stonehenge, present near and southeast of Ore Hill)

Larke dolomite (Ola)
(chiefly thick-bedded dark-blue coarsely crystalline dolomite, generally without chert but locally yields some chert at the surface; lower part is light-gray, fine-grained, and thinly banded by siliceous laminae that weather in relief; sparsely fossiliferous)

Mines dolomite (Om)
(coarse and fine grained blue dolomite, largely oolitic; on weathering gives rise to great quantity of irregular platy scoriaceous chert, much of which is silicified oolite with black grains and contains two species of Cryptozoon)

CAMBRIAN

Upper Cambrian

Gatesburg formation (Ꞓg)
(chiefly thick-bedded blue coarsely crystalline dolomite, with many layers of sandstone up to 10 feet thick; Stacy dolomite member, Ꞓs, free of sandstone, at base; Ore Hill limestone member, Ꞓo, which contains rare trilobites, in middle)

Warrior limestone (Ꞓw)
(thin-bedded blue fine-grained magnesian limestone with shaly partings; some layers contain abundant rounded quartz grains; sparingly fossiliferous, including Cryptozoon and trilobites)

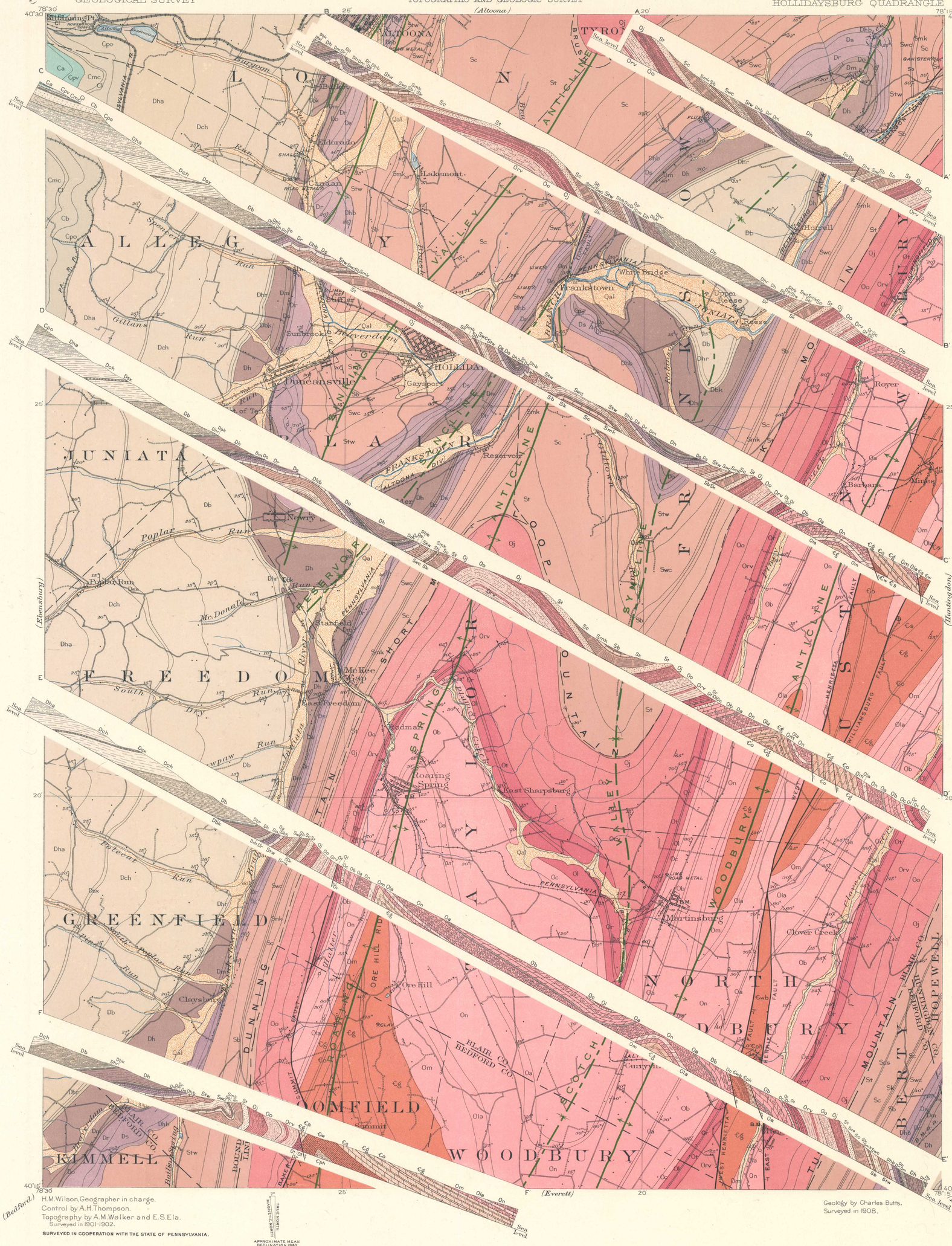
Middle Cambrian

Pleasant Hill limestone (Ꞓph)
(lower part argillaceous thin-bedded limestone weathering to shale; upper part pure thick-bedded dark limestone; contains trilobites, brachiopods, and Hyolithus)

Lower Cambrian

Waynesboro formation (Ꞓwb)
(yellowish arkosic sandstone, fine quartz conglomerate, red and green shale, and calcareous sandstone; contains Hyolithus and trilobites)

Known fault
Probable fault
Concealed fault
(covered by younger deposits)
Overthrust side of thrust fault
Strike and dip of stratified rocks
Strike of vertical beds
Horizontal beds
Quarry
Axis of anticline
Axis of syncline



H.M.Wilson, Geographer in charge.
Control by A.H.Thompson.
Topography by A.M.Walker and E.S.Ela.
Surveyed in 1901-1902.

SURVEYED IN COOPERATION WITH THE STATE OF PENNSYLVANIA.

TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION 1940

Geology by Charles Butts.
Surveyed in 1908.

Scale $\frac{1}{62500}$

4 Miles
7000 Yards
15000 Feet
5 Kilometers

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