

STRUCTURE AND ECONOMIC GEOLOGY

STATE OF PENNSYLVANIA
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COMMISSIONERS
(Sewickley)

PENNSYLVANIA
CARNEGIE QUADRANGLE

U.S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR
(Rever) 30' 15"
40' 30"



LEGEND

SEDIMENTARY ROCKS
(Areas of subaqueous deposits are shown by patterns of parallel lines, sedimentary deposits by patterns of dots and circles)

- Recent**
- Qal Alluvium (in flood plains of present streams)
- Wisconsin?**
- Qlg Late glacial gravel (gravel, sand, and silt of glacial and local material on low river terraces)
 - Qlt Lower terrace deposits (sand, silt, clay, and silt of local derivation, on low terraces)
- Pleistocene**
- Qig Intermediate glacial gravel (gravel, sand, and silt of local and foreign material on gradual terraces of moderate elevation)
- Kansan?**
- Qeg Early glacial gravel (deeply decayed, high terrace gravel, sand, and silt of glacial and local material derived from sedimentary and igneous rocks of the north as Canada)
 - Qcm Carmichael formation (high terrace sand, silt, clay, and deeply decayed, partly rounded pebbles of local derivation)

- Permian**
- Cw Washington formation (sandstone, shale, limestone, and thin coals, Washington coal near middle)
 - Cm Monongahela formation (gray shale and limestone and some sandstone, Waynesburg coal at top and Pittsburg coal at base)
- UNCONFORMITY?**
- Ccm Conemaugh formation and Ames limestone member (gray or greenish shale, sandstone, thin coals, and some limestones)

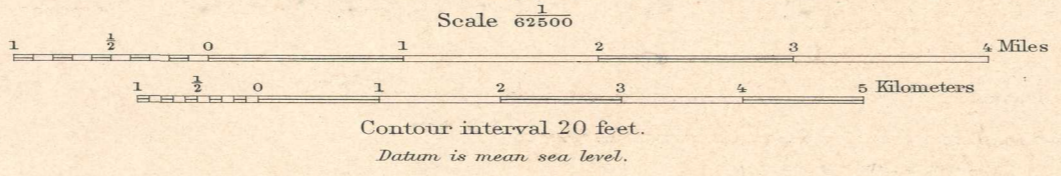
- ECONOMIC AND STRUCTURE DATA**
- Outcrop of workable coals (with Washington coal, with Waynesburg coal, pb. Pittsburg coal)
 - Structure contours drawn on the bottom of the Pittsburg coal (Contour interval is 20 feet; datum is mean sea level)
 - Coal mines

NOTE: The most valuable coal is the Pittsburg at the base of the Monongahela formation; other coals, clay and shale for brick and tile, limestones for cement materials, and building stone occur throughout all the consolidated formations; the stream and terrace deposits yield gravel, sand, and clay; distribution of oil and gas wells and pools shown on separate map.

QUATERNARY
CARBONIFEROUS

H.M. Wilson, Geographer.
Frank Sutton and Robt. D. Cummin, in charge of section.
Topography by E.B. Clark, J.H. Wheat, A.C. Roberts, and E.G. Hamilton. Assistant, J.S.B. Dainfield, and various city, town, and park surveys.
Control by D.H. Baldwin, Robert Cole, and C.A. Clunet.
River shoreline by U.S. Army Engineers.
Surveyed in 1903-1904.

APPROXIMATE MEAN DECLINATION 1924.



Geology by F.B. Peck, G.C. Martin, and E.W. Shaw.
Surveyed in 1906, 1907, and 1909.

SURVEYED IN COOPERATION WITH THE STATE OF PENNSYLVANIA.

(Brewster) 40' 15"
80' 00"