U. S. GEOLOGICAL SURVEY
CHARLES D. WALCOTT, DIRECTOR

STATE OF PENNSYLVANIA
GEORGE W. MC NEES, SIMON HARROLD,
FRED D. BARKER COMMISSIONERS

ECONOMIC GEOLOGY

PENNSYLVANIA
BROWNSVILLE QUADRANGLE

LEGEND

SURFICIAL ROCKS

(Areas of Surficial rocks are shown by patterns of dots and circles)

PLEISTOCENE

- Pal — Alluvium *(in flood plains of present streams)*
- Pcm — Carmichael clay *(clay, sand, and bowlders on terraces and in abandoned channels of the larger streams)*

SEDIMENTARY ROCKS

(Areas of Sedimentary rocks are shown by patterns of parallel lines)

CARBONIFEROUS

Permian series ?

- Cd — Dunkard formation *(sandy shale, coarse sandstone, some thin limestone, and beds of coal, many of workable size)*

Pennsylvanian series

- Cm — Monongahela formation *(shale, limestone, and occasionally coarse sandstone; Pittsburg coal at the bottom, Waynesburg coal at the top, and coal beds of local importance between)*
- Ccm — Conemaugh formation *(sandstone, shale, small amount of limestone, and a few small coal beds)*

⚒ *Coal mines and sand pits*
● *Wells drilled for gas*

Known productive formations

- Cm — *Most important coal* *(Monongahela formation contains the Pittsburg, Waynesburg, and other coal beds)*
- Cd — *Coal* *(Dunkard formation includes the Washington and other coal beds of local importance)*
- Ccm — *Coal* *(Conemaugh formation contains thin coal beds)*
- ▨ *Contour lines showing lay of Pittsburg coal bed* *(elevation above sea level shown by figures on contour lines; contour interval is 20 feet)*
- *Coal outcrops* *(continuous lines represent coal beds of probable workable thickness; long dashes, thin beds of doubtful value; short dashes, outcrops covered by surficial deposits)*

H. M. Wilson, Geographer in charge.
Control by Sledge Tatum and Arthur C. Roberts.
Topography by Frank Sutton, J. H. Wheat, W. N. Morrill, and T. G. Basinger.
Surveyed in 1899-1900 in cooperation with the State of Pennsylvania.

TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION 1902.

Scale $\frac{1}{62500}$

1 ½ 0 1 2 3 4 Miles

1 ½ 0 1 2 3 4 5 Kilometers

Contour interval 20 feet.
Datum is mean sea level.

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Assisted by L. C. Glenn,
Charles Butts, and L. H. Woolsey.
Surveyed in 1891.