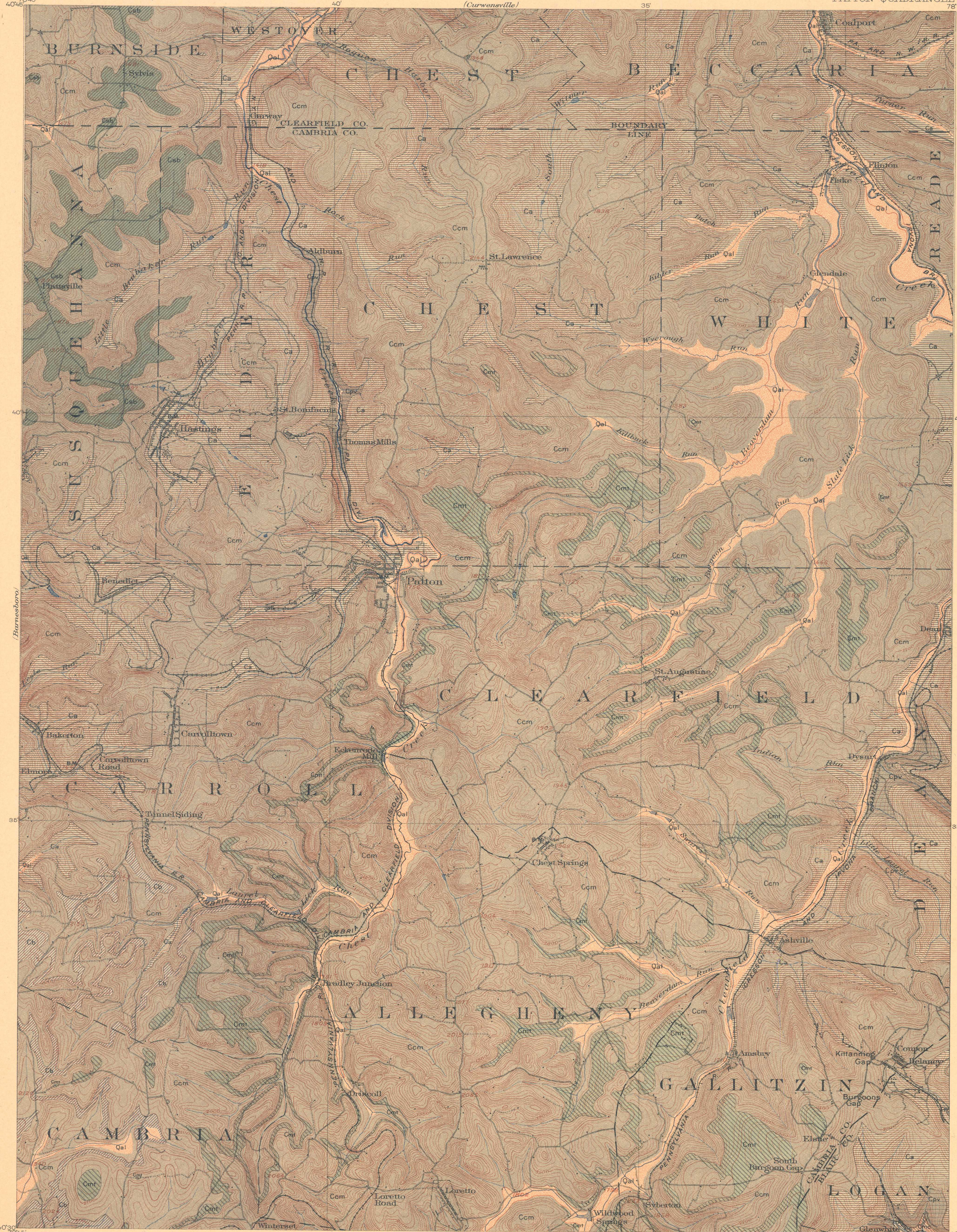


# AREAL GEOLOGY

U.S. GEOLOGICAL SURVEY  
GEORGE OTIS SMITH, DIRECTOR

STATE OF PENNSYLVANIA  
GEORGE W. MCNEES, RICHARD R. HICE, ANDREW S. MCCREATH  
COMMISSIONERS  
(Curwensville)

PENNSYLVANIA  
PATTON QUADRANGLE



## LEGEND

### SEDIMENTARY ROCKS

(Areas of subaqueous deposits are shown by patterns of parallel lines; subaerial deposits by patterns of dots and circles)

Oal

Alluvium  
(in flood plains of present streams)

Ccm

Conemaugh formation  
(shale, thin limestone, some red shale, thin coal beds locally workable, and coarse thick-bedded sandstones containing the Mazonian, and the Allegheny, Cb, and Buffalo, Cb, members)

Cca

Allegheny formation  
(chiefly light and dark gray clay shale with variable beds of coarse gray sandstone and several valuable coal beds, Upper Freeport coal at top)

Cp

Pottsville formation  
(thick-bedded sandstone with shale in the middle carrying thin coal, locally workable)

Cm

Mauch Chunk formation  
(soft red shale in upper part, greenish to gray thick-bedded sandstone in lower part)

QUATERNARY

CARBONIFEROUS

H.M. Wilson, Geographer in charge.  
Triangulation by S. S. Gannett.  
Topography by Frank Sutton, A.M. Walker, and J.D. Forster.  
Surveyed in 1901-2 in cooperation with the State of Pennsylvania.

Scale 1:50,000  
Miles  
Kilometers

Contour interval 20 feet.  
Datum is mean sea level.  
Edition of May 1913.

Geology by Marius R. Campbell, Frederick G. Clapp, and Charles Butts, assisted by J.S. Burrows.  
Surveyed in 1903-4 and 1908.  
SURVEYED IN COOPERATION WITH THE STATE OF PENNSYLVANIA.