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

STATE OF PENNSYLVANIA
GEORGE W. MC NEES, SIMON HARROLD
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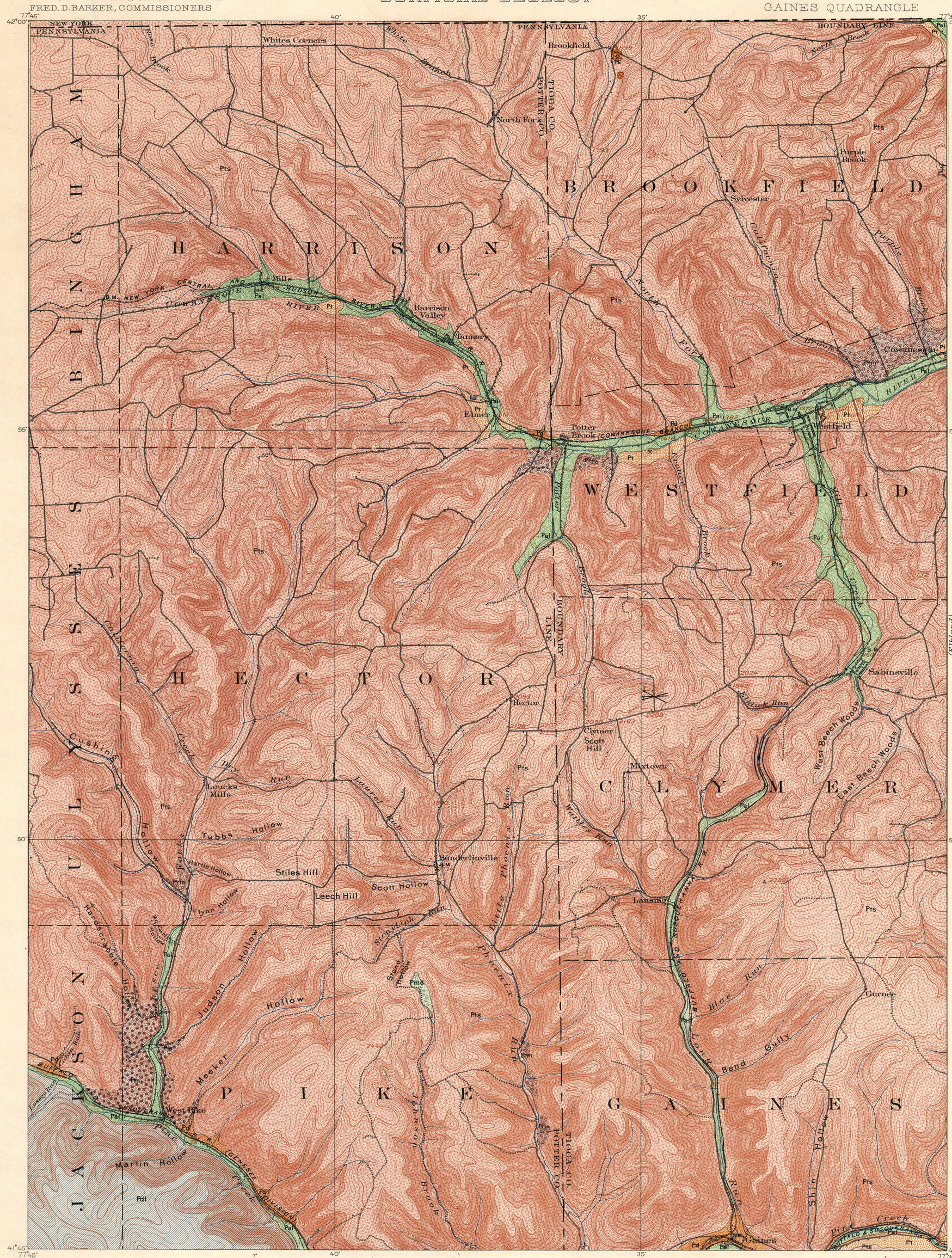
SURFICIAL GEOLOGY

PENNSYLVANIA-NEW YORK
GAINES QUADRANGLE



LEGEND

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

Post-Glacial

- Pal — **Alluvium** *(flood plain silts underlain by stratified drift)*
- Pmd — **Marsh deposits** *(peat and muck)*
- Pd — **Gravel fans or deltas**

Wisconsin Glacial Invasion — PLEISTOCENE

- Pt — **Morainal and frontal terraces**
- Pk — **Kames** *(including isolated gravel deposits)*
- Prm — **Retreatal moraines**
- Pm — **Terminal moraine**
- Pts — **Till sheet**
- Pdl — **Apparently driftless area** *(surface covered with sedentary soil and talus)*

Glacial spillways *(direction of current indicated by arrow)*

Glacial striae
Gravel pits

H.M. Wilson, Geographer in charge.
Control by S.S. Gannett, Oscar Jones, and J.H. Wheat.
Topography by J.H. Jennings and J.W. Thom.
Surveyed in 1899 in cooperation with the State of Pennsylvania.

APPROXIMATE MEAN DECLINATION 1902.

Scale 1/62500

1 0 1 2 3 4 Miles

1 0 1 2 3 4 5 Kilometers

Contour interval 20 feet.
Datum is mean sea level.

Edition of April 1903.

T.C. Chamberlin, Geologist in charge.
Geology by William C. Alden.
Surveyed in 1900.