





# ATLAS

TO ACCOMPANY THE FINAL REPORT OF THE STATE GEOLOGIST.

## GEOLOGICAL SURVEY OF PENNSYLVANIA,

1893.

J. P. LESLEY, State Geologist.

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- 12-13—Geological and Topographical Map of most of Bucks and Montgomery counties (*uncolored*), scale 1 mile to an inch.
- 14—Four Cross Sections of Bucks and Montgomery counties, scale 1 mile to an inch.

Office of Geological Survey of Pennsylvania, Room 18, 4th Floor, Post Office Building, Philadelphia, Pa.

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GEOLOGICAL MAP OF PENNSYLVANIA. NORTH-EAST SHEET. **1**

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**GEOLOGICAL MAP OF PENNSYLVANIA**

BY  
W. SMITH, ASSISTANT GEOLOGIST

SECTION OF J. P. LESLEY, STATE GEOLOGIST

1893.

SCALE: 6 MILES TO AN INCH.

NOTES.

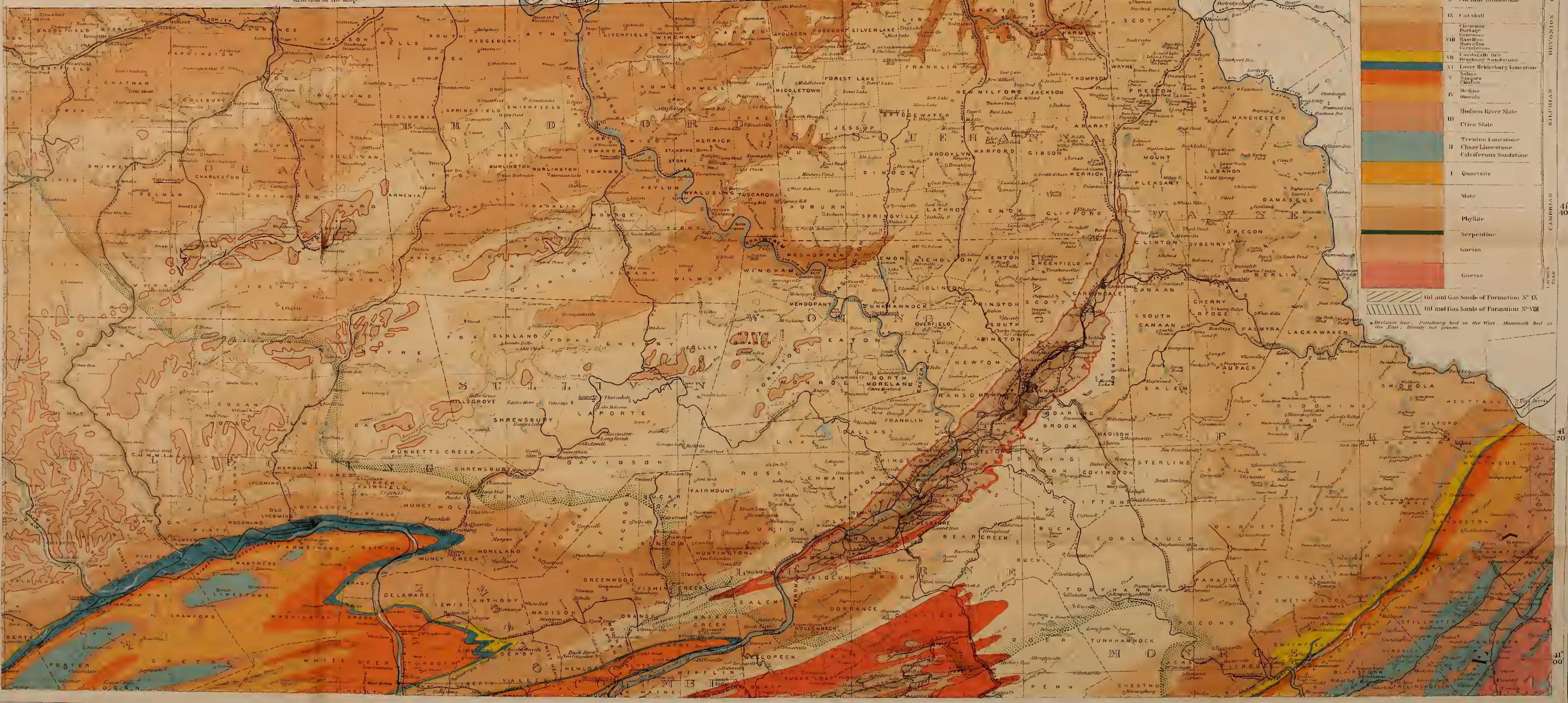
1. The original map was drawn on a scale of 2 miles to an inch and reduced to photographic scale by Julius Bien & Co. to 6 miles to an inch.

2. The portion of New Jersey shown on this map is reduced from the 1 mile sheets of the New Jersey Geological Survey published in 1888, and the coloring copied from the Geological Map of New Jersey published in 1889.

3. Messrs. Howell T. Fisher and Chas. J. Wright assisted in the construction of the map.

GEOLOGICAL COLUMN OF THE FORMATIONS OF PENNSYLVANIA IN ORDER OF SUCCESSION AND TIME.

COLORS	FORMATIONS
[Brown]	Alluvium
[Green]	Terminal Moraine
[Light Green]	Potters and Five Fly and Sands
[Dark Green]	Triassic Trop. Red Shales and Sandstone
[Light Blue]	For. I. Greene County Measures Washington County Group Monongahela River Coal Measures
[Blue]	For. II. Pittsburg Measures Allegheny River Coal Measures Pottsville Conglomerate
[Orange]	For. III. Mauch Chunk Red Shale
[Yellow]	For. IV. Pocahontas Sandstone
[Light Orange]	For. V. Carroll Shale
[Light Purple]	For. VI. Chemung Portage Canton Shinarump Columbian
[Purple]	For. VII. Tombigbee Bricklayer Sandstone
[Dark Purple]	For. VIII. Lower Allegheny Limestone
[Red]	For. IX. Seneca Niagara Medina Onondaga
[Red-Orange]	For. X. Hudson River Slate
[Orange-Red]	For. XI. Trenton Limestone
[Orange]	For. XII. Chazy Limestone Calciferous Sandstone
[Yellow-Orange]	For. XIII. Quartzite
[Yellow]	For. XIV. Slate
[Light Yellow]	For. XV. Plymville
[Greenish-Yellow]	For. XVI. Serpentine
[Green]	For. XVII. Gneiss
[Light Green]	For. XVIII. Gneiss



[Hatched pattern] Oil and Gas Sands of Formation No IX  
 [Hatched pattern] Oil and Gas Sands of Formation No VIII  
 Division line, Pittsburg bed in the West. Mammoth bed in the East. Density not proven.





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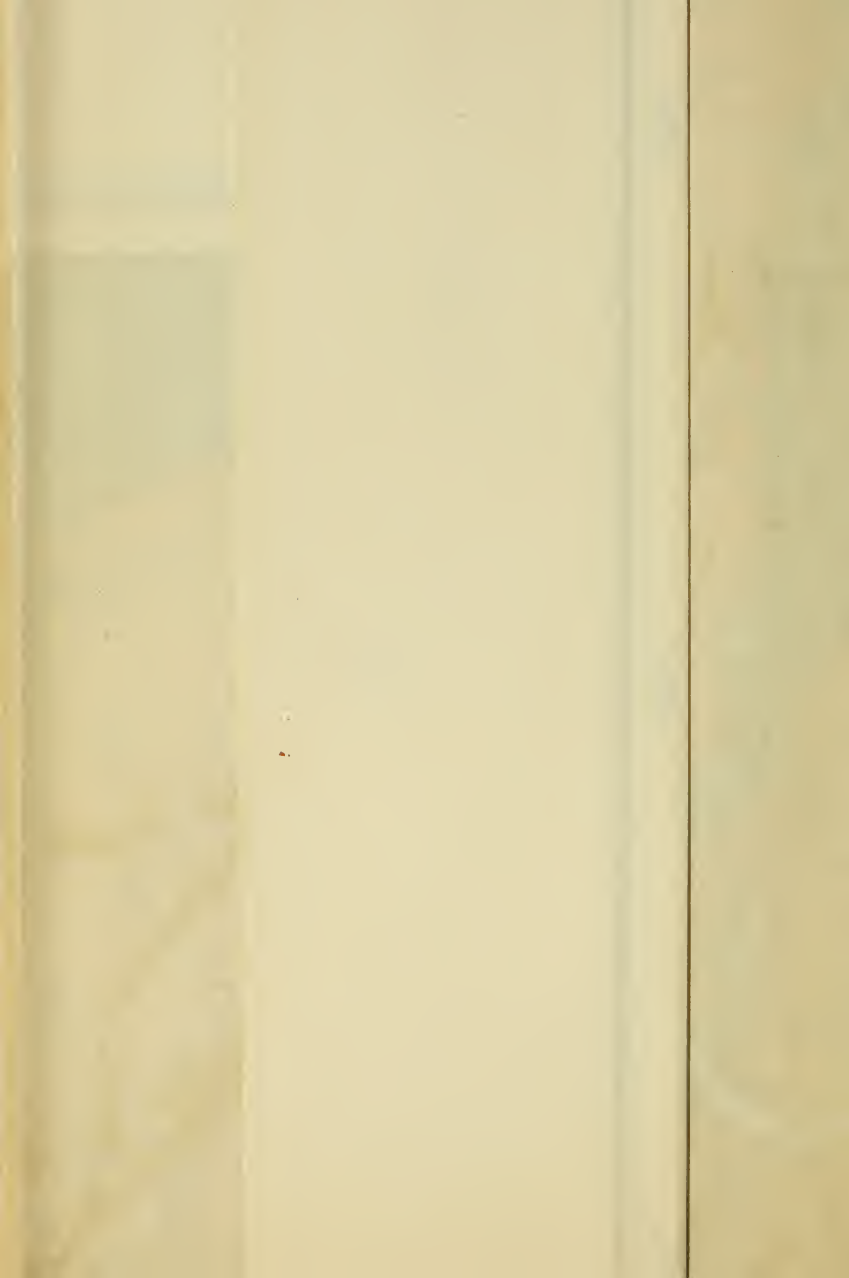
GEOLOGICAL MAP OF PENNSYLVANIA. SOUTH-EAST SHEET. **2**





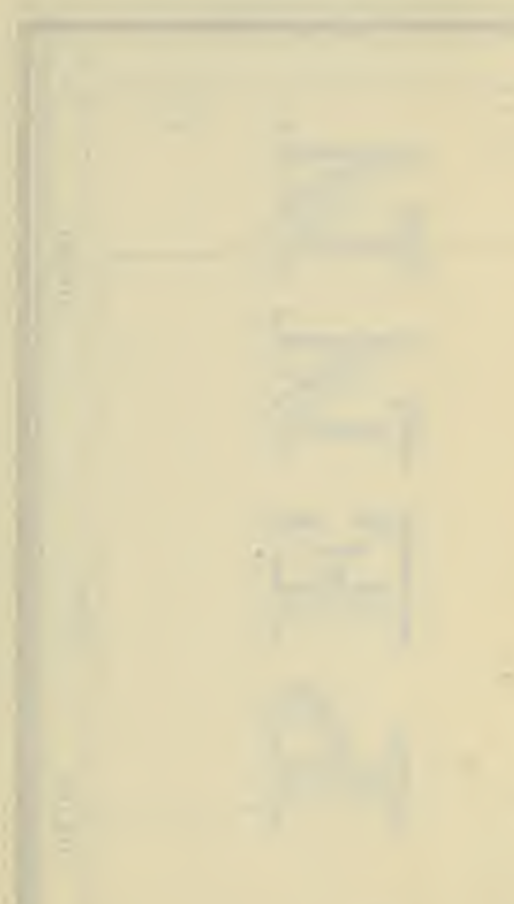






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**GEOLOGICAL MAP OF PENNSYLVANIA. NORTH-WEST SHEET. 3**











# PENN

NOTE.  
 The map is drawn on a polyconic projection. The data used in its construction were the County Maps published with the several Reports of the Assistant Geologists of the Survey between 1874 and 1892, the map sheets of the several Surveys of the Anthracite Region, of Berks and Montgomery Counties, of the Durham & Lehigh Hills, of the South and West, of the Allegheny River, of the Allegheny and Southwestern Pennsylvania, the Philadelphia Water Department Map, the publications of the State Boundary Commission, and its maps furnished by various Railroad Companies, adjusted to established Stations of the U. S. Coast Survey east of the Susquehanna River.





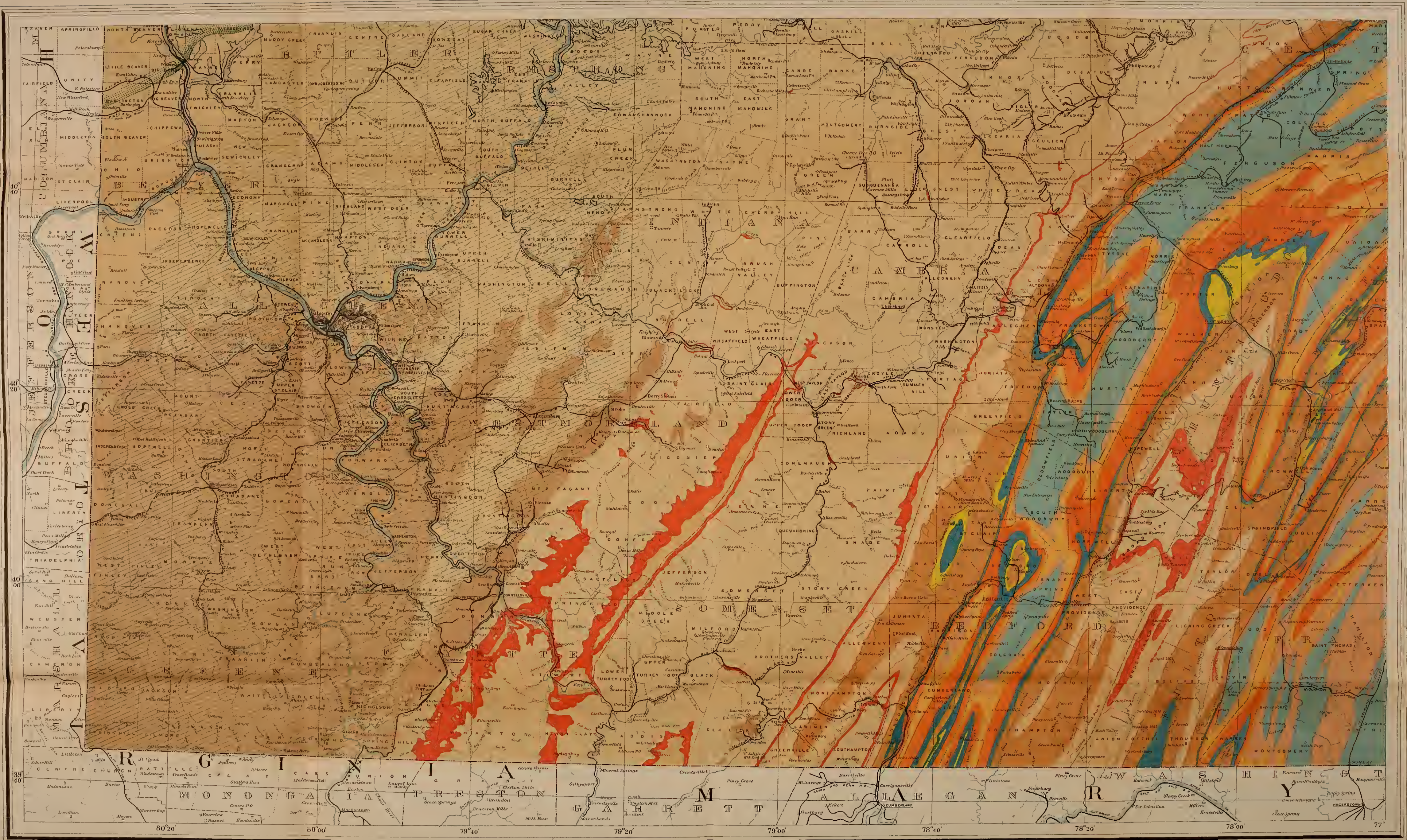


GEOLOGICAL MAP OF PENNSYLVANIA. SOUTH-WEST SHEET. - **4**

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BITUMINOUS COLLIERIES MAP. NORTH-EAST SHEET. **5**



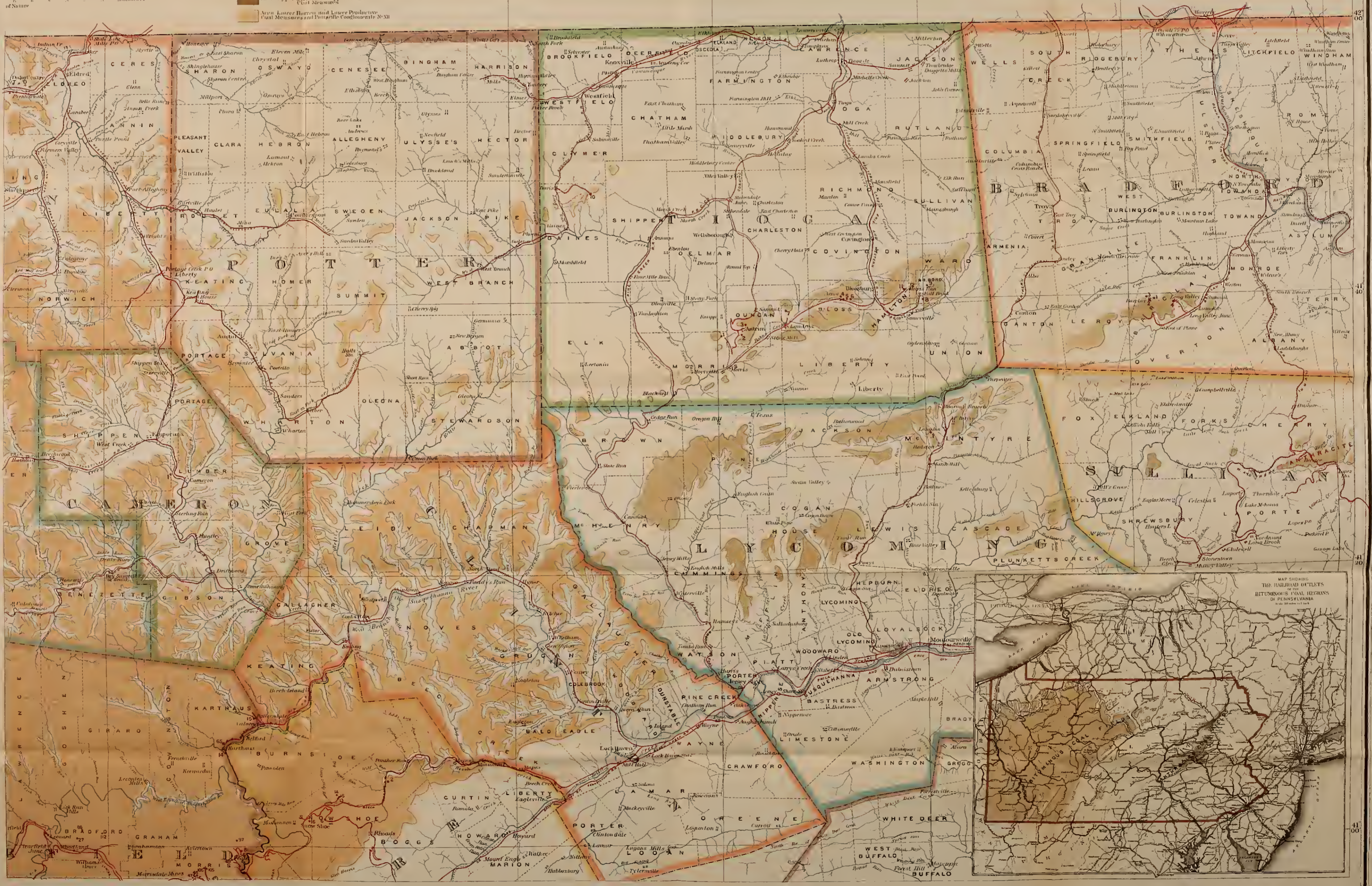




# GEOLOGICAL MAP OF THE COLLIERIES OF PENNSYLVANIA

BY  
JOHN BERSTADT  
GEOLOGIST.  
Scale 1 inch = 10 miles.

EXPLANATION OF COLORS  
Orange - Area Upper Barren and Upper Productive Coal Measures  
Yellow - Area Lower Barren and Lower Productive Coal Measures and Pottery Conduits No. XII







BITUMINOUS COLLIERIES MAP. SOUTH-EAST SHEET.

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BITUMINOUS COLLIERIES MAP. NORTH-WEST SHEET. **7**

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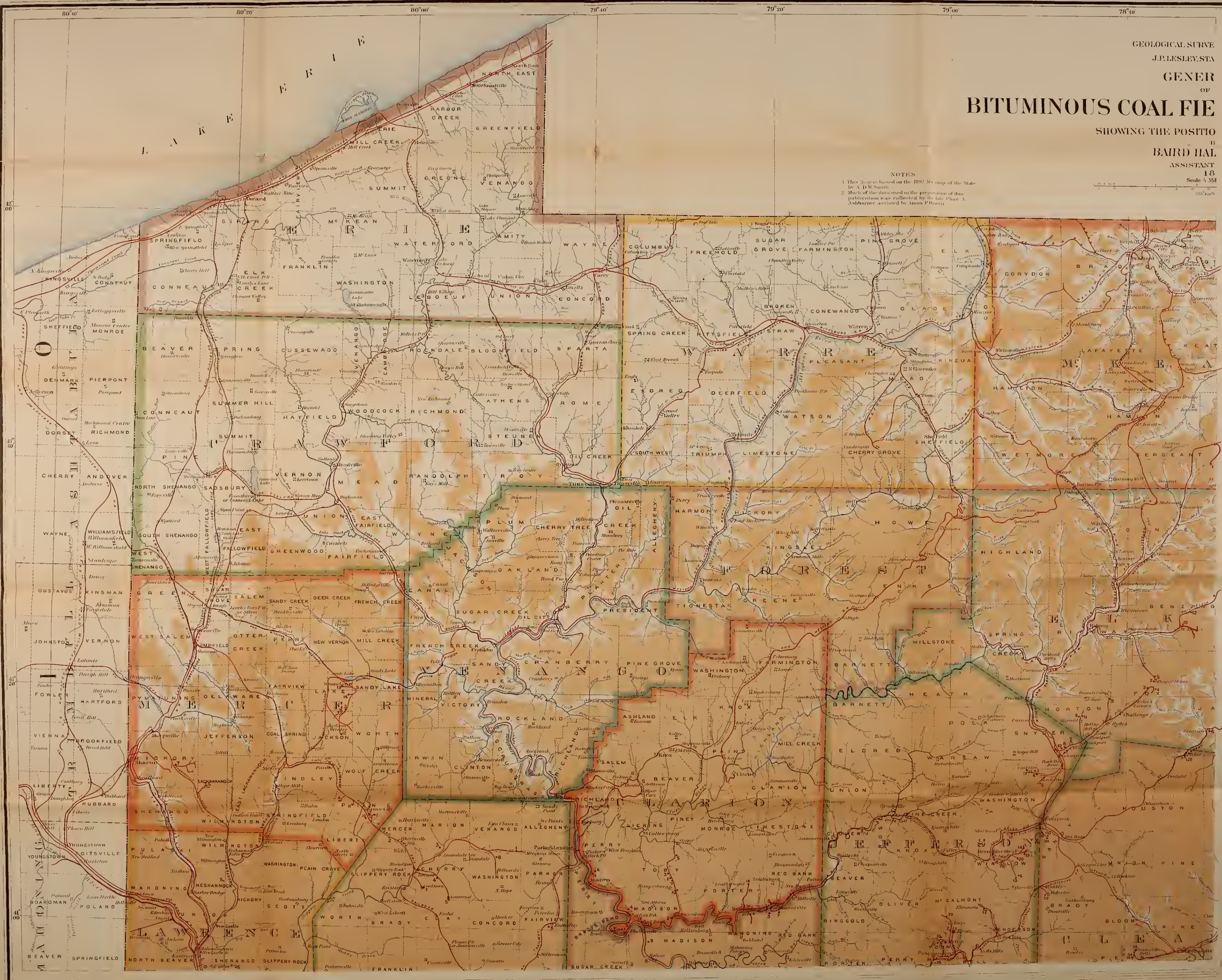
GEOLOGICAL SURVEY  
J.P. LESLEY, STA  
GENERAL

# BITUMINOUS COAL FIELD

SHOWING THE POSITION  
OF

BAIRD HALL  
ASSISTANT  
18  
Scale 4 MI

NOTES  
1. This map is based on the 1892 M.S. map of the State by A. D. W. Smith.  
2. Much of the data used in the preparation of this publication was collected by the late Philip A. Ashburner assisted by Amos F. Brown.







GEOLOGICAL MAP OF LEBANON COUNTY.

9

W. D. COMPTON

1878

1878

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GEOLOGICAL SURVEY  
OF PENNSYLVANIA.  
J.P. LESLEY, STATE GEOLOGIST

# GEOLOGICAL MAP OF LEBANON COUNTY

BY  
RICHARD H. SANDERS  
(FIELDWORK IN 1878-1879)  
1892.

Scale: 2 Miles to 1 Inch



### EXPLANATION OF COLORS

- Coal Measures
- XII Potsville Conglomerate
- XI Mauch Chunk Red Shale
- X Pecos Sandstone
- IX Catskill Red Sandstone
- Cheimung Shale  
Savage Flings  
Hamilton Shale
- VII Oriskany Sandstone
- VI Lower Heidelberg Limestone
- V Clinton Shale
- IV Medina and Onondaga Sandstones
- III Hudson River Shale and Utica Slate
- II Trenton Limestone  
Catawban
- I Potsdam Sandstone
- New Red Sandstone
- Trap







Sage

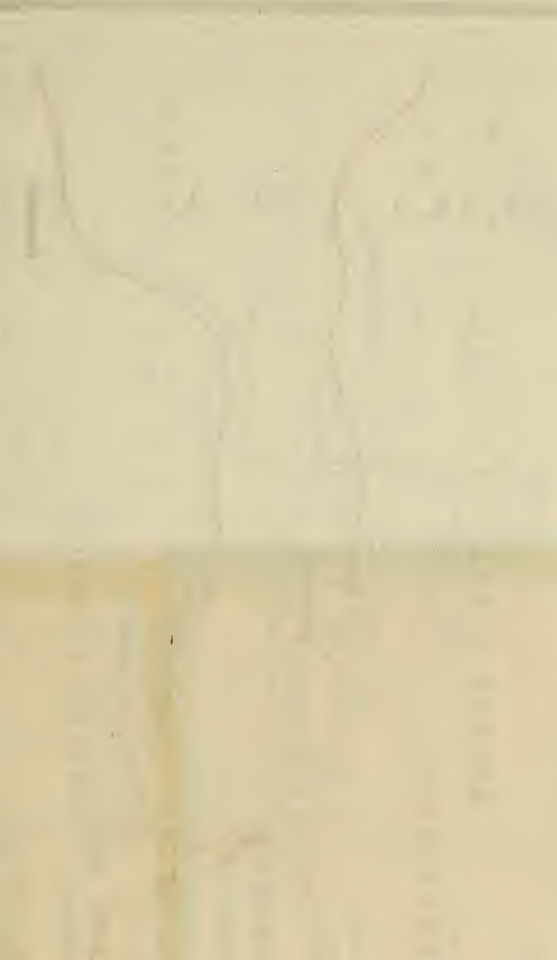
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BITUMINOUS COLLIERIES MAP. SOUTH-WEST SHEET. **8**











80° 20' 80° 00' 79° 40' 79° 20' 79° 00' 78° 40'







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A1/a5

**GEOLOGY AND TOPOGRAPHY OF BUCKS AND MONTGOMERY COUNTIES. EAST SHEET. 10**











THE CONTOUR LINES COUNT FROM  
MEAN SEA LEVEL. THE SURFACE OR BROWN  
ONES ARE 20 FEET APART IN LEVEL.

THE BLUE CONTOUR LINES SHOW THE SHAPE OF THE BOTTOM OF EACH SET OF  
SHALES, OR TRAP, AND IN EACH SET ARE 1000 FEET APART IN LEVEL.

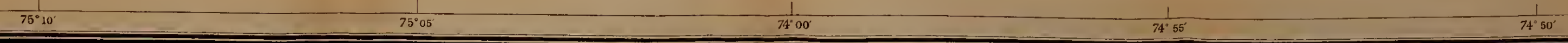
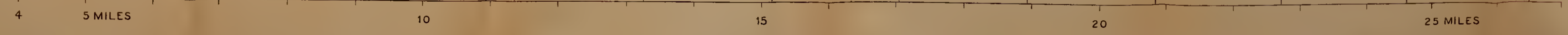
A ONE-BARBED ARROW SHOWS THE STRIKE AT ITS POINT; THE BARB SHOWS WHICH SIDE THE DIP IS; AND THE ANGLE, THE  
AMOUNT OF DIP. A BREAK IN EITHER LINE MEANS ROUGH MEASUREMENT; TWO BREAKS, GREATER UNCERTAINTY.

THE COLUMNAR SECTION IS BASED ON COMPUTATIONS FROM POINT TO POINT OF NEAR EXPOSURES, ACCORDING TO THE DIP, STRIKE AND HEIGHT, WITH VARIOUS  
CHECKS AND THE IDENTIFICATION OF BEDS IN MEASURED AND SAMPLED EXPOSED SECTIONS. — IN THE CONTRACTED NAMES:— T. = TOWN; V. = VILLE; B. = BURG.

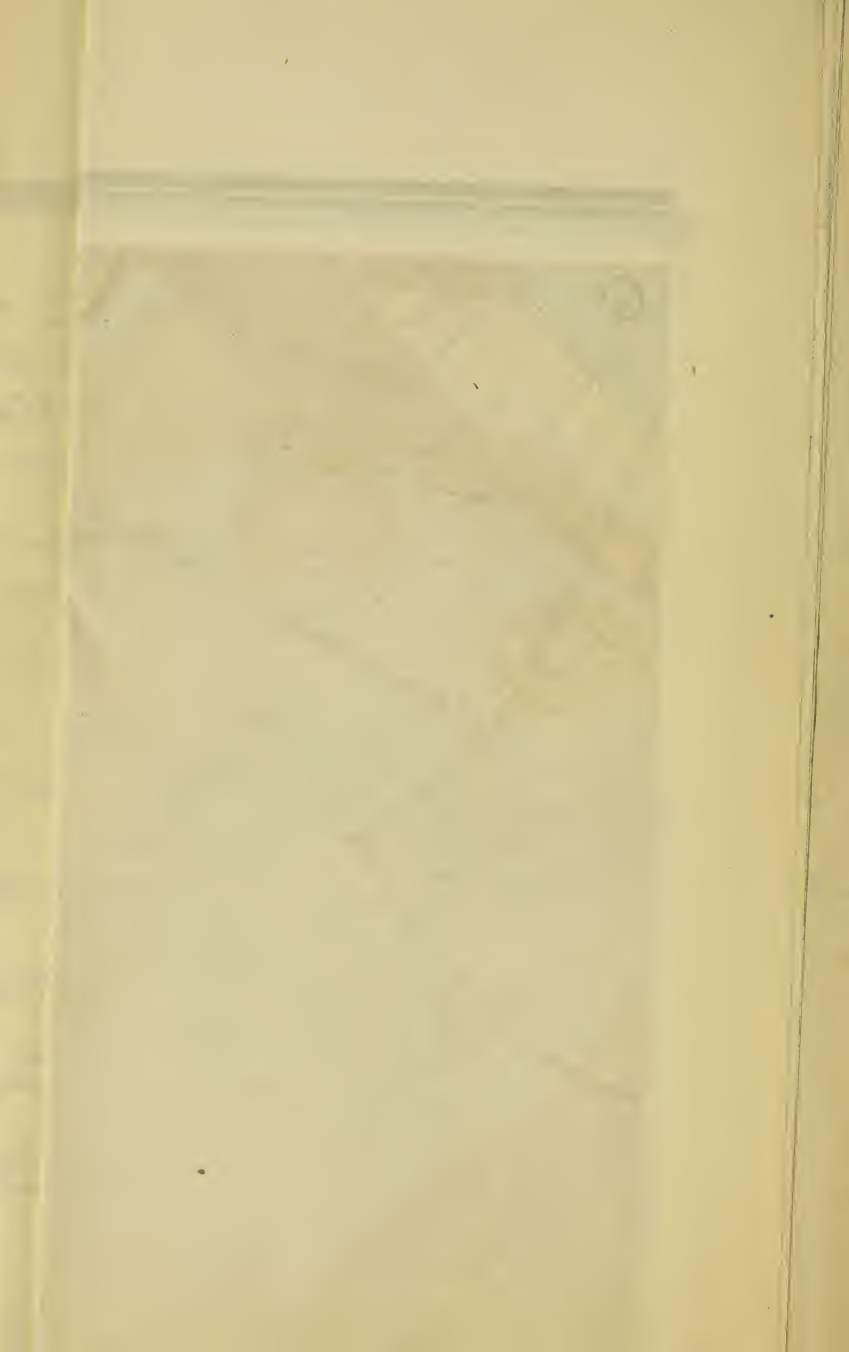
SCALE: — ONE MILE TO AN INCH; OR 1 : 63 360.

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100 000 FEET









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GEOLOGY AND TOPOGRAPHY OF BUCKS AND MONTGOMERY COUNTIES. WEST SHEET.

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GEOLOGICAL SURVEY OF PENNSYLVANIA. J. P. LESLEY, STATE GEOLOGIST.

A GEOLOGICAL AND TOPOGRAPHICAL MAP  
OF MOST OF  
BUCKS AND MONTGOMERY COUNTIES,

BY  
BENJAMIN SMITH LYMAN. — 1893.

COLUMNAR  
SECTION  
OF THE  
MESOZOIC  
OF THE MAP.

THE LATITUDE AND LONGITUDE LINES WERE DRAWN BY MR. A. D. W. SMITH. THE TOPOGRAPHY OF THE EASTERN PART OF THE MAP WAS COPIED BY HIM, OR UNDER HIS CARE, FROM THE WORK OF THE UNITED STATES AND NEW JERSEY GEOLOGICAL SURVEYS.

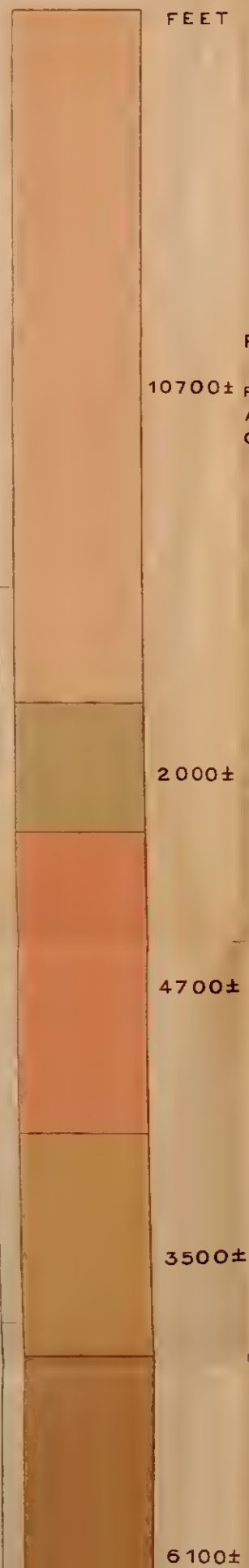
THE TOPOGRAPHY OF THE MAIN CENTRAL THIRD OF THE MAP IS COPIED FROM MESSRS. HERING AND PAOOCK'S EXCELLENT LARGE MAP FOR THE PHILADELPHIA WATER DEPARTMENT (C7); THE NORTHERN EDGE FROM MR. E. V. D'INVILLIERS'S DURHAM AND READING HILLS MAP (O3).

THE SOUTHERN AND WESTERN PART IS BASED ON THE PHILADELPHIA BELT MAP (C6) AND SCOTT'S ATLASES OF BUCKS AND MONTGOMERY COUNTIES; AND ITS TOPOGRAPHY SKETCHED BY B. S. L., WITH ANEROID LEVELS.

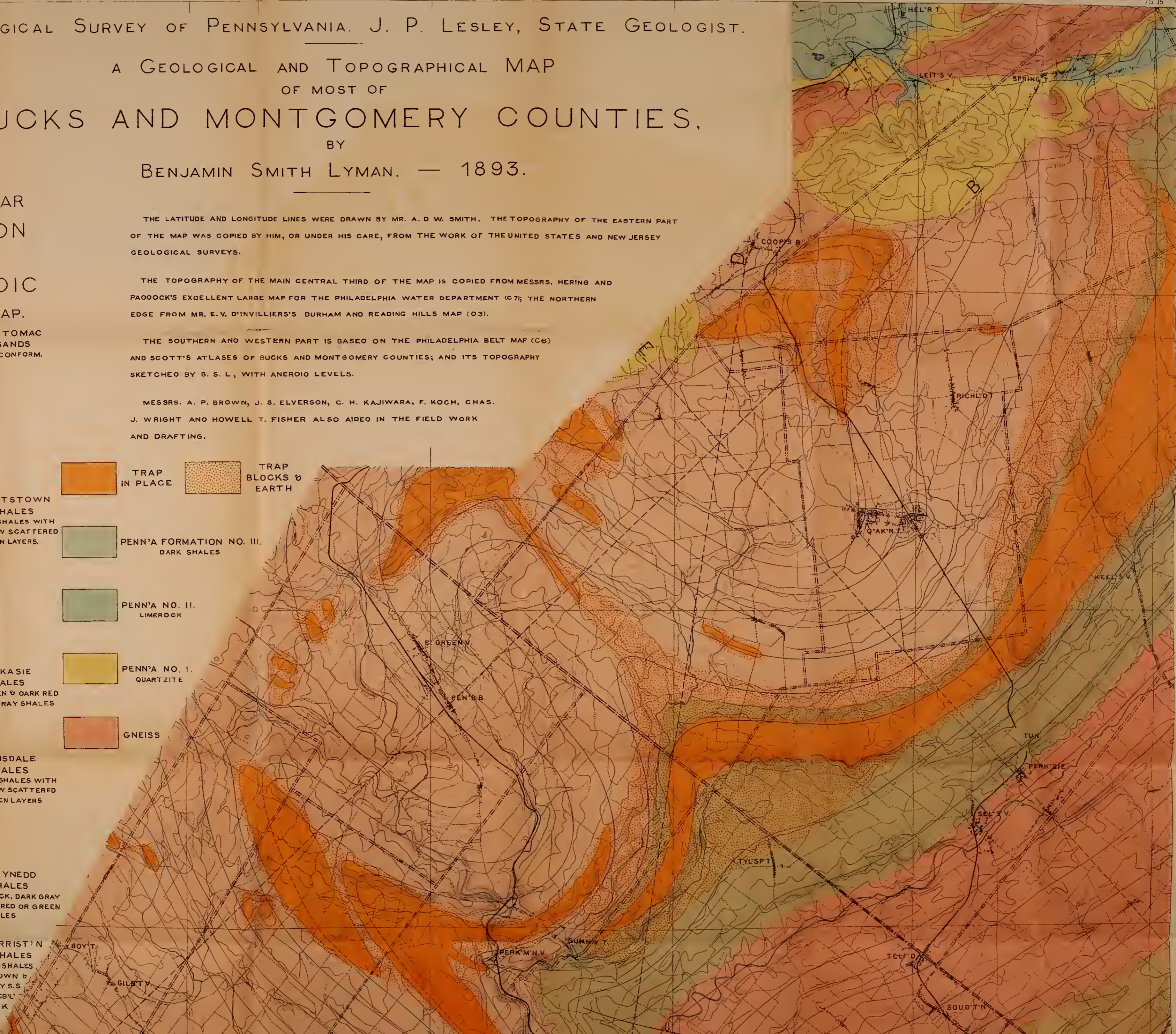
MESSRS. A. P. BROWN, J. S. ELVERSON, C. H. KAJIWARA, F. KOCH, CHAS. J. WRIGHT AND HOWELL T. FISHER ALSO AIDED IN THE FIELD WORK AND DRAFTING.

60? FT. POTOMAC SANDS UNCONFORM. FEET

40° 30'  
40° 25'  
40° 20'



- TRAP IN PLACE
- TRAP BLOCKS & EARTH
- POTTSTOWN SHALES  
10700±  
RED SHALES WITH A FEW SCATTERED GREEN LAYERS.
- PENN'A FORMATION NO. III.  
DARK SHALES
- PENN'A NO. II.  
LIMEROCK
- PENN'A NO. I.  
QUARTZITE
- PERKASIE SHALES  
2000±  
GREEN & DARK RED OR GRAY SHALES
- GNEISS
- LANSDALE SHALES  
4700±  
RED SHALES WITH A FEW SCATTERED GREEN LAYERS
- GWYNEDD SHALES  
3500±  
BLACK, DARK GRAY AND RED OR GREEN SHALES
- NORRISTON SHALES  
6100±  
REDSHALES BROWN & GRAY S.S. & PEBBL' ROCK





GWYNEDD  
SHALES  
3500± BLACK, DARK GRAY  
AND RED OR GREEN  
SHALES

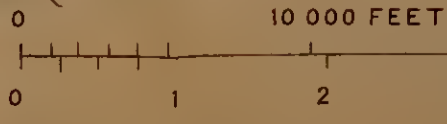
NORRISTON  
SHALES  
REDSHALES  
BROWN &  
GRAY S.S.  
& PEBL.  
ROCK

6100±

27000±

A MAP  
TO SHOW THE  
GENERAL POSITION  
AND  
RAILROAD CONNECTIONS  
BUCKS AND MONTGOMERY COUNTIES  
Scale 45 Miles to an Inch  
C. S. M. 11

This RAILROAD MAP  
is copied from the  
map prepared by the  
STATE GEOLOGICAL SURVEY  
GENERAL MAP of the  
ANTHROPOGENIC TERRAINS  
of 1890 with additions  
from the STATE GEOL.  
GEOG. MAP of 1893



75°40' 75°35' 75°30' 75°25' 75°20' 75°15'



1850  
1851  
1852  
1853  
1854  
1855  
1856  
1857  
1858  
1859  
1860





TOPOGRAPHY OF BUCKS AND MONTGOMERY COUNTIES, EAST SHEET, **12**

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75° 10'

75° 05'

74° 00'


74° 55'

74° 50'

KEY TO NAMES OF PLACES  
IN AND NEAR  
BUCKS AND MONTGOMERY Cos.

TOWNS IN CAPITALS OVER 10000 INHABITANTS.  
.. Roman .. 500 ..  
.. Italics .. UNDER 500 ..

SCALE:— 4½ MILES TO AN INCH




KINTNS SV.

REVERE

DTTSV.

PHICKO

PT.P. EST.

LUMB.

DOULIN

LAMBT.

N HOPE

CENT V.

BOYLS

40° 30'

40° 25'

40° 20'





THE CONTOUR LINES COUNT FROM MEAN SEA LEVEL. THE SURFACE, OR BROWN ONES ARE 20 FEET APART IN LEVEL.

THE BLUE CONTOUR LINES SHOW THE SHAPE OF THE BOTTOM OF EACH SET OF SHALES, OR TRAP, AND IN EACH SET ARE 1000 FEET APART IN LEVEL.

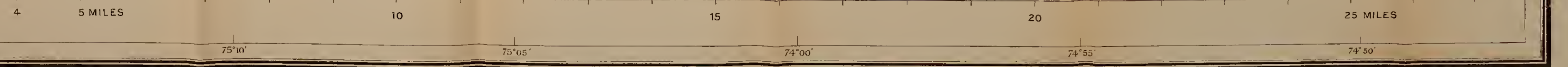
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SCALE: — ONE MILE TO AN INCH; OR 1 : 63 360.

50,000

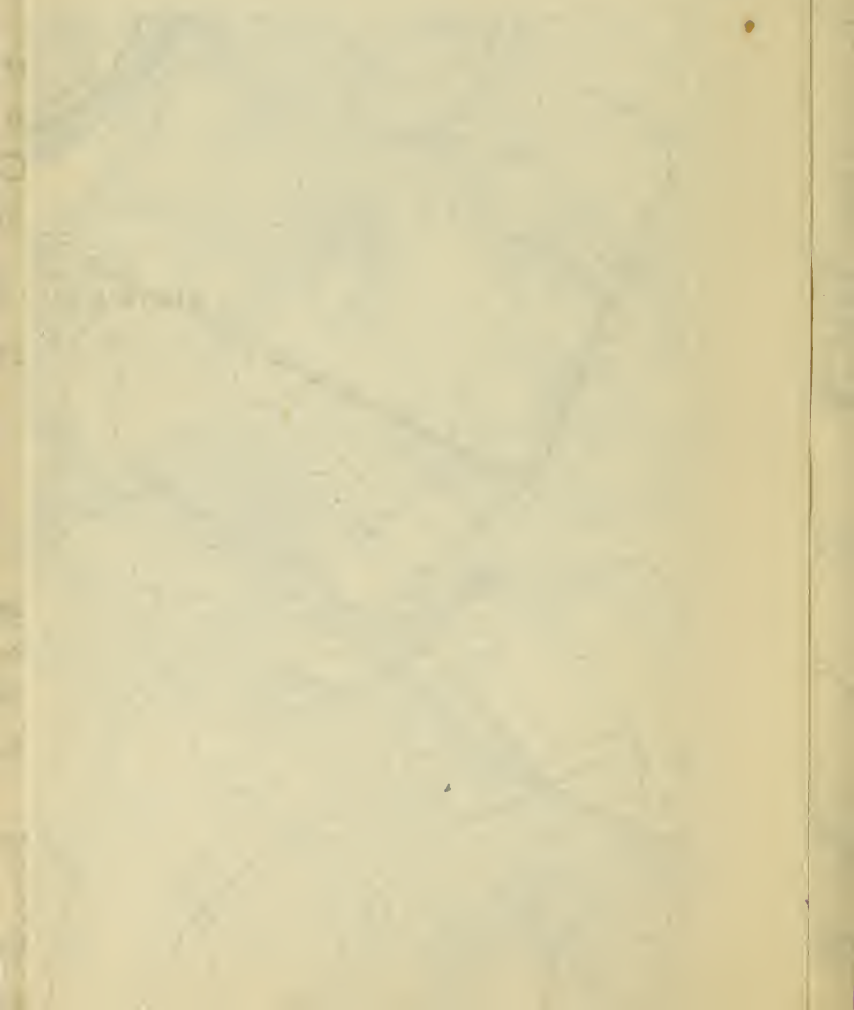
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TOPOGRAPHY OF BUCKS AND MONTGOMERY COUNTIES. WEST SHEET. **13**



75°40'

75°35'

75°30'

75°25'

75°20'

75°15'

# GEOLOGICAL SURVEY OF PENNSYLVANIA. J. P. LESLEY, STATE GEOLOGIST.

## A GEOLOGICAL AND TOPOGRAPHICAL MAP OF MOST OF

# BUCKS AND MONTGOMERY COUNTIES,

BY

BENJAMIN SMITH LYMAN. — 1893.

### COLUMNAR SECTION OF THE MESOZOIC OF THE MAP.

THE LATITUDE AND LONGITUDE LINES WERE DRAWN BY MR. A. D. W. SMITH. THE TOPOGRAPHY OF THE EASTERN PART OF THE MAP WAS COPIED BY HIM, UNDER HIS CARE, FROM THE WORK OF THE UNITED STATES AND NEW JERSEY GEOLOGICAL SURVEYS.

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MESSRS. A. P. BRDWN, J. S. ELVERSDN, C. H. KAJIWARA, F. KOCH, CHAS. J. WRIGHT AND HOWELL T. FISHER ALSO AIDED IN THE FIELD WORK AND DRAFTING.

60? FT.  
FEET

POTOMAC  
SANDS  
UNCONFRM.

10700±

POTTSTOWN  
SHALES  
RED SHALES WITH  
A FEW SCATTERED  
GREEN LAYERS.

TRAP  
IN PLACE

TRAP  
BLOCKS &  
EARTH

PENN'A FORMATION NO. III.  
DARK SHALES

PENN'A NO. II.  
LIMEROCK

2000±

PERKINSIE  
SHALES  
GREEN & DARK RED  
OR GRAY SHALES

PENN'A NO. I  
QUARTZITE

GNEISS

4700±

LANSDALE  
SHALES  
RED SHALES WITH  
A FEW SCATTERED  
GREEN LAYERS

3500±

GWYNEDD  
SHALES  
BLACK, DARK GRAY  
AND RED OR GREEN  
SHALES

6100±

NORRISTON  
SHALES  
REDSHALES  
BROWN &  
GRAY S.S.  
& PEBBLE  
ROCK





GWYNEDD  
SHALES  
3500±  
BLACK, DARK GRAY  
AND RED OR GREEN  
SHALES

NORRISTON  
SHALES  
6100±  
REDSHALES  
BROWN &  
GRAY S.S.  
& PEBBL.  
ROCK

27000±

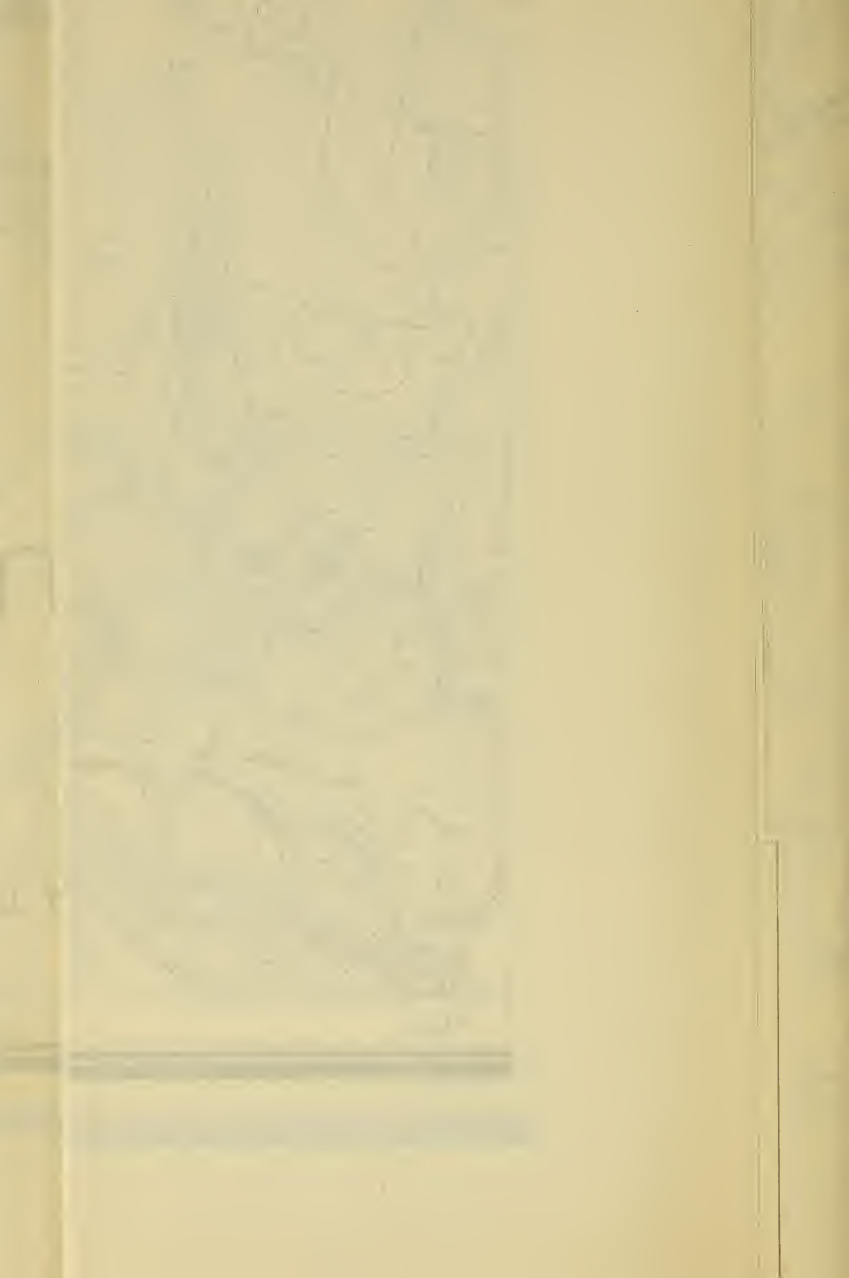
A MAP  
TO SHOW THE  
GENERAL POSITIONS  
RAILROAD CONNECTIONS  
BUCKS AND MONTGOMERY COUNTIES  
Scale 1:50,000  
U.S.G.P.

This RAILROAD MAP  
is derived from the  
map appended to the  
STATE GEOLOGICAL SURVEY  
GEOLOGICAL MAP of the  
SOUTH-WEST CORNER  
of 1898 and is published  
from the STATE GEOLOGICAL  
MAP of 1893.

0 10,000 FEET  
0 1 2 3

75° 10' 75° 35' 75° 30' 75° 25' 75° 20' 75° 15'







BUCKS AND MONTGOMERY CROSS SECTIONS, **14**

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GEOLOGICAL SURVEY OF PENNSYLVANIA.  
J. E. LESLEY, STATE GEOLOGIST.

**FOUR CROSS SECTIONS**

OF  
**BUCKS AND MONTGOMERY COS.**

BY  
**BENJAMIN SMITH LYMAN**

July, 1893.

SCALE—ONE INCH TO A MILE,  
OR 1:63,360.

HORIZONTAL AND VERTICAL ALIKE.

**MESOZOIC:**

**IGNEOUS:**

POTTSTOWN SHALES

PERKASIE SHALES

LANSDALE SHALES

OWYNEED SHALES

HORRISTOWN SHALES

TRAP

**PALEOZOIC:**

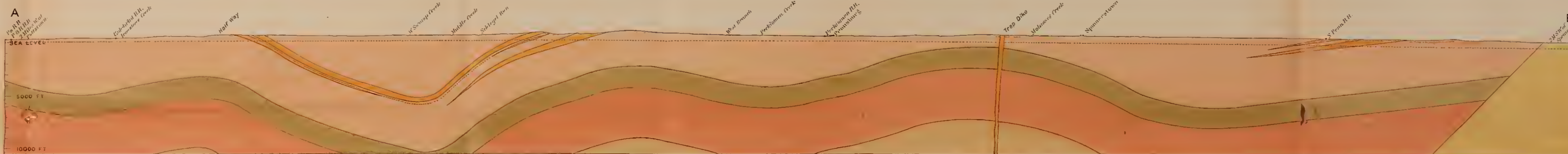
PENNA. NO. II.

PENNA. NO. I.

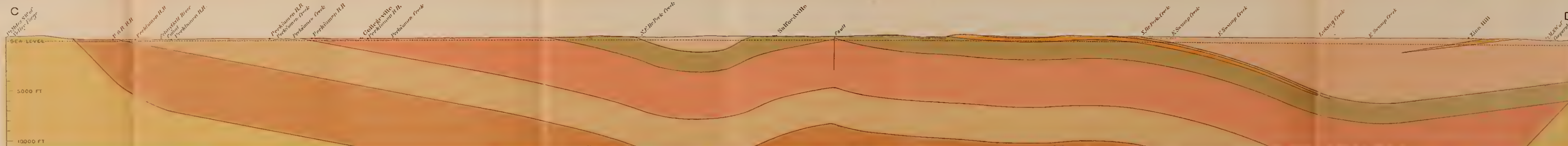
**ARCHÆAN:**

ONEISS

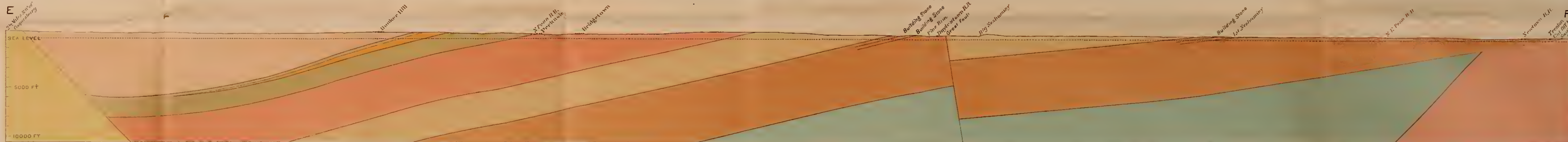
**SECTION IN THE N. W. EDGE OF THE COUNTIES.**



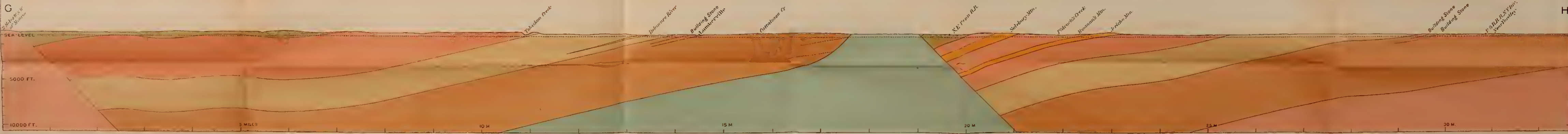
**SECTION THROUGH THE PERKIOMEN VALLEY.**



**SECTION IN THE S. W. EDGE OF BUCKS CO.**



**SECTION NEAR THE DELAWARE.**



The cross section lines are indicated by corresponding letters in the accompanying map.

The slope of the surface of the section shows the inclination of the great faults and the position of the topography are quite unknown and are merely given approximately.

It is unknown whether the Mesozoic may not extend still deeper than is here shown.







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