

1932
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SECOND
FIELD CONFERENCE
OF
PENNSYLVANIA GEOLOGISTS

MAY 28-30, 1932

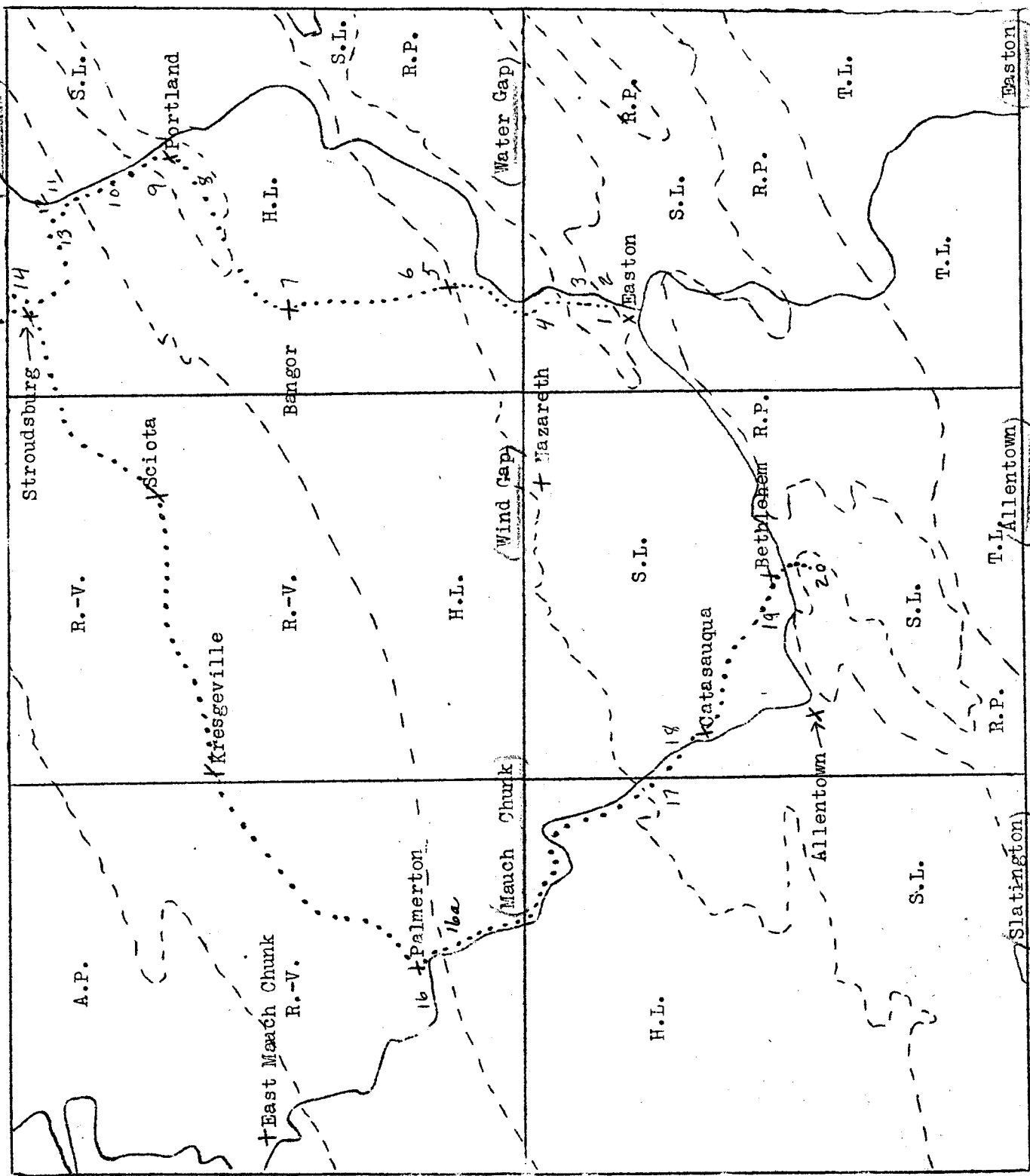
Around and near the "Forks of the Delaware",
and various and sundry "Gaps"

Willard
P. K. G.

Joint Hosts
Departments of Geology at Lehigh University
and Lafayette College.

Committee

- | | | |
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Legend for outline map
(opposite) of the area traversed.

T.L.	Triassic Lowland, underlain by red sandstone and shale and basic intrusives of Triassic age.
A.P.	Allegheny Plateau - underlain chiefly by Missippian rocks.
R.V.	Ridge and Valley division - underlain by Devonian and Silurian rocks.
H.L.	Harrisburg Peneplane - underlain chiefly by Ordovician shales.
S.L.	Somerville Peneplane - underlain chiefly by Cambro-Ordovician limestones.
R.P.	Reading Prong - underlain chiefly by pre-Cambrian gneisses and Cambrian quartzite.
....	Route of trip.

Scale - roughly 5 miles to the inch.

DELAWARE WATER GAP-STROUDSBURG REGION

COLUMNAR SECTION

SYSTEM	MEMBER	DESCRIPTION	THICKNESS
PLEISTO- CENE	Wisconsin	Till on uplands, stratified drift as terraces and kames. along lowlands. Weathering normal.	
	Illinoian	Scattered areas of both till and stratified drift. Deeply weathered.	
TRIASSIC	Brunswick	Soft bright-red shale and fine sandstone. Metamorphosed to hard dark baked shale adjacent to large intrusive masses of diabase. Upper beds capped by coarse quartzose and limestone 'fanglomerate'.	12,000
	Lockatong	Hard dark-red to dark-gray shale and argillite and hard impure limestone. Locally metamorphosed to hard baked shale.	3,000-3500
	Stockton	Chiefly tan and reddish arkosic sandstone with some conglomerate and red argillaceous sandstone and shale.	3,000
DEVONIAN	Chemung ("Catskill")	Red, gray and green, continental beds north of Analomink.	3500
	Portage	Gray sandstone and shale. Ithaca (?) fauna south of Analomink.	1600
	Hamilton	Gray, brown-weathering, sandstone and shale. Abundantly fossiliferous in Brodhead Creek Valley. Grades up into Ithaca (?) and down into Marcellus.	1300
	Marcellus	Black or gray shale, the latter sometimes slightly arenaceous: usually barren but locally highly fossiliferous.	800 ?

SYSTEM	MEMBER	DESCRIPTION	THICKNESS
	Onondaga	Black to dark gray limestone, the lower part very cherty; sparingly fossiliferous.	250
	Oriskany	Gray to brown conglomerate and sandstone above grading down into quartzitic or cherty beds; abundant casts of fossils.	50
	Helderberg	Gray limestone and shale; mostly fossiliferous. Several divisions recognized.	400
SILURIAN	Poxono Island	Green, somewhat calcareous or sandy, barren shale concealed locally under debris of Cherry Creek Valley.	200 ?
	"Clinton"	Brown, red, green and white sandstone and shale; apparently barren throughout. Grades down into Shawangunk.	2000 $\pm$
	Shawangunk	Lower portion very massive, gray conglomerate and sandstone; upper part browner. <u>Arthro-</u> <u>phycus</u> and eurypterids reported from lower part. Basal contact concealed locally.	1700 $\pm$
ORDOVICIAN	Martinsburg	Black shales and slates Upper hard vein slate Middle sandy member Lower soft vein slate	2000 $\pm$ 2000 $\pm$ 2000 $\pm$
	Jacksonburg	Dark gray to black argillaceous limestone low in magnesian carbonate. Cement rock.	600 $\pm$
	Beekmantown	Interbedded low and high magnesian limestones. Some fossil mollusca	1000 $\pm$

SYSTEM	MEMBER	DESCRIPTION	THICKNESS
CAMBRIAN	Allentown	Dolomitic limestone, thinly and thickly bedded containing Cryptozoon.	1500 $\pm$
	Tomstown	Dolomitic limestone usually thick massive beds alternating with shaly strata.	1000 $\pm$
	Hardyston	Siliceous sandstone and pebbly conglomerate in places metamorphosed to quartzite yellow, brown, reddish..	300 $\pm$
PRE-CAMBRIAN	<u>Sedimentary</u>		
	Franklin (?)	Coarsely crystalline roughly foliated limestone containing graphite flakes.	
	<u>Igneous</u> (and sedimentary)		
	Byram	Gray granitoid light colored acid gneiss - composed of microcline, microperthite, hornblende, pyroxene and sometimes mica.	
	Pochuck	Dark granular basic gneiss-composed of hornblende, pyroxene, oligoclase and magnetite.	

Trip No. 1 -- Saturday, May 28

TRIASSIC TRIP

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- ✓ 0.0 Start at Markle Hall, Lafayette College .v. . . 1:15
- ✓ (1) 1.1 Lehigh Valley Station Ar. 1:20
Edge-wise Conglomerate in Kitt. Lv. 1:30
- Route 611 south.
- ✓ 2.0 N. Dip -- Kittatinny Ls.
- ✓ (2) 2.5 Hardyston Conglomerate Ar. 1:34
Pre-Cambrian Lv. 1:45
- ✓ 2.5- Dip of Kitt. Ls. and
✓ 3.3 Truncation by Somerville Peneplane.
- ✓ (3) 6.8 Giant Ripple Marks; Kitt. Ls. Ar. 1:54
Lv. 2:02
- ✓ (4) 9.7 Wisconsin Gravel Pit, Ar. 2:10
Riegelsville Lv. 2:24
Fresh gravel, no pebbles, no weather holes.
- ✓ 10. Turn, go back to stop light,
Riegelsville, sharp left.
- ✓ (5) 11.1 Illinois Drift Ar. 2:29
Lv. 2:39
- ✓ 11.4 Sharp variation in dip of
✓ 11.5 Kittatinny.
- ✓ 11.6
- ✓ 12.1 Junction Route 611
- ✓ (6) 12.2 Turn left, 100 yards -- Durham Cave Ar. 2:47
Lv. 3:02
- Turn south on 611.
- ✓ (7) 12.9 Monroe.
Contact Triassic & Cambrian Ar. 3:05
Lv. 3:30
- ✓ 14.1 Kinterville; left on 32
- ✓ 16.3 Turn right first cross road; uphill.
- ✓ 16.7 Turn left at Fork.

Trip No. 1 - page 2

- B
L
S
- ✓ (8) 17.4 Trap . -- Ringing Rocks. Ar. 3:42
Lv. 4:07
- ✓ 19.3 Bridgeton; Junction Route 32
Right on 32.
- ✓ (9) 28.7 Contact - Brunswick & Lockatong . . . Ar. 4:38
Lv. 4:43
- ✓ 30. Point Pleasant, left across bridge.
- ✓ (10) 30.4 Byram, N.J. -- Lockatong Ar. 4:47
Lv. 4:57
- ✓ 41.5 Recross river, north on 32 to
Milford,
Cross river to N.J.
Left 1st street.
- ✓ (11) 43.8 "Fanglomerate" - ~~Stockton~~ ^{Shub} Ar. 5:30
Lv. 5:45

Continue to Riegelsville, cross
river, back to Easton on Route 611.

SLATE AND CEMENT TRIP

Saturday afternoon, May 28

	0.0	Hotel Easton. Follow Bushkill Creek to Tatamy then west and north to Stockertown.	Lv. 1:00PM
	8.7	Stockertown - Hercules quarry.	
	14.6	Bangor.	
(1)	17.9	<u>Stop.</u> Penn. Aggl. Struoco marble- izing plant. Slate is lacquered to resemble marble, onyx, serpen- tine, etc.	Ar. 1:45 Lv. 2:15
(2)	18.7	<u>Stop.</u> Parsons Brothers soft vein slate quarry and plant. Deepest quarry in district - 700 feet deep. Arrangements will be made for such persons as care to do so to descend to bottom of quarry - a thrilling adventure. Sawing of slate by wire rope. Method of preparation of slate for roofing, blackboards, vaults, etc.	Ar. 2:18 Lv. 3:45
	22.6	Wind Gap Village.	
(3)	33.9	<u>Stop.</u> Nazareth cement rock quarry. Characteristic cement rock. Specimens of bryozoa (Prasopora), crinoid stems and occasional brachiopods.	Ar. 4:15 Lv. 4:45
(4)	36.7	<u>Stop.</u> Small quarry along road. Basal high calcium rock-cement limestone member of Jacksonburg formation.	Ar. 4:53 Lv. 5:08
	42-43	Note the slate fence posts along the road in this district.	
(5)	44.1	<u>Stop.</u> Chapman quarries in hard vein member of Martinsburg. Fine ribbon slate. Overturned folds.	Ar. 5:20 Lv. 5:50
	46.9	Bath.	
(6)	48	<u>Stop.</u> Keystone Portland Cement Company's plant. Go through plant observing wet process of cement manufacture.	Ar. 6:00 Lv. 6:30

Return to Easton.

TRIP No. 3 - Sunday, May 29

Note: To cover the ground it will be necessary to hold closely to the schedule. Whistles will remind you of the leaving time.

0.0 Leave Hotel Easton 7:30

W. to Circle: N follow trolley to end of line: Left diagonal, winding road to top of Chestnut Hill.

✓ (1) 2.7 Stop. Top Chestnut Hill, ruins of old inn.Ar.7:40

(1) Panorama to N. - Succession, pre-Cambrian to Silurian (Mt.). Penaplane history. Drainage development, including Gaps.
(2) View to S. - Valley train (Wisc.) in Delaware Valley. Lv.8:00

✓ (2) 4.6 Stop. Serpentine-Talc Quarry Ar.8:07

Pre-Cambrian. Chiefly serpentine and talc rock. Lv.8:32

The original materials were probably mostly sediments, including impure dolomitic limestones, with possibly an igneous member or so.

This series suffered dynamic metamorphism during which the main qualities of the rocks, as we see them today, were produced.

Still later, movement along shear and joint zones has developed additional "slip fibre".

Reference: F.B. Peck: Talc and Serpentine of Northampton County, etc; Topo. and Geol. Surv. Penna., Report 5, 1911.

Accessory minerals:

Fairly common:

Phlogopite
Tremolite
Dolomite
Calcite
Pyrite

Less Common to Rare:

Molybdenite	Chlorite
Graphite	Prochlorite
Biotite	Vermiculite
Actinolite	Eastonite
Sphalerite	Titanite
Chalcopyrite	Zircon
Topaz?	Retinalite
Hydromagnesite	Marmolite
Pitchblende	Bowenite
Strontioalcalcite	Porcellophite

Aragonite	Thermophyllite
Breunnerite	Chrysotile
Fluorite	Chalcocite
Barite?	Galena
Celestite?	Cuprite
Diopside	Hematite
Coccolite	Magnetite
Salite	Ilmenite
Augite	Limonite
Nephrite	Malachite
Wernerite	Gypsum
Epidote	

5.2 Slow - Pot Holes in River

✓(3) 5.5 Stop. Weygadt Cut Ar. 8:35
 Gneisses and schists contorted and Lv. 8:50
 intruded by pegmatitic granite which
 often contains tourmaline. Prominent
 slickensides and joints. All Pre-Cambrian.

5.8 Wisconsin Terraces

6.5 Slow - Kittatinny Limestone
 Variable bedding and dip

✓(4) 6.9 Stop. Kittatinny Limestone Ar. 8:53
 Probable fault (obscure). Variation Lv. 8:58
 in structure each direction. Gash
 veins; breccia; near Cambro-Ordovician
 contact. Well developed Wisconsin
 Terraces on Jersey side.
 Limestone continues. Where concrete
 road changes to old macadam - Jack-
 sonburg Limestone (cement rock).

✓(5) 11.2 Stop. Wisconsin Stratified Drift Ar. 9:05
 Cut in face of terrace. Coarse Lv. 9:15
 texture. Great variety of rock.
 Much subangular. Normal weathering.

(6) 12.2 Slow. Fold in Slate
 Martinsburg. Slaty cleavage.
 Ribbons show bedding.

During next mile:

Several cuts in slate. Structure varies
 from monocline to close folding and
 crumpling. Quartz veins.

14.0 Enter area of Wisconsin Drift
 Slate bed rock

Go through Bangor (Route No. 611)

- ✓ (7) 19.5 Stop. Bangor Slate Quarry Ar. 9:37
Ribbons show folded structure (W.wall) Lv. 9:48
axial plane about horizontal. Wisconsin
till.
On uplands beyond, note Wisconsin
drift fragments largely quartzite and
sandstone; also occasional small swamps.
- ✓ 22.0 Enter Kame Area
- ✓ 23.7 Slow. Kettle Holes among Kames Ar. 9:59
Through Mt. Bethel
- ✓ (8) 25.2 Stop. Panorama Point Ar.10:03
Jacoby Kames in low foreground. Water Lv.10:15
Gap and Mt. in distance. Peneplanes.
- ✓ (9) 26.6 Stop. Quarry in Kittatinny Limestone, Portland. Ar.10:18
Faulted up into area of Martinsburg. Lv.10:30
Ground water. Unconformity - Pleis-
tocene on Cambrian.
Through Portland. North part of town
on Wisconsin Terrace.
- ✓ (10) 27.8 Stop. High Wisconsin Terrace Ar.10:35
One of several Kame terraces between Lv.10:45
Delaware and Water Gap. Some are on
Jersey side. Very coarse texture:
great variety of rock fragments;
largely subangular; normal weathering.
- ✓ (11) 30.3 Stop. (Entrance to Delaware Water Gap on . . Ar.10:52
Route 611) The massive, gray Shawangunk Lv.11:05
(Tuscarora) conglomerate and sandstone
"holds up" the ridge and forms cliffs.
Talus from these beds covers the Sha-
wangunk-Martinsburg contact. At left
turn of highway, thin black shale lenses
among the massive beds carry sparse eury-
pterid fragments. Arthropycus has been
reported from the lower part of the
Shawangunk on both sides of the river.
Note off-set of main ridge of Blue Moun-
tain ("Kittatinny Range") at the watergap
as shown on the topographic sheet.

✓ 31.0 Slow. Along highway opposite and above bath
31.5 house (N.J. side). Rock cuts along the left side of the road expose the transition beds from gray or brown Shawangunk to red and green "Clinton" (Bloomsburg of the Swartzes, High Falls of N.J. Survey). On New Jersey side above bath house, the red beds form the Kemmersville double-crested anticline broken by small faults. As pass northward, observe stratification of the "Clinton" and the glacial grooving along the rock cuts facing the highway. To the northeast the open, island-dotted, upper Delaware Valley is glimpsed making a strong contrast with the narrow valley and swift water at the gap.

✓ 31.7 Slow. Site of burned Kittatinny Hotel to Delaware Water Gap Village. Brownish Sandstone and some shale gradually replace the red beds upward (to the north) and dip under Cherry Valley where the Poxono Island is concealed.

✓ 32.5 Slow. Northward from Delaware Water Gap Village along old highway (Route 611, right fork at north side of village); the road traverses the middle one of three river terraces. The highest is to the left, and the lowest is occupied by the line of the Delaware, Lackawanna and Western Railroad.

✓ (12) 33.0 Stop. Abandoned limestone quarry, east end of Godfreys Ridge, about three-fourths of a mile north of Delaware Water Gap village. Ar.11:13
Lv.11:28
The upper part of the Helderberg is exposed underlying the Oriskany which is visible in trees at top of quarry face. In fallen blocks of "ribbon" limestone are abundant ostracods.

✓ 34.7 Slow. Along Route 612 across Godfrey's Ridge:

✓ 35.5 a. South slope, ascending from Cherry Creek Valley. Succession of exposures: Helderberg, Oriskany, Esopus. The Oriskany varies from a cherty or quartzitic below to a sandy and conglomeratic phase above suggesting the Shriver and Ridgely members, respectively, of Maryland. It is full of casts of fossils.

- (13) 31.1 b. Stop. At refreshment stand, top of grade. Ar.11:40
Looking back, the water gap is clearly Lv.11:45
seen to the southeast. In the valley
directly below the highway may be seen
the meanders of Cherry Creek.

c. Crest and north slope of Godfreys Ridge
along highway. Here is exposed the highly
sheared Escopus "Grit" the upper part of
which may be Schoharie since it is fos-
siliferous. The faunule has not been
determined.

d. Base of North slope Godfreys Ridge at foot
of grade. Abandoned highway grade to left
of present route, as well as the new road
cut through dark, cherty Onondaga limestone
overlying the Escopus-Schoharie (?) beds.
The Onondaga is rather barren.

- (14) 37.8 Stop. Leaving Stroudsburg via Route 90 north- Ar.11:50
ward, turn right down side street at top Lv.12:00
of first rise at northern edge of town to
quarry. Exposure of black to gray, some-
times slightly arenaceous Marcellus shale.
This member, usually quite barren, is here
highly fossiliferous. The following forms
have been identified:

BRYOZOA, Indet.

BRACHIOPODA

Lingula cf. delia
L. ligea
Orbiculoidea sp.
Craniella hamiltoniae
Craniella?
Chonetes mucronatus
C. scitulus
C. setigerus
Strophalosia truncata
Camarotoechia prolifica
Liorpynchus limitare
L. laura
L. laura (?)
Tropidoleptus carinatus
Spirifer mucronatus (?)
Ambocoelia umbonata
A. nana
Brachiopod, indet.

PELECYPODA

Panenka costata
Nuculites triqueter
Liopteria laevis
Actinopteria muricata
Nyassa subalata
Aviculopecten invalidus
A. scabridus
Lunulicardium curtum
Modiomorpha alta
Allocardium alternatum(?)

GASTROPODA

Styliolina fissurella

CEPHALOPODA

Nephritoceras Bucinum
Bactrites clavus (?)

ARTHROPODA

Phyllocarid, indet.

PISCES

Tooth

PLANTAE, indet.

(15) 41.0 Stop. On Route 90, about two miles north of Stroudsburg. Reef in midst of Hamilton. Brown, submassive, pitted beds. Highly fossiliferous horizon. Good collecting in the exposure and in debris thrown out at right side of road. The following forms have been identified from this locality.

Ar. 12:10
Lv. 12:25

COELENTERATA	Schizophoria striatula
Pleurodictyum sp.	Camarotoechia congregata
Streptelasma rectum	C. contracta
Zaphrentis prolifica	Liorhynchus cf. multocostum
Z. simplex	L. sp.
Z. sp.	Tropidoleptus carinuatus
Amplexus cf. hamiltonae	T. cr. occidentis
Aulacophyllum	Atrypa reticularis
Craspidophyllum archiaci	Spirifer angustus
Ceratopora cf. dichotoma	S. mucronatus
C. jacksoni	S. granulosus
Syringopora cf. maclurei	S. sculptilis
Favosites cf. hamiltoniae	Elythra (Spirifer) fimbriatus
F. cf. clausus	Nucleospira concinna
ECHINODERMATA	Athyris spiriferoides
Crinoid "stem joints"	A. cf. cora
BRYOZOA	A. sp.
Hinderella?	Brachiopod, indet.
Monticulopora sp.	PELECYPODA
Fenestella cf. biperforata	Liopteria sp.
F. cf. laevinodonta	Actinodesma erectum
F. cf. parallela	A. sp.
F. sp.	Aviculopecten sp.
Thamniscus sp.	Modiomorpha concentrica
Taeniopora exigua	Pelecypod, indet.
Bryozoa, indet.	GASTROPODA
BRACHIOPODA	Turbo sp. nov.
Stropheodonta demissa	CEPHALOPODA
S. perplana	Spiroceras sp.
Chonetes macronatus	ARTHROPODA
Productella spinulicosta	Phacops rana
Dalmanella sp.	P. sp.
Rhipodomella vanuxemi	Dalmanites boothi

✓ 41.8 Slow. Northward and eastward from Station 15. Continue north along Route 90, crossing Bfordhead Creek. Upper Hamilton underlies the creek bed at bridge. Turn eastward to intersection of Routes 90 and 190. Rock cuts at intersection (east side Route 190) carry Ithaca (?) fauna, the highest marine known locally, since the Chemung is represented by continental green, red and gray beds northward through Analomink. Turn south (right) at intersection and return via Route 190 to Stroudsburg via East Stroudsburg.

✓ 46.0 Stroudsburg Ar.12:50
EAT LUNCH HERE Lv. 1:30

✓ 48.8 Kames on left
✓ 50.0

✓ 51.3 Henrysville Village - open valley on left.

✓ 52.5 Kames fill open valley

✓ 54.6 Forks of concrete road. Keep right on Route 209.

✓ 60.0 On the left the far ridge is the Pocono Mts.
The glacial material over which we are now
traveling is much more evenly distributed
than that closer to Stroudsburg.

✓ 69.4 Turning left toward Palmerton, we drive across
the Catskill (?) and at Palmerton are on the
Silurian.

✓ 74.4 Palmerton. The oxide plant of the N.J. Zinc Co. 2:45
is seen on the left as we enter the town. As
we leave Palmerton, a sand pit in the Oriskany
is seen at the top of the ridge to the right.

Turn right at the intersection with the main
highway.

✓ (16) 77.0 Stop. Onondaga limestone consisting of blue ... Ar.2:55
siderite and calcareous stone has been mined Lv.3:10
for manufacture of deep red metallic paint.
Paint ore in sheds contains many fossils.
N.J. Zinc Co.'s plant is seen to the south
above which can be seen outcrops of the red
Clinton (?) shales.

✓ 78.4 Slow. Clinton (?) shales are seen in the road
cuts as we drive through Lehigh Gap where
we go down the section this morning at
Delaware Water Gap.

✓ 79.0 Resistant Silurian forms the ridge. Continue
on Route 145 toward Bethlehem.

✓ (16a) 80.0 Stop. Unconformable contact between Martinsburg Ar.3:17
(Ordovician) and Shawangunk (Silurian). A Lv.3:37
very interesting exposure showing an angular
unconformity between the two formations and
other evidence of an erosional interval.

✓ 82.0 Do not go into Slatington but follow Route 145
which turns to left at edge of town. Martins-
burg shale outcrops along the road in numerous
places, as well as along the river to the left.

- 86.0 The Lehigh River has entrenched its bed to a depth of about 400 feet in this area. Here we cross the Lehigh, drive along the inside of an entrenched meander and rise close to the Harrisburg Peneplane level.
- 89.0 Martinsburg slaty-shale along the road shows numerous crumplings and other minor structures.
- 91.0 Just beyond the small town of Cementon are several quarries in cement rock.
- 91.5 Along the river to the left is the site of the first cement plant in the Lehigh Valley.
- 91.8 Turn to right off of main road to--
- (17) 92.4 Stop. Coplay Cement Co., new quarry. Over- . . . Ar.4:10
turned and recumbent folds in bluish-black Lv.4:20
argillaceous Jacksonburg limestone.
- 93.1 Vertical kilns used by Coplay Cement Co. many years ago. Return to highway and turn right toward Bethlehem.
- (18) 94.2 Stop. Quarry between Catasauqua and Northampton. Ar.4:35
Excellent overturned folds in Beekmantown Lv.4:55
limestone. Structure indicates overturning from the south.
- 96.2 Catasauqua
- 97.2 After leaving Catasauqua we pass over the Somerville (Bethlehem) peneplane.
- 98.6 Just to the right of the road approaching Shoenersville is one of the old iron pits, one among many such pits in this area.
- 100.2 Turn to the left on gravel road leading to Bethlehem. Keep left at next fork, and at subsequent forks keep the metropolis of Bethlehem in view ahead and be governed accordingly.
- (19) 102.7 Stop. Monocacy Creek quarry to left showing ... Ar.5:15
Allentown limestone with Cryptozoon, oolitic Lv.5:30
limestone, folding and faulting.
- (20) 106.3 Stop. Lookout Point on Lehigh University Campus, Ar.5:40
South Mountain. Limestone-shale valley below Lv.6:00
with a prominent gneissic hill projecting above the limestone. Blue Mt. is in the distance, and gneisses of the Reading Prong beneath and behind us.

"And now we eat" - next stop - Hotel Bethlehem - Dinner 7:00.

Byram and Pochuck gneiss

Lookout Point (South Mountain)

Hardyston sandstone-quartzite

Lehigh River

Tomstown limestone

City of Bethlehem

Allentown limestone

Tomstown limestone

Allentown limestone

FAULT

Town of Catasauqua

Beekmantown limestone

Jacksonburg shaly limestone (cement rock)

Lower soft vein slate

Middle sandy member

Upper hard vein slate, Martinsburg shale

Ordovician-Silurian Unconformity

Lehigh Gap. Shawangunk sandstone and cong.

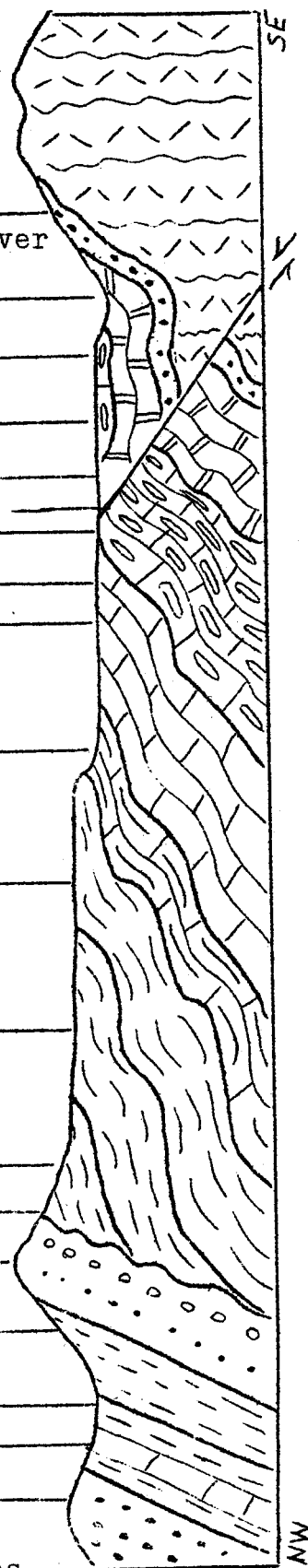
"Clinton" shale

Town of Palmerton

Helderberg limestone and shale

Oriskany sandstone

Scale: Horizontal - 1" = $2\frac{1}{2}$ miles
Vertical - 1" = 2000 feet



SAUCON VALLEY TRIP

Monday forenoon, May 30

	0.0	Leave Hotel Bethlehem at	7:45 AM
(1)	4.1	<u>Stop.</u> Ueberroth pit of the old zinc mines at Friedensville. Most important zinc mines in Pennsylvania. Worked from 1853 to 1893.	Ar. 7:55 Lv. 8:25
(2)	4.5	Old Hartman pit	Ar. 8:27 Lv. 8:42
(3)	9.3	<u>Stop.</u> Coopersburg stone polishing works. Only place in State where the Triassic diabase is being utilized for monuments.	Ar. 8:53 Lv. 9:23
(4)	14.2	<u>Stop.</u> Jacksonburg limestone outcropping in a road cut below Bowers Rock. Area detached from main mass by distance of 9 miles due to faulting.	Ar. 9:32 Lv. 9:42
(5)	18.4	<u>Stop.</u> Limeport quarry where Martinsburg (?) slate unconformably overlies the Allentown limestone. Small area 13 miles south of main shale belt.	Ar. 9:51 Lv. 10:11
(6)	19.5	<u>Stop.</u> Graphite prospect pit.	Ar. 10:14 Lv. 10:24
(7)	20.9	<u>Stop.</u> Vera Cruz Station. A number of old pits in gneiss, from which magnetite ores were mined, are found on the slopes behind the station.	Ar. 10:32 Lv. 10:52
(8)	22.2	<u>Stop.</u> The site of the old diggings from which the Indians obtained jasper for weapons and implements. Near the town of Vera Cruz.	Ar. 11:01 Lv. 11:31
(9)	26.3	<u>Stop.</u> A source of sand and gravel in a solitary kame lying northeast of Emaus.	Ar. 11:44 Lv. 11:54
(10)	28.0	<u>Stop.</u> Parnes place. Hardyston quartzite partially altered to jasper and limonitic iron ore.	Ar. 12:04 Lv. 12:34
(11)	32.0	<u>Stop.</u> Sand pit. Decomposed gneiss quarried for sand.	Ar. 12:45 Lv. 1:00

Return to Bethlehem

Trip No. 5 -- Monday, May 30.

COMPARISON OF ILL. and WIS. DRIFT.

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- 0.0 Start at Markle Hall 8:00
- (1) 1.0 Top Chestnut Hill Ar. 8:04
Weathering of Pre-Cambrian since
Ill. stage. Lv. 8:12
- (2) 2.7 N.E. Chestnut Hill Ar. 8:16
Terrace of Ill. Strat. drift. Lv. 8:34
Cut. Much weathering.
- (3) 6.5 Quarry -- Ill. Till. Ar. 8:57
On limestone (Jacksonburg). Lv. 9:27
Much weathering.
- (4) 8:7 Cut in Wis. Terrace Ar. 9:35
Strat. Drift. Lv. 9:45
Normal weathering.
- Martin's Creek -- turn right.
Turn left at forks of concrete.
11. Notice that bed rock is generally near surface.
- (5) 12.1 Mt. Pleasant Ar. 9:53
S. edge of Wis. ice. Lv. 10:00
Absence of morainal topography.
- 14.8 Through Richmond.
- 16.7 Village of Stone Church --
turn right.
- (6) 18.0 Cut Wis. Till Ar. 10:17
Normal weathering. Lv. 10:29
Rounded fragments.
- Left turn just after crossing Creek.
- 20.2 Strike Concrete road --
Turn right.
- 21.6 Mount Bethel --
turn left.
- 22.0 R.R. track --
turn right.

- (7) 22.3 Portland Sand and Gravel Co. Ar. 10:52
 Kames. Lv. 11:12
 Coarse texture, striated boulders.

(Note:---Can visit high terraces along Delaware, but it will take 35 minutes additional time).

- 22.9 Back to Mount Bethel (Village) --
 turn right on concrete.

- 23.5 Turn right on macadam.

- 23.9 Enter Kame area.

- 24.3 Kettle hole among kames --
 to right, across R.R.

- 26.0 Leave Kames.

East Bangor.

- 29.2 Bangor -- 11:30
 West on Route No. 202

- 30.4 Turn left off of concrete.

- (8) 30.6 Wis. Moraine Ar. 11:35
 Typical topography. Lv. 11:50
 Contrast with subdued Ill.
 topography to W.

- 32.0 Turn left.
 on Ill. till.

- 32.4 Cross Creek.
 Now in Wis. Moraine.

- 32.7 Turn right.

Travel winding road along Moraine to --

- 34.1 Ackermanville -- 12:00
 End of Wis. Morainial topography.

- 45.0 Back to Easton. 12:30

Trip #6 THE SPITZENBERG

Monday forenoon, May 30

00.0 miles, Hotel Bethlehem, proceed north on Main St.

00.3 At 2nd traffic light, turn left on West Union Street (U.S.22)

05.8 U.S.22 joined by Penna. 43. Go straight.

06.8 U.S.22 turns left, go straight on Penna.43.

08.3 Penna.43 bears left.

20.0 New Smithville. On left at far side of town is one of the best examples of Pennsylvania Dutch barn paintings to be seen in this neighborhood.

28.7 Lenhartsville R.R. Station. Party meets here at 9:00 A.M. Driving time from Bethlehem approximately one hour for average driver.

29.0 Turn right on Penna.143.

30.1 Follow Penna.143 up hill to the right.

32.2 Right on Penna.143 through covered bridge.

32.3 Greenawald Station. Go right.

32.4 Park cars.

Trip starts up old incline to quarry and then on up the Spitzenberg. The quarry is in red and green Martinsburg shale, which was quarried for filler for linoleum. There are many halos around mineral particles, also some copper minerals. The conglomerate which makes up the upper portion of the hill is different from any other rock found in the region and its age is unknown. Being an unfossiliferous rock, so far as is known, the pebbles become of great importance in trying to unravel the history.