

OUTLINE OF FIELD TRIP - 1A.

Coal Mine Trip

LEADER: W. A. Copeland.

This trip will afford an opportunity of seeing a highly mechanized under ground coal mine in the heart of the Bituminous Coal Mining district of Pennsylvania.

The following references may be consulted:

Richardson, G. B. - United States Geological Survey.
Bulletin #829 - 1932.

Rayburn, J. M. - Engineers Society of Western Pennsylvania
Vol. 40 - NO. 1 - 1924.

Hosford, C. F. Jr., Brosky, A. F. and others, - Coal Age -
May 1930.

This trip can be taken regardless of weather conditions.

Date - Friday afternoon - May 25, 1934.

Time - Meet at 12:45 P. M. at place of registration at
Carnegie Museum.
Automobiles can be parked just west of the Museum.

Leave Carnegie Museum at 1:00 P. M.

Arrive at Mine office about 1:40 P. M.

Sign Release slips.

Get lamps and start underground about 2:10 P.M.

Spend two hours underground.

Back on surface - 4:30 P. M.

Check in lamps - 4:45 P. M.

Back at Museum - 5:30 P. M.

Note: This is a gaseous Mine.

Pilots will be furnished to direct you to the Mine.

Road Log of Trip 13, Herron Hill Reservoir & Allegheny River Blvd.
Friday 1:00 to 5:30

I. Carnegie Museum to Herron Hill Reservoir

Speedometer

- 0.0 Carnegie Museum. Leaving the Museum go north on S. Bellefield to end of street. Turn left up Center, follow Center to
0.3 Bryn Mawr. Right on Bryn Mawr. Follow Bryn Mawr to Iowa St. Right on Iowa to end of street, then left out Adelaide to
1.2 Steps on right. Up steps to Reservoir.

Herron Hill Reservoir (elev. about 1250') is at the approximate elevation here of the 'Allegheny Peneplain' which may be seen in the distance. The abandoned valley of the Monongahela River lies to the east and southeast, the present Allegheny and Monongahela to the north and south, respectively. Below the Reservoir to the northwest is seen a broad gap at the elevation of the abandoned Monongahela channel. This is the westernmost of three gaps which connected the Allegheny and Monongahela channels. The river gravels in the western part of this gap are of Allegheny type, but to the southeast this changes to Monongahela type of sand and clay.

II Herron Hill Reservoir to Brilliant Cut, and to faulted area.

- 1.2 Herron Hill Reservoir. Circle block to left returning to Bryn Mawr and Center.
1.9 Left down Center to Bellefield. Right on Bellefield to
2.5 5th Ave. Left out 5th Ave. Note that 5th Ave here follows the "inside" of the abandoned Monongahela channel to Penn Ave., thence turns directly across it and about at Frankstown Ave. (Sp. 5.1) enters Negley Run which occupies the easternmost of the three gaps connecting the Allegheny and former Monongahela channels. Continuing out 5th Ave. Extension, the overhead bridge at Sp. 5.7 is level with the old valley and here, as throughout most of the extent of Negley Run, terraces on the sides indicate the level of the gap.
6.9 Right on Allegheny River Blvd.

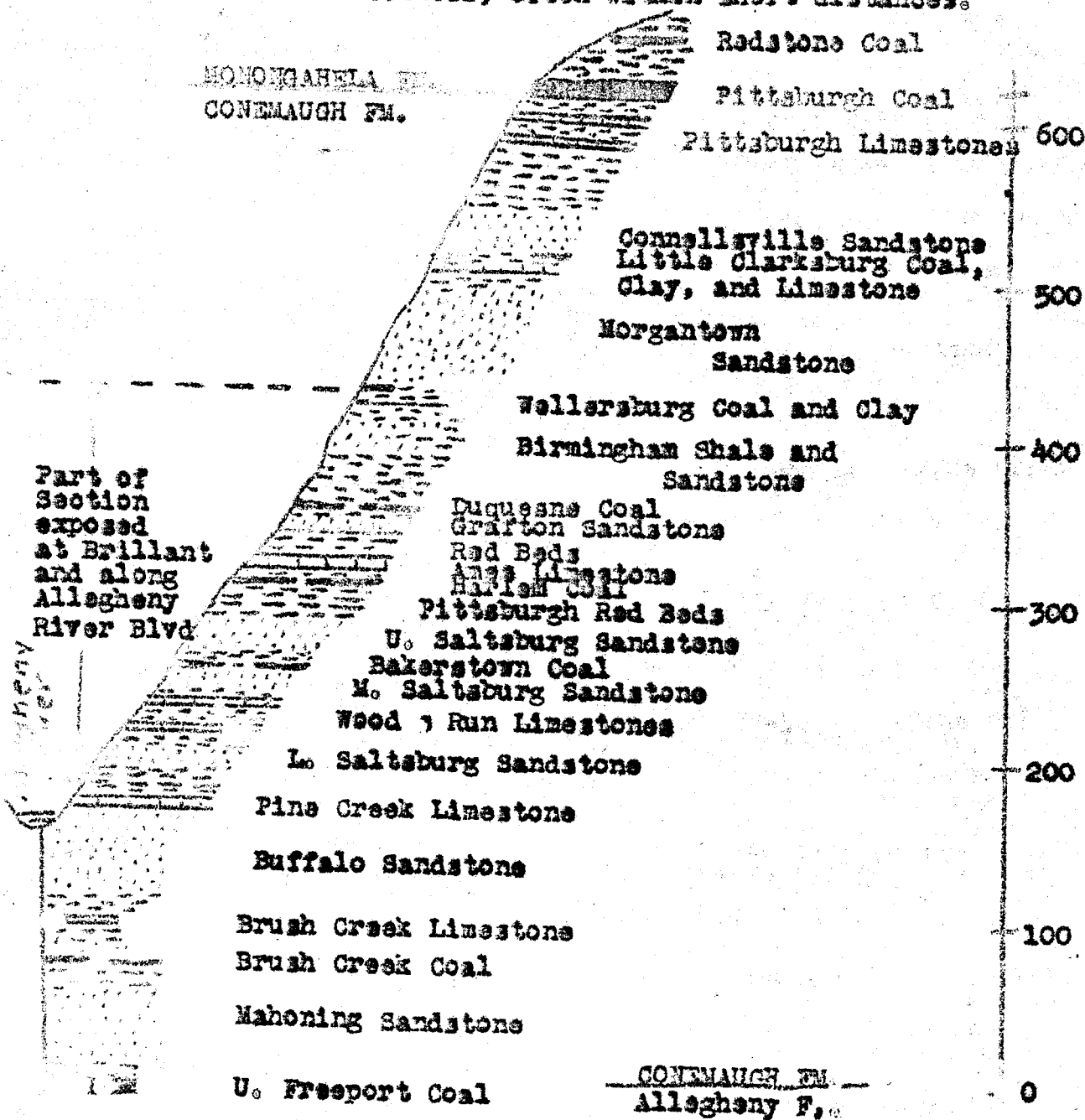
- 7.1 Brilliant Cut. The section here seen lies about the middle of the Conemaugh Formation, extending from the Middle Saltsburg Sandstone up to the Wellersburg Clay. See the attached "Generalized Section of the Conemaugh Formation" for names and sequence of beds here.
7.7 to 7.9. Faults in ~~Riverside~~ Woods Run- Saltsburg~~Y~~ horizons. The two limestones here are the Woods Run limestones, the sandstones are Saltsburg Sandstone, the Red Beds above are principally Pittsburgh Red Beds.

III Returning to Carnegie Museum, follow the Allegheny River Blvd back to 5th Ave., and back 5th Ave. to Bellefield St., left on Bellefield to Museum.

HIGHLY GENERALIZED SECTION OF CONEMAUGH FORMATION IN PITTSBURGH

Marine fossils are found in the Ames, Wood & Run, Pine Creek, and Brush Creek Limestones, and occasionally in some of the shales in the lower half of the formation. Most of the beds are practically devoid of fossils, and no marine fossils have been found in beds higher than the Birmingham Shale.

Typically the members of the formation are very variable in character and thickness, often within short distances.



TRIP NO. 2

BEAVER VALLEY TRIP - SATURDAY, MAY 26, 1934.

LEADER: Chas. R. Fettke.

BRING A LUNCH

Party will assemble in front of Carnegie Library.
Leave at 8:00 A.M., Daylight Savings Time (7:00 A.M., EST)

- 0.0 miles. Set speedometer at 0 at south end of Point Bridge across Monongahela River at Pittsburgh.
Turn right on Route 22 (Carson Street).
- 0.3 miles. Party will re-assemble on vacant lot on right hand side of road opposite Sunoco Filling Station. - 8:30 A. M.
Excellent exposure of upper one-half of Conemaugh Series can be seen in cliff on left hand side of road.
- 0.8 miles Turn left on Route 22.
- 2.0 miles Outcrop of Morgantown sandstone on right hand side of road.
- 2.6 miles Turn left just after passing Sunoco Filling Station and park on side road parallel to main road. - Arrive 8:50 A. M.
Outcrop of Pittsburgh limestone and coal. The numerous coal mines that are seen along the route traversed during the morning all operate in the Pittsburgh seam.
The bottom of the Pittsburgh seam represents the base of the Monongahela and the top of the Conemaugh Series of the Pennsylvanian System. - Depart 9:05 A. M.
- 10.2 miles Park on right side of road after passing Union Church and road cut beyond.
Outcrop of Benwood limestone in road cut. Approximately 180 feet above Pittsburgh coal. - Arrive 9:30 A. M.
Northeastern end of McDonald oil pool. Production from 30-foot, Gordon, and 5th sands. - Fine view of Allegheny peneplane. Depart 9:45 A. M.
- 15.1 miles Keep to left on Route 22.
- 18.6 miles Champion Coal Cleaning Plant of Pittsburgh Coal Company on left hand side of road.
- 25.6 miles Enter Florence oil pool. Production from 100-foot sand.
- 27.0 miles Turn left on Route 18 at Florence.
Fine view of Allegheny peneplane.
- 28.4 miles Turn right on "red dog" road. Very sharp turn. Go 1.2 miles on this road, turn around and stop on way back to Route 18 for birds-eye view of coal stripping operation of Harmon Creek Coal Company, the largest of its kind in western Pennsylvania.
- 34.00miles Park on right hand side of Route 18 going north at outcrop of Pittsburgh Coal. - Arrive 10:40 A. M.
One hour will be spent in examining section exposed by operations of Harmon Creek Coal Co.

45 to 50 feet of cover are stripped to mine about $4\frac{1}{2}$ feet of coal. Largely sandstone. Includes Rooster Coal which lies 20 to 30 feet above Pittsburgh. Cover shot. Holes are drilled 40 feet back from face and 25 feet apart with a churn drill. If wet, hole is sprung with a gelatin dynamite to rid it of water. Black powder is used for blasting, 3 to 7 kegs per hole. Holes are drilled to draw shale above coal. Two 300-ton steam shovels with 6 cu. yd. dippers are used. Each shovel moves 5000 cu. yds. per shift. The top of the coal is cleaned with wire brushes before loading. It is seldom shot. $1\frac{1}{2}$ cu. yd. steam shovels are used for loading into cars. About 1500 tons of coal are mined per day, this being the capacity of the tipple. - Leave 11:40 A. M.

Continue North on Route 18.

41.3 miles

Intersection of Routes 18 and 30.
One hour for lunch. - Arrive 12:00 - Leave 1:00 P. M.

45.4 miles

Outcrop of Ames limestone on right-hand side of road. 10 minute stop - The Ames limestone is a thin but very persistent limestone occurring at about the middle of the Conemaugh series. It is the uppermost of the marine limestones of the Pennsylvanian System in western Pennsylvania.

51.4 miles

Fine example of a recent landslide on right-hand side of road. Top of slide coincides with base of Mahoning sandstone at base of the Conemaugh series. Upper Freeport coal, clay, and shale involved in slide. Slide is about 140 feet wide at base. Occurred on April 4th and completely blocked road for a time. - Arrive 1:30 P. M. - Depart 1:45 P. M.

55.5 miles

View of earlier and later glacial gravel terraces at intersection of Beaver and Ohio Rivers.

10 minute stop

Continue on Route 18 through Monaca, across bridge over Ohio to Rochester, and then turn left on Route 68 crossing Beaver River to Beaver and proceeding on through Vanport.

62.1 miles

Park on right-hand side of road. - Arrive 2:20 P.M.
Good exposure of Vanport limestone in railroad cut above road. Also Lower Kittanning coal and clay in cliff. Lower Kittanning clay is mined in this vicinity for manufacture of face brick and low heat duty refractories. Clay iron stone concretions in shale above Lower Kittanning coal contain siderite, barite sphalerite, and galena along septarian cracks. -
Leave - 2:24 P. M. Leave - 2:40 P. M.

Return toward Beaver.

65.4 miles

Turn left on side street to gravel plant. 10 minute stop. - Large pit exposes a thick section of the later glacial gravels. - Wisconsin.

66.1 miles

Return to main highway, Route 68, and continue through Beaver.

67.9 miles

Turn left up Beaver Valley on west side.

69.6 miles

Straight ahead on right-hand road.

70.4 miles

Turn left after crossing bridge.

70.8 miles

Turn right near depot.

Beaver Valley Trip - Saturday May 26, 1934. - Sheet #3.

71.3 miles Turn left over bridge and continue on Route 18 through
Beaver Falls.

73.9 miles. Geneva College on right. Turn left.

75.2 miles. Morado.

Outcrop of Homewood sandstone, uppermost member of Pottsville
series. - Arrive 3:35 P. M. - Leave 3:50 P. M.

Return to Pittsburgh via Route 18 and the Ohio River Boulevard.

Uniontown and Ohio Pyle Trip

Sunday May 27, 1934.

Starting Time: 9:00 A.M.

Leader: Henry Leighton

Note: No stops will be made until Chestnut Ridge is reached but much can be noted from the cars by following the succeeding outline.

Through the City of Pittsburgh: Start from Carnegie Museum which is situated in the flat-bottom of an old channel of the pre-glacial Monongahela River. This channel was silted up, during inter-glacial times, with from 5 to 50 feet of yellow clay, sands and boulders which are to be seen around the Cathedral of Learning across Forbes Street from the Museum. Follow U. S. Route No. 22 through Schenley Park and cross a deep post-glacial ravine on the Wilmot Street Bridge. This ravine is cut in Upper Conemaugh shales and the marine Ames limestone lies at the level of the ravine bottom. Continue west on the Boulevard of the Allies noting the many exposures of the non-marine shales and sandstones of the Upper Conemaugh. Cross the Monongahela River on the Liberty bridge, reached by a circular ramp which leads to the right off the Boulevard of the Allies just west of the Liberty Bridge. Proceed straight ahead through the Liberty Tubes, a double vehicular tunnel one mile in length. The tubes are cut in the Morgantown Sandstone of the Conemaugh which is to be seen at the east portal. The Pittsburgh coal bed lies some 200 feet higher on the steep valley wall. At the west end of the tubes turn left on State Route No. 51, or Sawmill Run Boulevard; the exposed rocks here are Upper Conemaugh.

Liberty Tubes to Clairton, Pa. At the junction of State Routes Nos. 51 and 88 bear left on Route No. 51 keeping in the left traffic lane at the intersection. Just beyond this junction, on the right, is a good exposure of the Pittsburgh coal which separates the Conemaugh from the Monongahela group and lies at the base of the Monongahela group. About one mile farther on, note, about 100 feet to the left, some good outcrops of fresh-water limestones in the Monongahela group. At the fork in the road marked "51 R." and "Airport L.", take the Airport road to the left. Along this road may be seen the great terraces built up by slag dumped by the steel mills and hauled by their private railroad, the Union Railroad, under which the road passes in two places. Turn right on State Route No. 885, the road marked "Clairton." From the hill overlooking Clairton one can get a fine view of the United States Steel Corporation's great by-product coke plant on the Monongahela River. Proceed down hill into Clairton and on the main street turn left, leaving State Route No. 885, drive 3 blocks and turn right on the Clairton Bridge over the river.

Clairton, Pa., to Elizabeth, Pa. On the east side of the river, opposite Clairton, turn right along the river to Elizabeth, Pa. The cliffs opposite Clairton give a fine section of Conemaugh strata, including the Morgantown sandstone underlain in turn by the Wellersburg clay and Schenley red beds, the Birmingham shales, other clays and shales, and, at the first ravine, the Ames limestone. Across the river a fine view can be had of the Clairton plant and the river activity.

Elizabeth, Pa., to Perryopolis, Pa. At Elizabeth, Pa., turn left on State Route No. 51 and follow it up Hayden Run in Upper Conemaugh strata, one and one-half miles, to the outcrop of the Pittsburgh coal, mining activity in which can be seen for one-half mile; thence up hill, with many exposures of the fresh-water limestones which lie above the coal in the Monongahela group as far as the junction with State Route No. 31. Thence Route No. 51, which is followed to Uniontown, lies generally above the coal and fresh-water limestones are again well seen at the junction with State Route No. 71. Perryopolis is an interesting town which George Washington helped to lay out and in which he once had a flour mill. It lies, like the Museum district, in an abandoned loop of the Youghiogheny River. The characteristic yellow silt and boulders are to be seen in the vicinity.

Perryopolis, Pa., to Uniontown, Pa. Just beyond Perryopolis many old coal operations with the old bee-hive coke ovens are to be seen. This activity was all on the Pittsburgh bed. At the junction with State Route No. 711, at Washington Mines, similar relics of past activity are to be seen and just beyond the junction some more fresh-water limestones may be seen. Also on the left is a small stripping operation in the Pittsburgh coal. Thence we enter the influence of the Fayette Anticline which brings up Conemaugh strata and for several miles the area is barren of coal. Then the dips are seen bringing down the coal bed, again dipping to the southeast, into the great Uniontown syncline or coal basin which includes, besides the town of Uniontown, the towns of Fairmont, West Virginia, and Connellsville and Latrobe, Pennsylvania. This feature is a long narrow syncline just west of and parallel with Chestnut Ridge. Uniontown is situated in a coal mining and industrial region and it will be noted that the mines are mostly shaft mines since the coal lies deep beneath the surface in this syncline.

Uniontown, Pa., to Summit Hotel. In Uniontown turn left on U. S. Route No. 40, the Old National Pike or Road. Note the very old stone houses in Hopwood, the first town east of Uniontown, and also note the original mile posts along the route. Just east of Hopwood is begun the long ascent of Chestnut Ridge. Note at its base outcrops of the shales and coals of the Allegheny series. Chestnut Ridge is a long wooded anticlinal ridge extending from central West Virginia into Pennsylvania, with a total length of nearly 150 miles. It generally rises from 800 to 1000 feet above the surrounding lowland and has been in the past a distinct barrier to transportation. In it the following strata are exposed:

- 280 feet - Allegheny series, shales, sandstones and coals.
- 200 " - Pottsville sandstones, mostly heavy bedded.
- 100 " - Mauch Chunk shales, upper part, bright red and green.
- 25 " - Greenbrier limestone, marine, quarried for road stone.
- 50 " - Mauch Chunk shales, lower part, red and green.
- 400 " - Pocono sandstones, upper portion known as the Loyalhanna limestone as it is calcareous.
- 100 " - Upper Devonian shales, Chemung fossils to be found.

The first stop of the trip will be made at the first cabins and bear cage opposite the outcrop of the Mauch Chunk beds. Here may be seen the Pottsville and Mauch Chunk contact, the Greenbrier limestone in an active quarry, and, just west of the Turkey's Nest roadhouse, the Pocono beds. The second stop will be made at mile-post No. 59 where the Devonian shales with fossils are found and a very interesting overturned fold in the Devonian may be studied. Proceed then up the mountain in Devonian beds. From this portion of the road a wonderful view of the Uniontown district is to be seen.

Summit Hotel to Farmington, Pa. From the Summit Hotel proceed down the east slope of the Ridge about two miles to an old quarry in Greenbrier limestone on the left side of the road. This is the best fossil collecting spot in Western Pennsylvania and about an hour will be spent in collecting. Among the more common fossils are the following brachiopods (according to Miss Benson):

<i>Orthothetes kaskaskiensis</i>	<i>Martinea contracta</i>
<i>Productus olegans</i>	<i>Eumotria verneuliana</i>
<i>Linoproductus ovatus</i>	<i>Composita subquadrata</i>
<i>Girtyella indianensis</i>	<i>Composita sulcata</i>
<i>Spirifer pellaensis</i>	<i>Composita lowisonensis</i>
<i>Spirifer breckenridgensis</i>	

Among the rarer fossils are pentremites, a few pelecypods and gastropods, a trilobite, some fish spines and a few cup corals and crinoid heads. From the quarry continue east on U. S. Route No. 40 passing Braddock's Grave and Fort Necessity, two places of great historic interest. The rolling hills in this stretch are mostly of Conemaugh shales.

Farmington, Pa., to Ohio-pyle, Pa. At Farmington, Pa., turn left on State Route No. 381 and drive 7 miles to Ohio-pyle, Pa. The outcrops along this road are chiefly Conemaugh. At the first view of Ohio-pyle Falls stop and see the contact of the Lower Allegheny series and the lower or Brookville coal upon the heavy sandstones of the Pottsville. The Youghiogheny River here has cut a curious meander and has cut down into the Pottsville beds about 50 feet or more, the falls tumbling over the lower Homewood Sandstone with the Morcer shales and a thin coal just beneath. The great meander is probably inter- or post-glacial since the older channel can be traced across the neck along the railroad. The high-wooded meander spur is now a fine picnic ground with an old Summer hotel, ~~The Fern Cliff, on it.~~ (Many of us would like to see the State take over the meander for a state park). At the Falls can be seen a very pretty pot hole 6 feet in diameter. In the Pottsville sandstone near the Falls, there are many well-preserved impressions of *Lepidodendra*. Drive through the village of Ohio-pyle on State Route No. 381 and cross the river and railroad. Note the curious cross-bedding in the strata in the stream. Stop at the Ohio-pyle Hotel for chicken dinner - cost 75¢. Park cars at the railroad station across the street from the hotel.

Ohio-pyle, Pa., to Normalville, Pa. The road leads up a hill back of the Ohio-pyle Hotel and the lowest coal, the Brookville, is to be seen, with some impure flint clay, a little above the Hotel on the curve of the hill. On up the hill the whole of the Allegheny series is exposed with its numerous coals. There are no marine horizons here in the Allegheny, the Vanport limestone being missing. At the top of the hill the Upper Freeport Coal is to be seen under a heavy bed of the Mahoning sandstone, the lowest bed of the Conemaugh group. Down in the next valley, at Kaufmans, the Pottsville beds may be seen again. Good views of the deep gorge which the Youghiogheny River has cut in crossing Chestnut Ridge are to be seen from the hilltops. Cross the Indian Creek Railroad and a broadened part of Indian Creek known as Killarney Lake. The Indian Creek

valley below this point cuts a deep gorge and enters the Youghiogheny River near the axis of the Chestnut Ridge Anticline. This valley is a favorite summer resort. Up the Indian Creek valley there are some large coal operations working the Allegheny group of coals. At the junction of State Routes Nos. 381 and 711, those who intend to drive eastward to Ligonier or Somerset may leave the party and follow right on Route No. 711. The rest of the party will proceed left on Route No. 711 and follow it over Chestnut Ridge into Connellsville and thus into the Uniontown coal basin again. At Connellsville, turn right on U. S. Route No. 119 which will be followed through an industrial and coal mining area to Greensburg. Here a left turn will be made on the Lincoln Highway, U. S. Route No. 30, which will be followed to Pittsburgh and the Carnegie Museum.

A large number of topographic sheets would be required to cover the entire trip. The Uniontown and Ohiopyle section is covered by the Uniontown and Confluence sheets. Literature covering much of the trip includes the following:

- U. S. Geol. Surv. Folio 177. Burgettstown-Carnegie.
- U. S. Geol. Surv. Folio 94. Brownsville-Connellsville.
- U. S. Geol. Surv. Folio 82. Masontown-Uniontown.
- Pa. Geol. Surv. 4th. Ser. "Geology of the Pittsburgh Quadrangle,"
by Johnston.
- Pa. Geol. Surv. 4th. Ser. Bull. M-17, "Clay and Shale Resources
of Southwestern Pennsylvania," by Leighton. Contains
stratigraphic sections, a geologic map and bibliographies
of the various counties.

Henry Leighton