

GUIDEBOOK  
TO  
LOWER AND MIDDLE ORDOVICIAN STRATA OF NORTHEASTERN ARKANSAS AND  
GENERALIZED LOG OF ROUTE FROM LITTLE ROCK TO BATESVILLE, ARKANSAS



1973

Annual Meeting  
South-Central Section  
Geological Society of America

April 5-7, 1973

Trip Leaders

O. A. Wise  
Arkansas Geological Commission

Ernest E. Glick  
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TABLE OF CONTENTS

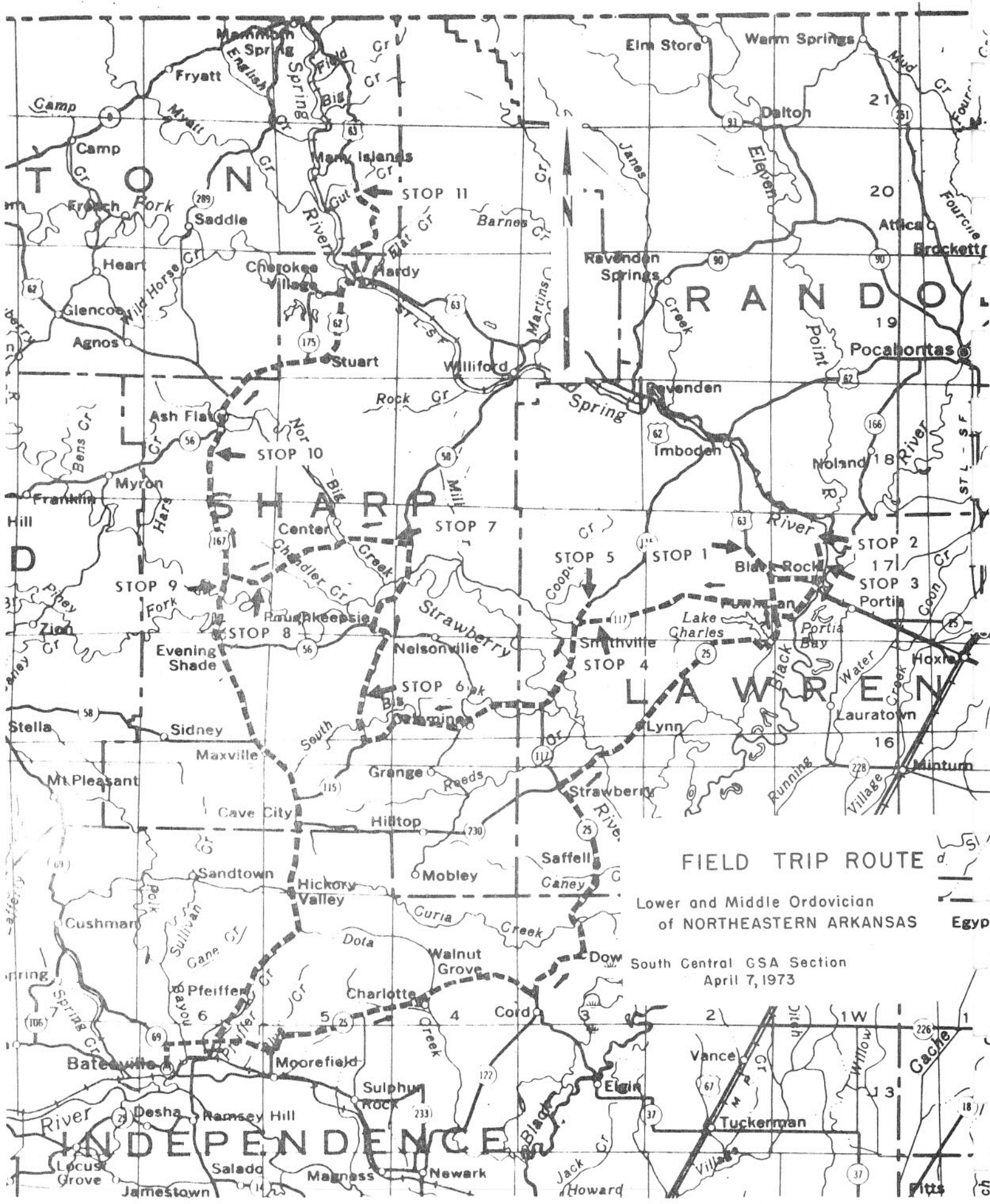
	PAGE
ROAD LOGS	
Lower and Middle Ordovician . . . . .	1
Evening Shade to Batesville . . . . .	14
Little Rock to Batesville . . . . .	17
Highway 5 to El Paso, Arkansas . . . . .	21

ILLUSTRATIONS

Lower and Middle Ordovician Trip Route . .	iv
Lower Ordovician Geologic Column . . . . .	4

NOTE:

The stratigraphic nomenclature and age cited in this guidebook does not necessarily conform to that of the U. S. Geological Survey.



**FIELD TRIP ROUTE**

Lower and Middle Ordovician  
of NORTHEASTERN ARKANSAS

South Central GSA Section  
April 7, 1973



**Egypt**

**Fitts**

ROAD LOG

LOWER AND MIDDLE ORDOVICIAN OF NORTHEASTERN ARKANSAS

<u>MILEAGE</u>	<u>DESCRIPTION</u>
0.0	Depart Powell Motel Parking Lot. Drive north on Highway 167. Route ahead crosses the Moorefield fault at approximately the railroad overpass and descends to an alluvial flat which probably has Fayetteville Shale beneath the alluvium.
1.1	Turn right on Highway 25.
2.0	Cross old highway; continue eastward on Highway 25.
4.9	Junction Highway 233 south to Moorefield, the type locality for the Moorefield Shale.
6.2	The Batesville Sandstone and the Moorefield Shale are the surface rock of a westward sloping upland. The town of Batesville rests on a similar sequence but is on the south side of the "down to the north" Moorefield fault. The next five miles of the route is largely over the cherty, clayey, decalcified "dirt rock" of the Moorefield.
11.2	The Chattanooga Shale is poorly exposed along the right (south) side of the road in the "up thrown" block of the Charlotte fault.
12.3	Bridge over Dry Fork. The cliff along the south side of Dry Fork is on the up-block along the Charlotte fault. As much as 100 feet of Joachim-Plattin-Kimmswick undifferentiated is exposed there in a quarry from which the road metal for Highway 25 has been taken. The route from Batesville to this point has been through the Batesville graben which is formed by the Ramsey Bottom fault on the south and the Pfeiffer fault to the north. The Moorefield fault and the Charlotte fault along with several minor faults serve to complicate the structure.

- 13.2 Bank on north side of road exposes a Boone limestone block sandwiched by the Moorefield Shale. This structure is interpreted by Wise as being a small horst. There have been other interpretations of this exposure.
- 14.8 Light-gray and dark-gray fossiliferous dense chert in the lower part of the Boone Formation. From here westward to Batesville, Glick has experienced some difficulty in mapping a contact between the decalcified siliceous "dirt rock" of the Moorefield Shale (Meramec) and the decalcified Boone (Kinderhook, Osage, and Meramec).
- 15.4 Gravel quarry at crest of hill. The age of these gravels is undetermined.
- 15.9 Boone Chert.
- 16.9 Gravel road to left at grocery store. The outcrops in the road ditch on the right (south) side of Highway 25 are Chattanooga Shale (Devonian and Mississippian) which are overlain by a sandy green clay and gravel. Northward from the junction, along the gravel road, the Penters Chert (Devonian) crops out below the Chattanooga.
- 17.4 Small quarry in Platin.
- 19.6 Turn left (north) toward Saffel on Highway 25.
- 21.6 Quarry  $\frac{1}{4}$  mile north of road in Platin Limestone.
- 24.2 St. Peter Sandstone outcrop.
- 24.6 Bridge over Curia Creek. About 80 feet of the St. Peter Sandstone is well displayed in the channel of the creek and along the road on the southeast side of the creek. The formation here is near its eastern limit of exposure, and is rather typical of the St. Peter Sandstone to the west. However, it contains some argillaceous and dolomitic beds. The route ahead (for the next eight miles) is primarily on the Everton Formation or on alluvium. The gravel, sand, and clay that make up the younger deposits of the Mississippi Embayment are found locally at an altitude of more than 500 feet in

this general vicinity. As our route here is at an altitude of less than 400 feet, the Paleozoic rocks exposed along this part of the route probably have been buried by Cretaceous, or Tertiary, or alluvium and then exhumed.

- 28.6 Saffel.
- 32.1 Strawberry.
- 32.5 Downtown Strawberry. Continue on Highway 25 to Lynn. The route more or less parallels the Ordovician contact with the post-Paleozoic sediments of the Mississippi Embayment.
- 35.0 Bridge across Strawberry River.
- 37.5 Downtown Lynn.
- 39.8 Lebanon Church, established 1852.
- 40.8 Eaton. Bedrock exposed in left (north) road ditch and the surrounding residuum has yielded the southeastern-most known collection of Ceratopea opercula.
- 41.1 "Biscuit rock" quarry. Smooth rounded gravels and cobbles in red, sandy matrix are evidence of Cretaceous or Tertiary age river delta or beach deposit. The rocks from this quarry have been used for road gravel, in ball mills, and as surfaces on which to paint scenes to sell to tourists.
- 44.8 Lake Charles State Park.
- 45.5 Lake Charles.
- 48.2 Powhatan.
- 48.3 Turn left on Highway 117S.
- 49.3 Junction Highways 117 and 117S bear right (northeast) on 117.
- 50.5 Keep left.
- 50.6 Junction U. S. Highway 63; turn left (north) on U. S. 63.



NORTHERN ARKANSAS

PRE-EVERTON GEOLOGIC COLUMN

Ozark Region (Ulrich)	Mid-Continent Region	Formation	
Canadian	Lower Ordovician	Black Rock formation	
		Smithville formation	
		Powell dolomite	
		Cotter dolomite	
		Jefferson City dolomite	
Ozarkian	Arbuckle	Roubidoux formation	
		Gasconade-Van Buren formations Gunter member	
Upper Cambrian		Eminence dolomite	
		Potosi dolomite	
		Derby-Doerun formations	
		Davis formation	
		Bonneterre dolomite	
		Reagan ss.	Lamotte sandstone
		Precambrian	Igneous rocks

Modified from Caplan; Arkansas Geological and  
Conservation Commission, INFORMATION CIRC. 21

Roadside park and rest stop. Drive to north end of park.

STOP NO. 1. PRE-EVERTON LIMESTONE (BLACK ROCK?)  
 NN $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 13, T. 17 N., R. 2W.

This massive blueish fossiliferous limestone which weathers to a tan or cream color, contains a variety of fossils at different localities. At this stop, one can observe sponges, the "nothing" fossil, scattered brachiopods and algal mats. Note dolomitization of limestone at the left side of the outcrop. Limestone exposures of this type can be found from east of this point to Poughkeepsie, a distance of approximately 25 miles. The trend of the outcrop is almost east-west which is a considerable departure from that mapped on the Arkansas Geologic Map of 1929; which shows a northeast-southwest pattern.

The sponges have been identified by Don Toomey\* as a lithistid genus Zittella. Also included in the country rock were conodonts (Arenig age) and spicules of a hexactinellid sponge Hyalostelia clinapentactinoides Lower Ordovician (Beekmantown). This limestone occurrence is developed at or very near the top of the Lower Ordovician sequence probably no more than 50 feet below the Everton contact.

The "nothing" fossil which is found associated with the sponge-bearing limestone and also at other localities where the sponge-bearing limestone has not been identified is a real "orphan". The sponge, bryozoan, and coral experts each in turn suggest the fossil belongs to a category not his own. All scientific suggestions are welcomed.

Observe the fossil trails and burrows on the flagstones (Batesville Sandstone?) of the walks in the rest area. Note the star-shaped fossil on the walk leading to the building.

\* Written Communication.

Depart Stop No. 1 on Highway 63 southeast (the direction from which we came).

- 52.8 Ceratopea locality.
- 54.3 Quarry on left (east) (Davis and Sons). This is in a southward plunging syncline that is mineralized (zinc) down dip.
- 54.4 Caution. Angle left across Highway onto Elm Street.
- 55.5 Turn left on 3rd Street.
- 55.8 Turn left on Walnut Street.
- 55.9 Turn right on 4th Street.
- 56.1 Jog 200 feet left at 4th and Bonita; continue northward.
- 56.3 Top of hill.
- 57.1 STOP NO. 2. PRE-EVERTON LIMESTONE (BLACK ROCK?)  
NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 8, T. 17N., R. 1W.  
McCarroll Farm on left. This is one of the easternmost and best exposures of the sponge-bearing "Black Rock Limestone". "Nothing" fossils are found weathering out of this exposure. The "nothings" can be saucer-shaped, cone-shaped, or a variation of the two. When the surface is weathered they frequently have ornamentation resembling stars on the upper surface. Magnification does not aid in developing detail of the ornamentation. On some of the better, less weathered specimens, the surface pattern appears to be a hexagonal arrangement resembling some corals (Wise).
- Get permission before entering lot in which fossil sponges are well exposed.
- Turn around and return to Black Rock.
- 58.3 Bonita and 4th Street; continue eastward on Bonita.

- 58.7 STOP NO. 3. PRE-EVERTON PELLET ZONE.  
NE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 16, T. 17N., R. 1W.  
The outcrop of dolomite on our right (south) is typical of the uppermost pre-Everton in this general area. It contains many easily seen pellets; some in clusters in burrows.
- The gradational contact of pre-Everton and Everton is displayed along the railroad a short walk south of here. This is the easternmost outcrop of the basal Everton in Arkansas (as mapped by Glick).
- Drive across railroad.
- 58.8 Turn around.
- 59.0 Cross railroad and continue westward.
- 59.1 Turn left.
- 59.5 Turn right at 2nd and Cedar.
- 59.6 Turn left at 3rd and Cedar.
- 59.7 Stop sign. Continue southward after stopping.
- 59.9 Caution. Turn left on Highway 25 South.
- 60.1 Passing under Highway 63 Bridge.
- 60.6 Powder House Quarry sponge zone. This is probably the locality from which Ulrich obtained his Black Rock fauna. A quarry north of Stop 2 is also a possible source.
- 61.1 Quarry on right.
- 62.0 Powhatan. Note the old Court House (1888) which is currently being restored on the hill.
- 62.1 Turn right (north) on Highway 117S toward Smithville.

- 62.3            Ceratopea locality.
- 63.3            Stop sign. Go left on Highway 117 toward Smithville.
- 65.0            Gravel pit. Siliceous material is being dug for road metal. This may be residual debris that filled an old sink hole in the Ordovician surface. It does not appear to be a product of weathering of the Ordovician bedrock. Also, in the quarry across the road (south) sand and clays of Cretaceous or Tertiary formation are present in what appears to be a continuation of this exposure.
- 65.9            Typical blue, sponge-bearing limestone is present on the lower slopes of this hill (right side) while the massive rock at the crest has been completely dolomitized. There are inclusions in the massive dolomitized beds which appear to be silicified sponges.
- 67.5            Denton.
- 68.4            Bridge over Flat Creek.
- 72.1            Sandstone in road cut.
- 72.6            STOP NO. 4. PRE-EVERTON LIMESTONE "SPONGE ROCK" (BLACK ROCK?).  
NW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 34, T. 17N., R. 3W.  
This outcrop, which appears to be in the area mapped as Black Rock on the Geologic Map of Arkansas, 1929, is "sponge rock" with layered algal mats and containing the "nothing" fossil. At the west end of this outcrop a thin greenish shale, less than six inches thick, is developed and can be exposed by digging away the soil cover. This shale contains graptolites which have been identified by W. B. N. Berry\* as very youngest Early Ordovician; they include Didymograptus bifidus and Phyllograptus ilicifolius cf. var Ozarkianus. The thick bedded sponge rock exposed here dips gently to the north.
- 73.1            Smithville City Limits - Bridge over Machine Creek.

\* U. S. Geol. Survey Prof. Paper 700D, p. D62-D70, 1970.

- 73.2 Junction Highway 117 and Highway 115 in downtown Smithville; turn right.
- 74.3 STOP NO. 5. THE LINCOLN MINE  
 NW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 27, T. 17N., R. 3W.  
 This stop is approximately half a mile north of Stop 4. Here the limestone is dipping slightly toward the south which would indicate a very gentle synclinal feature between this point and Stop 4. There are no intervening structural complications which would indicate the necessity for any other interpretation.
- The fauna here and in the road bank, just to the west of the gate, are primarily snails and Ceratopea opercula, differing from the sponge-algal fauna at Stop 4 (half a mile south). The elevation at this point and at Stop 4 are essentially the same. Ceratopea opercula here are of the unquis species.
- 75.4 Return to Smithville and continue westward on Highway 115-117.
- 75.5 (Side trip) bear right on town street; continue west on dirt road.
- 1.2 Bridge.
- .8 Townsend Cemetery Road to right (north).
- .1 Lincoln Mine Limestone facies in right (north) road ditch.
- 75.5 Return to Highway 117-115 and turn right toward Poughkeepsie.
- 79.5 Bridge over Strawberry River.
- 80.2 Junction Highways 117-115, continue straight ahead on Highway 115 (west).
- 81.2 Sharp County Line.
- 82.4 Bridge over Big Creek.

- 84.1 Calamine.
- 84.2 Calamine Mine to left (south). First zinc mine of record in Arkansas; developed by American Zinc Company in 1857.
- 89.0 Bridge over Big Creek.
- 89.9 Junction Highway 58 to Poughkeepsie. Turn right (north) on Highway 58 toward Poughkeepsie.
- 91.0 Bridge over Big Creek.
- 91.3 Upper part of the Everton Formation. These beds are dolomite containing grains of St. Peter-type sand and a few poorly preserved ostracods which are typical of the Everton in much of its outcrop area.

93.1 STOP NO. 6. BASE OF EVERTON  
 NW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 11, T. 16N., R. 5W.  
 The quarry on the right (east) is owned by Don Rodabaugh, who lives a short distance off the road to the left. Permission to enter the quarry must be obtained from him.

The subtle but distinctive contact about four feet above the floor of the quarry in this outcrop is considered by Glick to correspond to the contact of the Everton Formation on Powell Dolomite at the type area of the Powell about 80 miles west of here. It is, therefore, at the pre-Everton "unconformity". The sandy chert-granule "conglomerate" at the base of the Everton is a thin but surprisingly persistent marker across northern Arkansas. The "unconformity" at the base of the Everton becomes even more subtle and perhaps dies out along the outcrop to the east and in the subsurface to the south, but the upward change from a nearly sandless dolomite to sandy dolomite persists at about the same stratigraphic horizon.

The youngest pre-Everton unit (below the chert-granule "conglomerate") throughout this general area and eastward to the area covered by the sediments of the Mississippi Embayment contains the Smithville fauna.

The Smithville is considered by some geologists to be a post-Powell pre-Everton rock unit. But the Smithville fauna (which may have been the original basis for the differentiation of the rock unit) extends westward some distance into the upper part of a sequence of dolomite which Glick has mapped as Powell.

- 93.2 Fool Creek. Highway 58 north of the bridge to Poughkeepsie rests largely on lower Everton.
- 95.0 Poughkeepsie School on the right.
- 95.8 Crest of hill overlooking the town of Poughkeepsie.
- 96.0 Downtown Poughkeepsie. Turn right on Highway 58.
- 96.4 Pavement ends. Stay on the main road.
- 96.5 Sponge-bearing limestone to left is westernmost known occurrence. Highway 58 toward Sitka.
- 99.2 Bridge over the Strawberry River. The U. S. Army Corps of Engineers has for many years considered several sites for Belle Foley Dam about four miles east of here (down river). The project has been on the books for some time but still is only a distant possibility.
- 100.0 Thick bed of chert in the Lower Ordovician. The route ahead displays an abundance of chert debris. Some of the source beds may be distinctive stratigraphic markers.
- 100.8 Turn left on Highway 354 (gravel road junction). Some of the dolomite at this junction contains quartz sand. An excellent Smithville fauna has been collected one mile north of this point.
- 101.7 STOP NO. 7. MIDDLE POWELL DOLOMITE.  
Near center of E $\frac{1}{2}$  sec. 12, T. 17N., R. 5W.  
Bridge over Hurricane Creek. Most of the private property here is posted and permission should always be obtained before entering.



A bed of fossiliferous dolomite beneath a cherty layer crops out in the stream channel about fifty yards upstream. Large Ceratopea are well displayed in place. An extensive collection of similar, but weathered out specimens is available, so please leave these as a natural display.

- 103.9 Bridge in Kitchen Hollow.
- 104.2 Turn left on gravel road.
- 104.3 Bridge over North Big Creek.
- 105.4 Bear left at intersection.
- 105.6 Center Lookout Tower on right.
- 108.3 "Sponge rock" indicators, ("nothings") are on the right at an altitude of 510 feet.
- 108.5 STOP NO. 8. LOWER EVERTON FORMATION.  
NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 19, T. 17N., R. 5W.  
Road junction at altitude 585 feet; Ceratopea locality. Glick maps this rock as lowermost Everton. Some geologists consider the Ceratopea to be a Lower Ordovician form.
- The sponge bed indicators, "nothings", previously noted at mileage 72.7, are at an altitude 75 feet below this Ceratopea occurrence.
- 109.1 Bridge.
- 110.0 Bridge.
- 110.7 Bear left at triangular junction. Stop! Turn left (south) on paved Highway 167.
- 111.5 STOP NO. 9. PRE-EVERTON ROCKS (SMITHVILLE?)  
NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 27, T. 17N., R. 6W.  
The weathered red chert in this roadcut has yielded an excellent Smithville fauna.
- Turn around and go back to the north on Highway 167.

- 112.3 Center Tower Road. Continue northward on Highway 167.
- 118.3 Crest of hill.
- 118.7 STOP NO. 10. POWELL DOLOMITE.  
NE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 22, T. 18N., R. 6W.  
Powell Dolomite at parking level.
- Paleontologists recognize an impressive sequence of upper Cotter, Powell, and Smithville Ceratopea along Highway 167. Banded chert that is typical of upper Cotter is exposed along the highway 0.2 miles to the north of this point.
- 119.9 Junction Highway 56 to Norfolk. Continue north on Highway 167.
- 120.7 Downtown Ash Flat.
- 121.6 Junction Highway 62. Continue northward toward Hardy on Highway 62-167 past Cherokee Village turnoff and through Hiland.
- 126.6 Hiland.
- 129.8 Crest of hill. Outcrops of Cotter Dolomite, for next 1 $\frac{1}{2}$  miles.
- 131.3 Bridge over Spring River. The Arkansas Geologic Map of 1929 shows a narrow exposure of Jefferson City Dolomite in the Spring River Valley in this area.
- 131.6 STOP! Turn left (north) on Highway 63.
- 135.1 Hilltop grocery.
- 137.1 STOP NO. 11. JEFFERSON CITY (?) DOLOMITE.  
NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 23, T. 20N., R. 5W.  
Ceratopea can be found weathering from the massive dolomite which could be lower Cotter or Jefferson City. This is considered to be the oldest rock which we have examined on the trip. This is the last scheduled stop and we will now return to Batesville on Highway 62 and 167.

The following road log covers the portion of Highway 167 from Evening Shade to Batesville which we have not previously covered on the trip.

ROAD LOG

EVENING SHADE TO BATESVILLE

The route from Evening Shade to Cave City is principally in the Everton Formation. Starting at the Strawberry River just north of Evening Shade there is a massive carbonate section which may be correlative with the Sneeds Limestone lentil.

<u>MILEAGE</u>	<u>DESCRIPTION</u>
0.0	Strawberry River Bridge.
0.5	Cave breccia and conglomerate on the left (east).
1.2	Piney Creek Bridge.
2.0	Evening Shade intersection. Interbedded dolomite and sandstone of the Everton crops out along the next eight miles of the route.
10.0	Approximate Everton-St. Peter contact.
11.1	Cave City.
11.5	St. Peter Sandstone in the right (west) road ditch.
11.6	Joachim (?) on the left (east) side of the road.
12.1	Cave Motel.

The Cave Court. There is actually a cave beneath the motel and the highway. It is developed in the St. Peter Sandstone. A guided tour may be taken for a small fee. This cave is situated in a syncline or graben and is

partially water-filled. The water supply for the town of Cave City comes from wells drilled into this "underground river". Surface rock in much of the immediate vicinity is Joachim Dolomite and Plattin Limestone. The St. Peter can be found in scattered exposures.

- 12.4 Independence County line.
- 13.5 St. Peter Sandstone dip slope.
- 14.2 Plattin Limestone. At this locality an unusual facies of the Plattin can be observed. Not only is an abundantly fossiliferous coquina like bed developed about midway in the exposure along the right (west) road cut, but at the north end of the exposure a small massive reef is developed.
- 15.1 Plattin Limestone.
- 15.8 Chert debris. Possibly Penters.
- 19.0 St. Clair Spring on left (east) side of road. This is the type locality of the St. Clair Limestone Formation.
- 21.3 Pfeiffer. At Pfeiffer quarry half a mile to the left (east), Boone limestone resembling "Carthage Marble" was once quarried for dimension stone. The State Capitol Building in Little Rock was built in part from the limestone from this quarry. Manganese ore from the Batesville Manganese District is stockpiled in front of the Pfeiffer Quarry. A lumber yard utilizes the flat smooth floor of the quarry for a stacking yard.
- 22.5 Bear right and continue on Highway 167. We are crossing the Batesville graben with the Pfeiffer Fault bounding the northern side and exposing Ordovician to Mississippian rocks along the scarp. The south side of the graben is bounded by the Ramsey Bottom Fault which places the Batesville Sandstone capping the scarp on the south side of the White River.

- 32.8 Midwest Limestone Quarry and Batesville Marble Road. Upper Ordovician Fernvale Limestone is being quarried for road aggregate and agricultural lime. St. Clair Limestone (Silurian) is quarried for interior marble. The old Cason Manganese Mine situated between these two quarries is rapidly being covered by the waste debris from the Midwest operation.
- 30.1 Powell's Motel.

GENERALIZED LOG OF ROUTE FROM LITTLE ROCK TO BATESVILLE, ARKANSAS

On Interstate Highway 30, drive northward from Little Rock across the Arkansas River

- 0.0 Arkansas River Bridge.
- 1.7 Junction I-30 and I-40. Proceed eastward on Interstate 40 toward Memphis. Move into left lane.
- 3.4 Junction I-40 and Highway 67-167 (Exit No. 155)  
Proceed northward on Highway 67-167 toward Jacksonville.
- 4.6 McCain Blvd. overpass.

McCain Shopping Center on west side of highway is situated on sandstones and shales of the Jackfork Sandstone (Lower Pennsylvanian) along the south flank of an east-plunging syncline. The highway from here to Jacksonville follows the edge of the Mississippi Embayment where rocks of Tertiary and Quaternary age lap onto the truncated beds of Jackfork Sandstone (Pennsylvanian).

- 11.6 Jacksonville. Situated on the west edge of the Mississippi Embayment. In this vicinity, Paleozoic rocks of the Ouachita Mountains Region to the south are separated from the Pennsylvanian rocks of the Arkansas Valley to the north by an east-west trending zone of high-angle reverse faults along which displacement is considered to be several thousand feet. The faults are evident only as broad fault zones that separate distinct fault blocks.

These Paleozoic rocks were folded during the Ouachita Orogeny of Late Pennsylvanian or Early Permian time. The topography was modified by erosion prior to the deposition of Late Cretaceous and younger sediments.

The Pennsylvanian rocks of the Arkansas Valley in this vicinity are folded into large anticlines and synclines that have been truncated and in part buried under sediments of Late Cretaceous and Tertiary age. The magnitude of the

structures and the great thickness of the Pennsylvanian sequence exposed just west of the highway has long been of interest to geologists. In 1896 John C. Branner reported that Professor Newsom had measured 18,480 feet of Pennsylvanian rock in a composite section exposed along the flanks of the westward plunging Bayou Meto anticline, which we will traverse in the next several miles. Excellent exposures of part of the sequence can be seen along Highway 5, about 7 miles ahead. (A log of that side-trip is included at the end of this log.)

- 19.0 Highway 5 Exit. (Exit here if you plan to take the side-trip across the Bayou Meto anticline.)
- 19.3 Highway 5 Overpass.
- 27.7 Outcrop of sandstone in the middle unit of the Atoka Formation (Pennsylvanian).
- 31.6 End of 4-lane highway. Continue northward to Bald Knob on Highway 67-167.
- 31.8 4-way stop. Turn left and continue toward Bald Knob.
- 37.6 McRae (watch for speed limit signs).
- 40.4 Garner (watch for speed limit signs).
- 50.9 Little Red River.
- Greers Ferry Reservoir, a Corps of Engineers project, was formed by a dam some 30 miles northwest of here. Water released through turbines remains cold enough to support trout several miles downstream from the dam.
- 56.1 Acme Materials Company quarry in Paleozoic sandstone.
- 58.3 Traffic light downtown Bald Knob. Move into left lane within next half mile.
- 59.0 Junction Highway 167 and Highway 67.  
Turn left towards Batesville on Highway 167.

As the regional dip of the rock of this area is southward, our north-trending route crosses progressively younger rocks of the Lower Pennsylvanian sequence.

- 63.5 University of Arkansas Strawberry Experiment Station. The Bald Knob area is one of Arkansas' major strawberry producers. Plants produce for approximately three years and then are destroyed. After the fields "rest" a year or two they are planted with new plants.
- 65.8 Velvet Ridge.
- 75.9 Pleasant Plains. The Atoka-Morrow contact is somewhere between Pleasant Plains and Searcy. This wide choice results from a gradual change of concepts. The "old-timers" put a great deal of the Morrow of this area into the Atoka Formation. Some recent workers place the Atoka-Morrow contact as much as 30 miles south of that shown on the Arkansas Geologic Map of 1929.
- 79.6 Crest of hill. This cuesta is formed by a south-dipping sequence of rocks of Morrow age. The road-cuts ahead provide an unusually fine view of the lower Morrow.
- 81.0 Salado Creek.
- Rest stop parking area on west (left) side of highway just across bridge. In this vicinity and along the next 3 miles of the route, the contact between the Pitkin Limestone (Mississippian) and the overlying rocks of Pennsylvanian age is irregular. The undulation is in part due to large-scale cut-and-fill deposition during post-Pitkin time.
- 81.8 Huff Post Office (situated on Pitkin Limestone).
- 84.4 Large quarry in Pitkin Limestone (Chester).
- 85.9 Batesville Sandstone (Chester).
- The highway for the next 4.6 miles is on the dip-slope of the Batesville. Quarries in the Batesville produce a fine "ledgestone".
- 89.4 Batesville Airport.
- 90.3 Crest of hill. Capped with Batesville Sandstone. The route descends to the White River flood plain traversing outcrops of Batesville Sandstone (Chester) and the Moorefield Shale (Meramec). The Ramsey Bottom Fault (down to the north) drops the Batesville Sandstone to road level at the end of the bridge.



92.1 White River. Continue straight ahead through Batesville.

The valley of the White River in this area and the City of Batesville are situated on a graben surfaced mostly by Batesville Sandstone. Across the bounding fault to the north, quarries yield limestone of Ordovician, Silurian, and Mississippian age. Use of the stone includes agriculture limestone, building stone, "marble" and aggregate.

93.5 Junction Highway 167 and 233.

Powell Motel and Restaurant\*, on the north edge of Batesville, will be the assembly point for the trip Saturday morning.

End of log to assembly point.

\*We recommend the Top Club, rare and the "House Special" honey-French dressing for the salad. If here at Lunch time, don't miss the slaw, hominy, green limas and at any and all meals the fresh rolls.

SIDE TRIP NUMBER 1 ROAD LOG

HIGHWAY 5 FROM JUNCTION WITH HIGHWAY 67-167 TO EL PASO, ARKANSAS

By

Charles G. Stone, Arkansas Geological Commission

Exit from Highway 67-167 onto Highway 5, about 7 miles north of Jacksonville, Arkansas.

- 0.0 Highway 5 bridge over Highway 67-167. This is near the axis of the gently westward plunging Cato syncline. The route ahead drops stratigraphically through the sandstone and shale of the upper portion of the "middle" Atoka. The terms "lower", "middle", and "upper" Atoka are informal--designating distinct lithologic units that have been mapped regionally by Charles G. Stone.
- 1.4 Large quarry on either side of the road. Watch for trucks!
- 1.5 First deep road-cut--the unit being quarried is well exposed. Rocks dip southward about  $20^{\circ}$ . This is the lower unit of the "traceable three" in the upper part of the "middle" Atoka. Note the valley to the north formed in the thick sequence of shale in the lower part of the "middle" Atoka.
- 2.6 Junction Highway 5 and Highway 89. Continue northward on Highway 5.
- 3.0 Crest of hill. Rocks dip southward about  $45^{\circ}$ . These strata are near the top of the "lower" Atoka. For the next  $1\frac{1}{2}$  miles the dip gradually increases toward the axis of the Bayou Meto anticline. Notice graded bedding, bottom marks, and other features characteristic of turbidites and flysch. Most beds--whether sandstone, siltstone, or shale--are laminated; some contain clay pebbles in their lower inch or so.

- 4.6 Bridge across Fourmile Creek. This broad valley is cut in shale (and some sandstone) that probably is of Morrowan age. Faulting and squeezing that has occurred here along the axis of the Bayou Meto anticline is indicated by the presence of dickite along shear surfaces.
- 5.4 Crest of hill. Rocks near the middle of the "lower" Atoka dip northward about 75°.
- 5.6 Mountain Springs Baptist Mission on left.
- 6.3 Bridge over Magness Creek. This wide valley is cut in the thick shale unit of the lower half of the "middle" Atoka. The ridges directly ahead are formed by the resistant sandstone beds of the "traceable three" in the upper half of the "middle" Atoka.
- 7.4 Road breaks out of the ridges into the flat underlain by "upper" Atoka in the broad Conway syncline.
- 8.8 Bridge over Cypress Bayou--entering White County from Lonoke County.
- 9.9 Round Mountain to the west is along the axis of the Conway syncline. Coal in thin beds, beneath the "upper" Atoka units of sandstone on this mountain, has been mined for local use.

The south-north distance along the relatively straight highway just traversed from the axis of the Cato syncline, across the Bayou Meto anticline, to the axis of the Conway syncline is nearly 10 miles. The linear (east-west) extent of these structures is in excess of 30 miles. The dip near the synclinal axes is gentle; the dip near the anticlinal axis is steep. The stratigraphic thickness from oldest to youngest rock exposed is more than 12,000 feet.

Notice pimple or prairie mounds that occur in alluvial material along the small drainages in this area.

- 11.8 STOP sign! Junction Highway 5 and Highway 64. Proceed with caution! El Paso Dairy Bar on the right.

This is the north flank of the Conway syncline. The next ridges to the north are the "traceable three" dipping southward about 25° on the south flank of the Cadron anticline.

End of Side Trip