

JACKSON COUNTY.

This county is of rectangular shape. The East Fork of White river enters at the northeast corner and flows through it in a southwest direction, forming two triangular shaped districts, which are, for the most part, totally unlike in topography and geological features.

In the southeast district, the country is mostly rolling, with low sandy hills fifty to one hundred feet high. An exception to this is seen in a short range of knobs south of Brownstown and a range of sandy-clay hills southeast of Seymour, called Chestnut Ridge. The Knobs at Enoch Baughman's south of Brownstown have an elevation of about 360 feet above White River. The Chestnut ridge, at the old burying ground near A. H. Adams' house and on John Clark's land, is 165 feet above the bed of Mud creek, which will make it about 200 feet above the river. This is said to be the highest part of Chestnut Ridge. The bearing of this ridge is a little east of north and west of south. The ridge proper is called seven and a half miles long and an average of one mile in width. Though it may be traced north of the railroad and beyond the county line, it is not well defined and loses the name of Chestnut ridge after passing north of Mud creek. In the ridge proper, there are four depressions or gaps which cross it at right angles.

White river bottoms are wide and bordered by sand ridges and terraces as shown on the map.

The northeast district of the county is broken and traversed in a northeasterly and southwesterly direction by

ridges that have an average elevation of 280 feet above the plains and which, in places, spread out into broad table lands. The valleys through which the small streams find their way to White river are generally narrow. In the vicinity of Sparksville and Weddlesville, there are beds of loose sand, thirty feet or more in depth, that cap the solid beds of Knob shale and sandstone at an elevation of 280 feet above White river. Sand occupies a similar elevation in the ridge near the village of Vallonia on the south side of White river. These sand deposits have the same bearing as the course of White river, but, I do not believe that they owe their origin to the cutting and shifting of the bed of that stream, as will be further alluded to, when speaking of geological changes which took place during the Quaternary period.

The Muscatatuck river and its large tributary, Graham's creek, flow in a southwesterly direction and nearly parallel to White river, until it reaches the south boundary of the county and from thence in a west course to its junction with the latter stream, at a point where its course, also, turns at a right angle to the west. All the northern tributaries of these two principal streams in the east half of the county have the same general direction.

These striking phenomena must be mainly due to geological changes which transpired during the Glacial and Champlain eras.

The head waters of Salt creek in the northwest corner of the county, have their courses determined by the Knobstone ridges and the cause is probably referable to another set of geological forces.

GEOLOGY.

A horizontal section of the geological strata of Jackson county, is given on Plate 10. This section commences at the crop of Black Shale on East Fork of White river one mile above Rockford, and passes through the county in a southwest direction and from thence continues along the

Section from the west edge of Martin Co. to Rockford in Jackson Co., passing on or near

Ohio & Mississippi Railway.

MARTIN CO.

LAWRENCE CO.

JACKSON CO.

Shoals.

Huron.

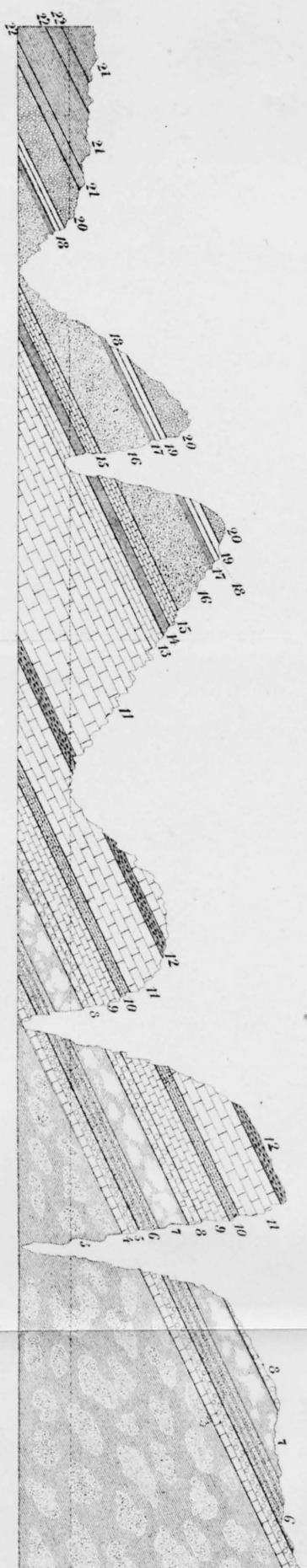
Mitchell.

River Valley.

Fort Ritner.

Sparks Ferry.

Pea Ridge.



21 Coal measure Shales
22 Coal seams

16 Chester sandstone 70 ft.
17 Shale 20 ft.
18 Iron Ore 5 ft.
19 Kaolin 6 ft.
20 Conglomerate 100 ft.

11 St. Louis limestone 220 ft.
12 Chert bed in limestone 10 ft.
13 Gray limestone 16 ft.
14 Shale 8 ft.
15 Blue limestone 16 ft.

6 Sandstone & shale 20 ft.
7 Tremular shale 40 ft.
8 limestone & graptolites 15 ft.
9 Gray limestone 30 ft.
10 Oolite 10 ft.

the line of the

KSON CO.

Baughmans.

Brownstown.

Shields Mill.

Rockford.



- 1 Black Shale 20 ft.
- 2 Goniatitic bed 10 ft.
- 3 Knob stone shale 340 ft.
- 4 Lime stone 4 ft.
- 5 Gode bed 15 ft.

line of the Ohio and Mississippi railroad to the Coal-measures in Martin county. While the general dip of the strata is at the rate of about thirty feet to the mile in the direction of this section, still, at many crops of the strata, it is difficult to recognize any dip at all.

The Black Shale, Fig. 1, is the oldest formation seen in the county. Its thickness has not been determined, for the bottom is not exposed and the greatest depth seen is at a locality about one mile above Rockford on Sec. 32, T. 7, R. 6.

The section is here :

Sandy soil and sandy clay.....	40 ft.
Clay, with a few small granite boulders and pebbles.....	30 ft.
Black Shale, with large masses of calcareous concretionary stone to the bed of the river	20 ft.
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Total.....	90 ft.

The water was five to six feet deep at the foot of the section and the shale appears to continue across the bed of the river. It is found in wells as far north as the county line. The next crop of this formation along the line of the section, is at Rockford. It is only possible to see it here at extreme low water. In digging the tail-race for the water-mill, which was recently destroyed by fire, a quantity of Black shale was thrown out and in it I succeeded in finding quite a number of small *Lingula* and *Discina*, which if not identical, resemble very closely species which are found in the carboniferous rocks.

The western boundary of the Black shale is represented on the map by a dotted line which passes near Newry, where the crop is seen in the bed of Muscatatuck creek, Langdon and Crothersville. A bituminous shale, similar to this, occurs in northern and eastern Ohio, and is there

referred, by Dr. Newberry, the able director of the Geological Survey of that State, to the Portage era; strata which, in New York, follow the Genesee in regular order. The fossil Brachiopods that have been found, in a good state of preservation, in this latter shale at Lexington Scott county, are considered by Whitfield, to be ample evidence for referring this shale to the same geological age as the Genesee of New York, with which opinion I am inclined to agree.

The following named fossils have been found in the Black shale at Lexington :

Leiorhynchus quadricosta,
Chonetes lepida,
Tentaculites fissurella,
Lingula and *Discina*.

The section of the rocks given on Plate 10, page 42, ends with the Black Shale at Vienna and it is readily traced by crops from Lexington to Rockford.

The Chemung and Catskill groups forming the upper members of the Devonian, and several hundred feet thick in New York and Ohio, are, as far as we know at present, entirely wanting in Indiana, and we come at once in the ascending order to the Kinderhook group which lies at the base of the Carboniferous formation. In his Geological Reconnaissance of Indiana, published in 1837, the late David Dale Owen gave to this formation the name of *Sub-carboniferous Sandstone* or *Knob Sandstone*, but since there are beds of sandstone and siliceous shales of very great thickness at a higher horizon and near the top of the the Sub-carboniferous period, Mr. Worthen of the Illinois Geological Survey, has thought best to substitute for Owen's name, that of Kinderhook group, and for the upper arenaceous beds, Chester Sandstone group.

Though the names given in the Illinois Reports are now generally adopted, I can see no good reason why Knob Sandstone or Shales, by which name the beds have so long been known to western geologists, should have been pushed

to one side for its reception ; indeed, Knob, or Knob Sandstone group has the advantage, it is derived from a striking topographical feature due to the lithological character of the strata.

The Kinderhook beds in Indiana, are made up of marly shales, arenaceous shales and sandstones, with two or more beds of geodes associated with or replacing beds of roughly weathering entrochital limestone.

The geodes first make their appearance along the line of the horizontal section on top of the ridge at Enoch Baughman's house, then at Pea Ridge and Sparksville. Just before reaching the county line there is a bed of gray limestone and chert containing fossils belonging to the Keokuk era. On Sec. 11, T. 4, R. 2, E., this entire formation is overlaid by a bed of St. Louis Oolitic limestone that is quarried at Dixon's, in blocks of large dimensions, for building purposes.

There is usually seen in Clark and Scott counties, resting immediately on the Genesee shale, a few inches of hard green mottled limestone. This limestone, at Rockford, passes upward into greenish gray, hard, calcareous shale, filled with fossil cephalopod shells, in a fine state of preservation. The *Goniatites* and *Nautili* of this locality are among the most interesting fossils found in the country. They are eagerly sought for by collectors and have given to Rockford a world wide notoriety. The rock is easily decomposed when exposed to the air and its fossils are found ready weathered out on the newly exposed surface after floods in the river.

The children of the village keep a sharp look out for them and the crop, which is only two or three feet thick and from one hundred and fifty to two hundred feet long, is diligently searched from day to day after each freshet or heavy rain. Large numbers are collected and sold, for what they can get, to the scientists who are attracted to the locality. They go by the name of "snake rocks" and if you ask for *Goniatites* or *Nautili*, as I did, you will be told that

they know nothing of such things, but on the other hand if you inquire for "snake rocks" as my friends Messrs. Gardner and Charles, of Seymour, who understood the matter, did, you will find that nearly every boy and girl in the village will have a few and are ready for a trade.

The best known fossils occurring in the Goniatic bed at Rockford are: *Nautilus trisulcatus*, M. & W., *N. digonus*, M. & W., *Goniatices Lyonii*, M. & W., *Bellerophon crytolites*, Hall, *Cardiopsis radiata*, M. & W. There are other species found which I believe to be new. As yet this is the only locality in the State where the above species of cephalopods have been found, though the corresponding strata of greenish, marly shales have a thickness of from fifty to one hundred feet or more in Clarke county. One mile above Rockford, there are in the upper part of the Genesee shale, large concretionary masses of calcareous rock which may in part represent the Goniatic bed, but they contain no fossils.

The Black shale and Goniatic bed, by a slight dip to the southwest, is carried beneath the surface before reaching Shields' Mill, seven miles west of Seymour.

The section at Shields' Mill exhibits:

Sandy loam and clay.....	15 ft.
Glacial gravel and occasional small boulders.....	20 ft.
Arenaceous shale and sandstone with nodular iron stone	70 ft.
O. & M. railroad track.....	0
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Total.....	105 ft.

The hills skirting around Brownstown come to the river at Shields' Mill and are from one hundred to one hundred and thirty feet high. It is possible that the greenish shales, of which the Goniatic beds forms the base, are

partly represented by the arenaceous shale in the above section. The latter shales have, mixed in the bed, disconnected bands of earthy carbonate of iron that carry about the same per cent. of iron as the carbonate regularly stratified in the Goniatite shales of Clarke and Scott counties. The arenaceous, reddish brown shales are seen on all sides of Brownstown, where not covered by the Quaternary deposits, and weathered lumps of iron stone are so common in the bed of Hough's creek, that parties were induced some years ago to undertake the construction of a Catlin forge to work it into swedged iron. The mill race, dug to secure a sufficient fall of water for driving the blast and trip hammer, is still to be seen, but the forge was never built, for want of funds. Catlin forges are only made to pay in inaccessible places, where ore is abundant, easy to fuse and the local demand sufficient to consume the entire yield. In early days such forges were common in the northern part of the State, where they were run on bog-ore. The process is wonderfully wasteful of fuel, which is charcoal, and it can no longer be made profitable in a State penetrated in every direction by railroads, which equalize the cost of labor and food products and introduce iron made by the indirect process at half the cost of swedged iron.

At Enoch Baughman's the knobs rise to an elevation of about three hundred and sixty feet above the East Fork of White river.

The arenaceous shale is seen at the base and the first geode bed makes its appearance on the top. In the latter there are found silicified casts of *Nautili* that are nearly a foot in diameter. They have the local name of "large snake rocks" to distinguish them from the, so called, Rockford "snake rocks" which are much smaller.

We also find in this geode bed a large *Bellerophon* and a number of species of geodized corals and encrinurites. A fossil *Bellerophon* from this geode bed presented to me by Mr. Richard M. J. Cox, measures five inches in diameter and three and a half inches across the mouth.

Section of the Knobs at Baughman's :

Clayey soil.....	
Nautili, geode bed.....	8 to 10 ft.
Vermicular siliceous shale and heavy bedded sandstone, quarried for foundations and chimneys	65 ft.
Encrinital limestone, local.....	1 ft.
Vermicular siliceous shale.....	145 ft.
Covered space containing siliceous shale and sandstone.....	50 ft.
Arenaceous shale with iron stone.....	12 ft.
To bed of Hough's creek.....	
Total.....	283 ft.

The siliceous shales in this section are remarkable on account of the number of vermicular markings which they contain.

These worm tracks have annular sub-divisions and they appear to have been made by two species of worms; one is quite small, not more than five to ten one-hundredths of an inch and the other is larger, being from two to three tenths of an inch broad. These tracks are tortuous and often many inches in length.

The large *Spirifer* so abundant in the Knob shale near New Providence, Clarke county: *Syringothyris textilis*, is rarely found here.

The following section was taken near Josiah Shewmaker's on Pea Ridge, Sec. 32, T. 5, R. 3, E.:

Covered siliceous shales.....	25 ft.	0 in.
Nautili bed, geode and limestone...	10 ft.	0 in.
Bedded gray sandstone.....	20 ft.	0 in.
Vermicular shales.....	40 ft.	0 in.
Geode bed.....	10 ft.	0 in.
Limestone.....	1 ft.	6 in.

Vermicular shales and thick bedded sandstone.....	40 ft.	0 in.
Vermicular shales with bands of sandstone.....	50 ft.	0 in.
Gray arenaceous shale to grade of O. & M. railroad.....	100 ft.	0 in.
	—	—
Total	296 ft.	6 in.

In this section we have two well defined geode beds, and each associated with a thin band of limestone; the latter is largely made up of encrinite stems and fragments of undistinguishable shells. Many of these geodes are more than a foot in diameter and run from that down to sizes not larger than a walnut. Some are solid but they are generally hollow and contain chalcedony crystals of many forms and colors. They are in such numbers that the hillsides and beds of all the branches are lined with them. Every specimen that is broken exhibits some new beauty so that one only ceases to collect from an inability to carry and take care of them.

These geodes, like the porcelain clay of Lawrence county, before alluded to, occupy the place of a limestone which has been removed by the chemical action of water, that held silica in solution. By an interchange of constituents through chemical affinity, silica was precipitated and the lime carried off in solution. In the case of the porcelain clay, which is a silicate of alumina, the latter earth was originally in solution with the silica. At some localities, where the geodes abound, the limestone is entirely removed.

Pea Ridge is also known as the "Carr Settlement." Though there are a few gaps, still, this ridge may be followed to the northern part of the county. But Pea Ridge proper is only about seven and a half miles long in a

northeast and southwest direction and a few hundred yards in width.*

On Guthries creek, Section 18, T. 5, R. 3, there is, in a narrow and deep ravine leading down to the creek, an exposure of heavy bedded, gray, sandstone which shows a face of twenty feet above the talus; good ledges of this stone are seen for some distance down the stream. Geo. W. Carr informed me that the stone used in building the abutments to the railroad bridge over East Fork of White river, at Woods ferry, were taken from the quarry on Guthries creek. It has also been used in building foundations and chimneys. When not subjected to too many sudden changes from wet to dry this stone may answer a very good purpose for masonry. The color is pleasing and it works easily under the chisel and hammer. Before reaching the top of the ridge we encounter a geode bed which is particularly rich in fine cabinet specimens.†

Just above Sparksville, where the ridge terminates in a bold escarpment on the river, there is a fine exposure of the Knob shales and sandstone, and the rocks of which it is composed have been weathered and washed bare from the summit, which is capped with sand, to the waters edge; a

*Hon. Geo. W. Carr, who lives on this ridge, is an intelligent and well to do farmer. He has represented his county many times in the State Legislature and was President of the Constitutional Convention which assembled in 1850. His brother Hon. John F. Carr and his son Geo. W. Carr, Jr., also live on Pea Ridge. Hon. John F. Carr has also represented his county in the Legislature and was a member of the Constitutional Convention of 1850. The father of these distinguished citizens moved from Mercer county, Ky., and settled in Clarke county, Ind., in 1804. He moved from Clarke county in 1808 and built the first house on Pea Ridge. Hon. Geo. W. Carr was born in 1807 and is now a hale, stout man able to do as much work on the farm as any of the younger hands. Josiah Shewmaker is the oldest man on the ridge and came to the county in a very early day, but first lived on his farm on the river bottom.

†Geo. W. Carr, Jr., has very obligingly collected and sent to the State Cabinet a barrel of beautiful crystallized geodes from Pea Ridge.

road around the point had to be blasted out for the railway track ; the order of succession is :

Sand.....	30 ft.
Vermicular siliceous shale.....	70 ft.
Vermicular shale containing three bands of sandstone, respectively 8, 7 and 18 inches thick.....	25 ft.
Buff limestone.....	4 ft.
Vermicular shale.....	31 ft.
Vermicular, siliceous shale with six bands of hard bedded sandstone.....	110 ft.
Shale with thin, irregular bands of oxide of iron.....	10 ft.
Bed of East Fork of White river.....	
Total	280 ft.

This section differs but little in the general character of the strata from the section at Shewmaker's. There are no geodes associated with the limestone and the latter rock is much thicker than it is at the latter locality. A peculiar feature of this section is the heavy bed of sand found at the top of the ridge, to which attention will be drawn when speaking of the Quaternary.

Clear Spring village is located on a broad table land underlaid by :

Soil, subsoil and clay.....	10 to 15 ft.
Quicksand in places.....	
Thin band of limestone.....	0 ft. 4 in.
Chert bed.....	5 ft.
Gray and buff sandstone.....	30 ft.
Geode bed and thin limestone.....	8 ft.
Vermicular shale.....	72 ft.
Siliceous, vermicular shale and argo-siliceous shale with iron- stone	145 ft.
Total.....	275 ft. 4 in.

The heavy, bedded sandstone near the top of the section is quarried for foundations and chimneys to houses and for walling wells.*

Section at the ford on Salt creek in Section 14, T 6, R 3:

Covered, to top of hill.....	80 ft.
Gray shale.....	5 ft.
Band of ferruginous sandstone	0 ft. 2 in.
Shale.....	1 ft. 0 in.
Band of brown sandstone.....	0 ft. 3 in.
Brown arenaceous shale.....	2 ft. 0 in.
Band of brown sandstone.....	1 ft. 0 in.
Siliceous shale.....	4 ft. 0 in.
Band of brown sandstone...1 ft. 6 in. to	4 ft. 0 in.
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	97 ft. 5 in.

The bands of sandstone in the above section are of a handsome dark brown color and the stone, where exposed to the air, has become very hard and rings under the hammer. It will make a handsome and durable building stone, but, without railroad communication, it is rather inaccessible to market. A similar stone is seen at Findley's Mill, on Salt Creek, in the northwest corner of the county.

The ridges on each side of Muddy fork of Salt creek are composed of knob stones and vermicular shales. One or two geode beds are found throughout the northeast part of

*While sitting in Mr. Browning's store at Clearspring, during a rain storm, the lightning struck a wood-house on the opposite side of the street and about forty yards distant. The house is of one low story, weather boarded, and has a shed roof covered with boards. The electricity did not touch a cherry tree, the limbs of which partly overhung the house, nor the roof itself. It struck a poplar stanchion on the inside of the house, about six inches below the roof and shivered it to pieces and tore off some of the side plank. Another stanchion, on the same side of the house, but some distance off, was also splintered, and a corner and two side posts on the opposite side; it then passed away without doing any further damage. The tree and outside of the house were saved by being wet; the water gave conductive properties to the wood.

the county with, occasionally, an accompanying thin band of limestone. The ridges are from 280 to 320 feet high.

At the crossing of the Brownstown and Bloomington wagon road, in the bed of Muddy fork, there is a gray arenaceous shale containing concretions of pyrites.

The section is:

Alluvial bottom	4 ft.
Hard, brown sandstone band.....	3 ft.
Arenaceous shale	6 ft.
Bed of creek.....	—
	—
	13 ft.

At low water, several salt springs can be seen, which break up from the bed of the creek. Thirty-five years ago a company sunk a well to this brine. The mouth of the well was below the overflow and it was not carried to any considerable depth. The brine did not prove to be very strong; twenty-five or thirty kettles were set and the manufacture of salt was prosecuted on a small scale for some years. The well has long since been filled up and the manufacture abandoned, but it is highly probable that stronger brine could be reached by boring down to the Genesee shale which might be reached here at from 100 to 150 feet.

The brine breaking up from the bottom of the creek, is so much contaminated with fresh water, that it is impossible to tell any thing about its strength, nor could I learn how many gallons of it were required to make a bushel of salt. The strata seen in the bank of the creek are dipping three degrees nearly north.

In the bed of Little Salt creek at Findley's Mill there is a sand stone which is probably referable to the band seen at the old salt works, and it is overlaid by arenaceous shale and sandstone flags to the top of the hill, in all 180 feet. North of Findley's Mill and just in the edge of Brown county, the ridge attains an elevation of 335 feet above Salt creek. Near the top there is a massive sandstone, in beds,

from three to four feet thick, of a brownish red color. It resists weathering and will prove a durable building stone. On the other side of this ridge is a thin bed of limestone which underlies the building sandstone. The ridges around Houston have the same geological structure: Sandstone at the top, thin geode and thin limestone from one to one and a half feet thick, underlaid by arenaceous and vermicular shale containing bands of sandstone.

Salt springs rise from the bed of Lutes fork of Little Salt creek in many places near Houston. I was informed that some years ago a well was bored on the creek and, after passing through two weak veins, a strong brine was found at a depth of ninety-six feet. An accident happened to the well which shut off the strong brine and the middle brine was used for making salt for some time but the works have long since been abandoned.

The hills and table land in the vicinity of Freeport rise about 150 or 200 feet above Bradens branch of Muddy-fork. Geodes are seen in all the road cuts and on the hill sides and covering the bottoms of all the small streams.

At Andrew May's heading mill, a short distance from Freeport, there are sandstone flags in the bank along the creek, overlaid by arenaceous shale and ferruginous gravel and sand. In the latter bed there are occasionally beds of bog ore; some of this ore is seen in the road cut near Mr. May's dwelling house. It also makes a showing back of his field where several holes have been dug by some unknown adventurers in search of precious metals. Around the remains of a small rude furnace I picked up some fragments of burnt bog iron ore, from which, they, no doubt, expected to extract precious metals.

It will be seen from the foregoing that the Palæozoic rocks of Jackson county are mostly represented by knob shales and sandstone, the equivalent of the Kinderhook beds of Illinois. The limestone and Nautili geode beds in the upper part, may possibly, belong to the Burlington and Keokuk eras.

At Mr. Enoch R. Dixon's quarry, near the southwestern

line of the county the stone quarried is a moderately fine grained Oolite bed which lies above the Nautili geode bed; it corresponds, lithologically with the Bedford, Ellettsville and Spencer Oolite building stone, and is, no doubt, equivalent with the Illinois, St. Louis era. A section taken from the railroad, one and a half miles south, and extending to the school house on the hill above the quarry, contains the following strata :

Red clay and chert with <i>Productus cora</i> , <i>Cyathophyllum rugosum</i>	10 ft.
Gray limestone, covered.....	80 ft.
Rubble limestone.....	2 ft.
Oolite limestone, visible and quarried.....	8 ft.
Gray limestone.....	40 ft.
Red chert and geodes.....	10 ft.
Limestone	3 ft.
Arenaceous shale.....	30 ft.
Sandstone.....	3 ft.
Shale	7 ft.
Sandstone.....	3 ft.
Vermicular shale.....	77 ft.
Gray sandstone.....	8 ft.
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Total.....	281 ft.

The fossils found in the lime stone under the lower geode bed of this section are :

Orthis keokuk, *Spirifer pseudolineatus*, *S. keokuk*? *Pentremites conoideus*, *Productus cora*, *P. striatus*, and *P. sp.*?

QUATERNARY.

The Quaternary rests immediately on the Palæozoic rocks described in the preceding pages. The influence which this era has had in modifying the topography of the country is unmistakable and at the same time difficult to explain in a satisfactory manner.

In the northwest part of the county there is barely a trace of glacial sand and clay, but it is well represented on both sides of White river and with the exception of a few short ridges south of Brownstown, covers the entire half of the county south of the East Fork of White river and is composed of:

Brown, reddish sand.....	10 ft.
Brownish clay mixed with sand, gravel, some small boulders and cherty gravel...	30 to 60 ft.
Total.....	70 ft.

In the northern part of the county the sandy-hills contain :

Sandy clay.....	30 ft.
Clay with some sand, gravel and small granitic boulders.....	40 ft.
Total.....	70 ft.

At Dannatelle's, on Chestnut ridge, we have :

Soil of sandy loam, buff colored clay and sand.....	30 ft.
Red clay and sand with small pebbles of granite and chert.....	38 ft.
Buff clayey sand with pebbles and a few small granite boulders.....	27 ft.
Mud creek.....	
Total	95 ft.

At Mr. Adams' house, on Chestnut ridge, in digging a well they passed through :

Sandy loam soil and subsoil.....	15 ft.
Loose sand.....	10 to 18 ft.

Reddish gravel and sand.....	40 ft.
Coarse gravel.....	4 ft.
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Total	77 ft.

A supply of water is reached in the coarse gravel.

A fine spring breaks out of a reddish gravel bank in a ravine in Mr. Adams' garden sixty feet below the house.

Chestnut ridge, as well as the sand hills to the northeast, are, therefore, all composed of Quaternary beds, the greatest thickness, of which, can not fall much short of two hundred feet.

The moraine of sand, clay and small erratic stones composing these beds, came down from the high divide in Randolph county and from the western border of Ohio. It is most probably the work of a retreating glacier which had its forces divided into several channels by ridges that checked and partially resisted its currents. After passing diagonally through the county to its south boundary the main direction of the moraine is changed from southwest to nearly a west course.

Baughman's ridge formed an island, as it were, between the two moraines in that part of the county. The East Fork of White river and the Muscatatuck flow through valleys that were cut out by the glaciers. In these moraines are found a large number of fragments of erratic limestone and chert, with occasionally small crystalline boulders. At Col. Morgan's near Cannelsburg in Daviess county I found in the moraine, numbers of *Orthis lynx*, *O. occidentalis*, *Rynchonella increbescens*, and other well known Lower Silurian fossils, brought from the Silurian beds in the vicinity of Randolph county and western Ohio.

While the sand beds forming the upper part of the drift have, in some places, an appearance something like the deposit constituting the Loess, yet since it nowhere contains any traces of land or amphibious mollusca that are so common in the Loess, it can not, therefore, with propriety be referred to the latter age.

There exists a tradition among the old citizens of this county, that there was a large granite boulder on Tipton's island in East Fork of White river a short distance above Rockford. Mr. Geo. V. Benton of Brownstown organized a party of gentlemen in Seymour for the purpose of visiting the locality and making an examination of the character of the boulder. Mr. Benton had previously driven me, in his buggy, over the greater portion of the county, and is a gentleman who takes great interest in the mineral developments and general prosperity of his county. After his trip to Tipton's island he wrote me that they were unable to find any rock on the island; but finally heard of a large rock which had been broken to pieces and removed from the river bed, just above the railroad crossing, and used in building the foundation to a house now owned by Mrs. Fischel. He sent me some pieces which he was able to break off the foundation. The stone resembles the concretionary limestone seen in the upper part of the Black shale about a mile farther up the river. Though it is not an unusual thing to find isolated erratics of very great size as far south as the Ohio river, yet I am inclined to think that this large stone had simply remained *in situ* after the shale, which crops out in the bank of the river above and below, had been denuded and washed away. I saw no erratics more than a foot in diameter in Jackson county, and such specimens are very rare.

The wells at Brownstown go to a depth of from fifteen to twenty feet and water is found in a quicksand which is underlaid by argillaceous shale; the upper strata passed through is sandy clay such as is seen covering all the country outside of the Knobs to the south. On a branch of Pond creek in Section 7, T. 4, R. 5, Mr. Kleinmeyer dug a well, at his saw mill, six feet square and twenty-seven feet deep. It passed through alluvium and drift and struck a stream of artesian water, in soapstone shale, which filled the well and ran out at the top in fifteen minutes time. The water is cool and clear as crystal, has a chalybeate taste and leaves a reddish gelatinous deposit on the side of the bold

running branch which it forms as it flows to discharge itself into a tributary of Pond creek.

It is my opinion that an artesian water may be had at a depth of from eighty to one hundred feet, at Brownstown, which is about the difference in level between that place and Kleinmeyers' well. A small bottle of the water was collected and brought to the laboratory for analysis.

It contains :

Bicarbonate of lime,

Bicarbonate of magnesia,

Carbonate of protoxide of iron,

Chloride of sodium.

There is contained in an imperial gallon, (ten pounds, twenty-eight grains of solid matter, of this, three grains were found to be carbonate of protoxide of iron, = 1.064 per cent.

It is therefore a pure chalybeate water, containing no more foreign mineral matter outside of the iron than is commonly found in potable well or spring waters.

In many cases of debility this water will prove highly beneficial as a pleasant, mild and safe tonic.

On the side of the bluff at the termination of the Knobs just above Sparksville, there are large masses of brown red clay (ochre). The color is due to iron derived from chalybeate waters. It is seen in a number of places close to the railroad track. This ochre makes a good and durable paint. The color may be changed, by calcining, to a variety of shades in which red predominates. It lies convenient for shipping on the Ohio & Mississippi railroad and it is not possible to find a better ochre, or more convenient to market.

On the bank of Judah's creek, a branch of Mill creek, in the south part of the county, Sec. 9, T. 4, R. 4, Mr. James Duncan found a large molar tooth of *Mastodon Ohioticus* and obligingly presented it for preservation in the State Cabinet. Other bones were seen, but on exposure to the air they crumbled into dust and could not be preserved. At

Sparksville some years ago the teeth and ribs of a Mastodon were found in the bank of the river and sent to Cincinnati.

I was told that Mastodon bones have been found in other parts of the county but could learn nothing definite in regard to them and do not believe that they have been preserved.

ANTIQUITIES.

Stone axes, arrow points, spear heads, knives, fleshers and other articles of stone, left by the pre-historic people who once inhabited the valley of the East Fork of White river and its tributaries, have been found in considerable abundance in Jackson county. They have mostly been gathered up by collectors from other parts of the country and removed from the State. But through the assistance of Mr. Geo. V. Benton of Brownstown of whose kindness I desire to make especial mention farther on, and the general interest taken in the subject by the citizens, I have been enabled to add a number of valuable specimens to the State collection.

His Hon. A. P. Charles, Mayor of Seymour, contributed two large, grooved, syenite axes; a symmetrically formed green stone plummet; a flat, narrow, rectangular, chloritic slate-stone with two perforations near the centre, and a number of finely shaped flint arrow points.

Mr. J. M. Browning, who lives on Section 28, T. 6, R. 4, contributed a large and handsomely finished green stone axe or celt.

A stone ax of F. M. Swope; a stone pipe of unique pattern but broken, found near Browntown by W. F. Newcomb. Richard M. J. Cox presented a stone ax and some pestles or grinders. Geo. W. Carr presented twenty-five large, finely formed, black flint arrow points of the broad pattern, with long shanks, being a part of a large lot which he plowed up in his field in the summer of 1870. They were arranged in bundles of eight with tips and shafts laid

in opposite directions and the whole buried under about twelve inches of earth. This is a most interesting find, as they appear to never have been in use and were probably buried, in the spot where found, on the eve of a hasty retreat. This locality is on the point of a high spur which stands out on the east side of the main ridge.

Geo. W. Carr, Jr., also presented a number of flint arrow points. Robert J. Esham gave a green stone celt or flesher, a grooved granite ax and some arrow points. Josiah Shewmaker contributed a unique grooved syenite ax. W. H. Sparks, a grinding pestle of gray granite which has a large and peculiar indentation in the lower part, a nether grinding stone and some arrow points. Mr. Wm. L. Alexander, who lives on Sec. 7, T. 7, R. 3, has sent a number of relics, for the collection, to Brownstown, but they have not yet been forwarded. There are also some other relics there for the collection which I can not more particularly mention for the same reason. Edward L. Wells, near Vallonia, presented a syenite pestle or grinder, and Dr. E. T. Finch, a gray granite pestle or grinder.

Though I could find no earthen or stone wall enclosures the numerous mounds that are scattered along the streams give abundant evidence that the district once contained a large population of mound-building people. In the north-east corner of the county on Sec. 33, T. 7, R. 6, there is a large, symmetrical mound thirty-five feet high, one hundred feet long and about sixty feet across the shorter diameter. It is in a short easterly bend of East fork of White River, one hundred steps from the left bank and commands an extended view up and down the stream. The section from the bed of the river to the top of the mound is:

Mound.....	35 ft.
Alluvium	2 ft. 6 in.
Gravel and sand.....	2 ft. 0 in.
Coarse, reddish sand.....	15 ft. 0 in.
Low water.....	0 ft. 0 in.

54 ft. 6 in.

The bank at this point never overflows. One hundred and twenty paces to the south there is a small branch which forms a circuit nearly around the mound, while on the north side a larger branch lies so near as to cut well into its base.

I counted between forty and fifty large forest trees growing on the mound, mostly sugar trees (*Acer saccharinum*,) some beach, poplar and ash. A sugar tree near the top measures three feet in diameter one foot above ground. At the west side of the mound there is a poplar tree which measures seven feet in diameter, three feet from the ground and estimated to be seventy feet to the first limb.

On the north side of the large branch in Geo. Shilling's old field, I thought I could detect the remains of a number of mounds, but the land has been so long in cultivation that it is difficult to pronounce upon it with certainty. Though it is reasonable to suppose that since the river overflows its banks a short distance to the south and this being the nearest high ground outside of the branches that enclose the great mound, it formed a most eligible site for the purpose. The large mound served the double purpose of an assembly ground for sun worship and a lookout.

A small hole has been, at some time, dug into the top of the large mound but there is no account of any relics being found in it.

A visit was made to the so-called mound between the waters of Mutton Creek and the Muscatatuck River near Newry. It is a hill detached from the spur of a low range of hills that divide the bottoms of the two streams. It lies about a quarter of a mile from the main ridge and the same distance from the Muscatatuck, and sixty steps from Mutton Creek. The long diameter is seventy-six feet, the short diameter sixty feet and the height twenty feet. These measurements were made before it was discovered, in a hole made by the uprooting of a large tree, that the revealed strata corresponded with that seen in the main ridge. I have made mention, therefore, of this isolated hill, not from any scientific interest which attaches to it, but from the fact that it has been so generally recognised as an artificial mound.

When making inquiries about antiquities, in different parts of the county, I was always cited to the above hill as being one of the largest mounds known in the country.

Before discovering that the stratification of the clay and sand in the hill corresponded with that of the ridge, my suspicions were aroused by seeing that it was on a bottom subject to a deep overflow from freshets in the Muscatatuck river. It is only in rare instances that you will find mounds built by prehistoric men on land subject to inundations.

On the east side of East fork of White river, one-half mile from Mahan's ferry and on the south side of the wagon road there is a large mound situated on a low ridge a few feet above overflow. In digging the foundation for a house now standing on the mound a great many human bones were found. Human bones were also thrown out in digging the well and in digging post holes. Though I noticed this mound while passing along the road, it was not until Dr. Wilson of Medora informed me of the above facts that I was aware of any special interest being attached to it. The old dwelling house on Daniel P. Henderlinder's place, two miles south of Medora, is built on a mound. It is on a sandy terrace which borders on the flats. The elevation is about eight feet above high water. The land here has been in cultivation for a great many years which has had the effect to equalize the surface and to partially obliterate the mounds which exist over the entire length of the terrace, which is about a mile and a half long. In some of the mounds of this district human bones have been found together with great numbers of stone axes, celts, and arrow points.

On the very top of the ridge near Sparksville, two hundred and eighty feet above the river, there are still to be seen traces of four mounds in a sandy field that has long since been in cultivation. It is said that they were rich in stone relics but the constant wearing away by the plow had left but little to reward our search, only a few arrow heads were picked up.

On the high ridge which divides the waters of Luts fork from the waters of Muddy fork of Salt creek, one and a

half miles southeast of Houston, I was informed that there are four or more deep mortar holes worn into sandstone, which have shallow traces leading from the top of the cavities to the edge of the rock.

I could hear of many other mounds in the county, but with the exception of the mortar holes above mentioned, which are probably the work of modern Indians, the most important localities and antiquities have been visited and reported upon.

AGRICULTURE.

Few counties in the state can boast of greater agricultural resources than Jackson. About three-fourths of the county is composed of table land and river bottoms and one-fourth clay land and sandy loam. The latter is for the most part in a fine state of cultivation and yields large crops of Indian corn, wheat and other cereals, clover and grass. This character of land though best adapted for Indian corn, is excellent for wheat, while the clay land is best for wheat, but produces also good crops of Indian corn. The sandy land is largely devoted to growing water-melons.

Mr. Richard M. J. Cox, a very intelligent farmer and observing man, has, in addition to fruit, grain and grass, twenty-five acres in water melons. He informs me that it requires about twice the labor to cultivate melons that is necessary for Indian corn. They are planted in hills, made by the hoe, from eight to ten feet apart. Six hundred to eight hundred to the acre is considered a good crop. They are cultivated by running through with a single shovel plow which is followed by a double shovel so as to leave the ground as level as possible. A dry season gives the best yield. The vines are preyed upon by a striped beetle which makes its appearance about the twentieth of May and lasts seven days, they are fought with a mixture of sulphur and ashes or lime; Mr. Cox thinks the best remedy is to cultivate, this drives them over to the neighbors fields. I did not get to see any of these beetles as they were out of

season at the time of my visit and the specimens promised for the determination of the species have not been received. Water melons commence to ripen about the middle of July and run to the middle of September. The first ripe bring a fine price but the average is about six cents a melon, delivered on the cars at the depot. Thirteen hundred are a car-load and the principal markets are Indianapolis and Cincinnati; from these cities they are sent all over the country. About two thousand acres are cultivated in melons and the revenue derived from this branch of agriculture alone will not fall far short of \$60,000 annually. The clayey soil of the ridges and low table lands is very greatly improved by under-draining and it is gratifying to see that attention is being paid to this all-important branch of farm improvement.

Chestnut ridge is peculiarly adapted to the growing of fruit. The elevation is above the usual line of spring frosts and the warm sandy loam soil gives fine flavor and color to the fruit. There are 85,000 peach trees on this ridge and 75,000 are bearing fruit. The principal growers are:

H. C. Dannetelle	7,000
I. C. Ferris.....	7,000
J. H. Green.....	6,000
John P. Clark.....	6,000
A. H. Adams.....	5,000
Butler & Love.....	5,000
John Cliver.....	4,000
Mr. Collins.....	4,000
Geo. Holinsbee.....	4,000
Wm. Willhouser.....	4,000
Collins & Bro.....	3,000
Nathan Lewis.....	3,000
Abraham Love.....	3,000
Hiram Love.....	2,500
D. Blair.....	2,000
Geo. Cox.....	2,000
Jas. Blair.....	1,500

G. R.—5

H. Girker.....	1,500
Andrew Cox.....	1,000
Wesley Densford.....	1,000
G. Froelich.....	1,000
Jas. Lewis.....	1,000
John Cox.....	500
Jas. Love.....	500

Total.....	75,500
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Peach trees, not bearing.....	10,000
Apple trees.....	10,000
Pear trees.....	3,000
Cherry trees.....	3,000
Plum trees.....	3,000
Quince trees.....	1,000

All kinds of small fruits grow well on the Ridge and attention is being given to their cultivation, especially strawberries, of which they have fifteen acres under cultivation, also three acres of Lawton and Kittatinny black berries.

But no kind of fruit does better than grapes, of which there are 40,500 bearing vines comprising the following varieties :

Ives' Seedling.....	25,000
Concord	5,000
Catawba.....	3,000
Clinton	2,500
Norton's Virginia.....	2,000
Other varieties.....	3,000

The vines are healthy, bear well and the crop never fails. The flavor of the fruit is remarkably fine and wine made from Clinton or Ives' Seedling is equal in flavor, color and body to the best Burgundy wines of France, to which they bear a close resemblance. Indeed, I am fully satisfied that the ridge lands of Jackson county furnish a soil and climate

that is not surpassed by any locality in Europe for the growing of grapes.

Grapes that are not sold in the bunch are made into wine. Though the manufacture of wine is just in its infancy, seventy-two and a half barrels were made this fall, 1874, distributed among six growers as follows:

J. P. Clark.....	40 barrels.
A. H. Adams.....	20 barrels.
H. C. Dannelle.	4 barrels.
H. Girker.....	4 barrels.
George Holinsbee.....	4 barrels.
J. C. Ferris.....	$\frac{1}{2}$ barrel.

The Jeffersonville, Madison & Indianapolis Railroad have built a depot at Conway especially to accommodate the fruit growers on Chestnut Ridge. When the peaches are ready for market special fruit trains are run from this depot to Indianapolis, which is the principal market for all the fruit grown in the Knob counties of the State.

Fruit of all kinds is extensively grown on Baughman's ridge and in the Carr settlement on Pea Ridge, also on the ridge south of Freetown.

Enoch Baughman has 3,000 peach trees in bearing and a number of pear, plum, cherry and apple trees; he has also, a fine vineyard, mostly Ives' Seedling, and makes a little good wine. He ships his fruit to Indianapolis.

On Pea Ridge, Hon. George W. Carr has a fine peach orchard of 1,200 trees, that is made in old worn out land.

Geo. W. Carr, jr., has an orchard of 750 peach trees set out last spring. Andrew Holmes, 2,500; John W. Owens, 500; J. Trueblood, 500; Thomas J. Plummer has a large orchard of pears and cider crabs. Jeremiah S. Tanner has an orchard of 700 Hughes' crabs just in bearing. Besides the above there are a great many other farmers who have turned their attention to the cultivation of grapes and orchard fruit: peaches, pears, apples and cider crabs, but I failed to obtain their names.

Enoch Baughman was the first person to plant a peach

orchard on the Knobstone ridges, and the marked success which has attended his pioneer work has given an impetus to fruit culture, which is rapidly developing into one of the most important agricultural interests in the county. The sale of fruit from this county in 1874, did not fall short of one hundred thousand dollars.

With but a few unimportant exceptions the entire crops are sold in Indianapolis.

The following list comprises the favorite varieties of peaches grown on the knobs, and are given in the order of their ripening.

- 1, Hale's Early.
- 2, Troth's Early Red.
- 3, Honest John.
- 4, Crawford's Early.
- 5, Yellow Rare Ripe.
- 6, Old Mixon Free.
- 7, President.
- 8, Royal Kensington.
- 9, Red Cheek Melocoton.
- 10, Grosse Mignonne.
- 11, Stump the World.
- 12, White Imperial.
- 13, Heath Free.
- 14, Heath Cling.
- 15, Smock's Free.
- 16, Noblesse.
- 17, Late Yellow Admiral.

In order to secure the best crops and finest flavor to the fruit, all the orchards in the knob region of the county should be underdrained with tile. This will render the soil porous, mellow and warm. Air charged with moisture and ammonia will be drawn through the earth into the drains and, circulating around the roots, supply them with air and food through the chemical decomposition which it induces in the soil. Much of the blight in fruit trees is due, in my opinion, to the want of a properly underdrained soil.

It is likewise asserted that the soil should be under-drained if it is desired to raise large crops of grain or grass.

It is gratifying to see that a few farmers in the county have commenced to under-drain, and it is to be hoped that the good results which it will develop may lead others to follow their example. It is a never-failing sign when you find a field pierced by crayfish holes that there is a stratum of water resting on the sub-soil. These animals live in the water below and cut holes to the surface, which serve the double purpose of furnishing light and a pit-fall to entrap food. It is a useless waste of time and money to undertake to cultivate such land without it is first properly under-drained.

TIMBER.

Jackson county was formerly covered with a dense growth of forest trees, such as are usually found in this latitude. On the river bottoms and Champlain terraces the principal trees are Poplar, Black walnut, White oak, Overcup oak, Black oak, Water oak, Beech, Sugar maple, Water maple, Ash, Hickory, Elm and Sycamore. On the knobs and high table lands, Chestnut oak, White oak, Red oak, Chestnut, Sweet gum, Hickory, Poplar, Black walnut, Beech and Sugar tree or hard maple, the latter mostly on the hillsides and in the ravines.

There are no less than eighteen saw mills at this time engaged in cutting lumber and making barrel heads and staves. Among the most noted saw mills for making lumber are Gleason's mill, cutting daily from 4,000 to 6,000 feet of poplar; Thomas' mill, making from 4,000 to 6,000 feet of beech, gum and oak; Spraytown mill, cutting poplar, oak, etc.; Courtland mill, running on poplar and walnut; mill near Shields, poplar, walnut and oak; May & Welch's mill, Freetown, principally poplar; Houston mill, assorted lumber; Kleinmier's mill, poplar and walnut. There are ten or twelve mills each cutting daily from 4,000 to 7,000 pieces of barrel timber. A mill four miles northeast of Seymour is cutting plow handles, plow beams, hoe handles, wagon wheel felloes, chair stuff and shingles.

At Seymour there is a mill and factory for making vast numbers of wagon and buggy spokes, grain cradles, mowing scythe snaths, etc. The spokes are prepared for the Chinese market by giving them a fine polish and finishing with a coat of beeswax to prevent the grain from being raised by the damp atmosphere to which they are subjected on a long sea voyage. The hickory wood of this State, I am told, is prized above all other for wagon spokes, tool handles, etc. The principal markets are Hartford, Boston and New York.

Now, notwithstanding the rapid consumption of trees by the many mills and wood industries, there still remains on much of the uncultivated lands, forests of noble trees. In the south part of the county there are to be seen standing, immense poplars and black walnuts. On T. F. Belding's land, Sec. 15, T. 4, R. 5, I measured four poplar trees that stood within a few feet of each other; the largest was thirty-eight feet in circumference three feet from the ground, one hundred and twenty feet high, and about sixty-five feet to the first limb. The others were, respectively, eighteen and a half feet, eighteen feet and seventeen feet in circumference at three feet from the ground. On the same farm a red elm measured eighteen feet in circumference. A poplar standing near Mr. Belding's house is twenty-one and a half feet around.

On Chestnut ridge, in Mr. John W. Clark's vineyard, I measured a chestnut stump which is nine feet two inches in diameter. These are the largest trees that came under my notice but it is common to see large trees still standing in various parts of the county. The knobs in the northwest part of the county are particularly noted for supporting fine forests of chestnut oak. These trees flourish upon the most rugged sides of the ridges and furnish the numerous tanneries of the district with their supply of "tan-bark."

In the Carr settlement, on Pea Ridge, there are a number of large poplar, oak and black walnut trees standing as witnesses to the former grandeur of the point. On the Hon. Geo. W. Carr's farm I saw the singular phenomenon

of the limb of a dog-wood tree which was bent to the ground and had taken root and was growing vigorously. The parent tree is eight inches in diameter and the Banyan-like limb two inches. This is the more remarkable, since it is difficult to transplant a dog-wood and have it grow under the most favorable treatment.

MINERALS.

The principal minerals of economical value, in the county, are, building stone, brick-clay and ochre. The heavy bedded, buff and gray colored sandstone, which occurs under the nautilus-geode bed in the knobs, can be quarried in good sized blocks at Baughman's, Sharpsville and at Rockcastle on Pea Ridge. This stone is easily worked, looks well and may be used in the construction of foundations to houses, but can not be looked upon as a very desirable stone since it is liable to crumble when exposed to the action of frost.

The Oolitic limestone, which is found of good thickness in the western part of the county, is a handsome and durable building stone; the color is whitish gray, it works easily under the hammer and chisel and is susceptible of high ornamentation. Mr. Thomas Dixon has opened a quarry for working the Oolitic stone, one and a half miles north of the O. & M. railroad on Sec. 11, T. 4, R. 2. He employs a number of stone cutters who are engaged in the manufacture of tombstones, sills and lintels for doors and windows, etc., etc. The foundation and other stone work in the excellent Court House at Brownstown is of stone from this quarry. It also furnished the stone for abutments and piers to the superb bridges built across White river at Seymour, Brownstown and Courtland crossing. These bridges were built by Mr. J. J. Daniels of Rockville who makes a specialty of this kind of work. Mr. Daniels has great confidence in the strength and durability of Dixon's stone and speaks in high terms of the facility with which it may be worked into required shapes.

Clay suitable for common bricks is found in most parts of the county ; but I saw none that can be considered of the best quality in close proximity to the principal towns. As a general rule the common clays do not make the best bricks.

MANUFACTURES AND IMPORTANT TOWNS.

The leading industries of the county in the way of manufactures are : Mills for making lumber of which there are seven or eight. Ten or twelve mills for cutting barrel headings and staves. Eight or ten establishments for tanning and dressing leather. Nine grist mills. Two large establishments for manufacturing wagon spokes, grain cradles, etc., etc. A large mill four miles northeast of Seymour, on the O. & M. railroad, for making tool handles and other kinds of wood work, and a small rolling mill at Seymour engaged in rolling scrap iron into rods and bars for the large machine shops of the O. & M. railroad.

BROWNSTOWN, the county seat, is a very pleasant town of about 1000 inhabitants, and has a large and handsome Court house. It is one mile from the O. & M. Railroad and elevated about sixty feet above the track. Ewing is the name of the depot ; the two may be considered as one town. It contains a number of mercantile houses which are doing a good business.

SEYMOUR, situated at the crossing of the O. & M. and the J. M. & I. Railroads, is a city of about 4000 inhabitants. It is in a highly prosperous condition, being by far the most important business center in the county. Besides the manufactures already alluded to, there are a number of minor establishments, cabinet, boot and shoe, blacksmith shops, etc., etc. This city is surrounded by a fine agricultural country and is the centre of an extensive grain trade. It sustains a bank and a great many mercantile houses, some of which do a wholesale business. The dwelling houses at Seymour are tastefully built, have well kept grounds and the

city contains as intelligent, genial and hospitable a people as can be found in any city of its size in the State.

Some years ago this place obtained considerable notoriety on account of the hanging of a few desperadoes, but forbearance had ceased to be a virtue and an outraged community rose in its might to smite a set of villians against whom the law had failed to be a protection.

ROCKFORD, once an important business town, has, on account of its proximity to Seymour, lost the best part of its trade. It has a world-wide reputation as a remarkable locality for fossil Nautili and Goniatites.

Medora, Vallonia, Shields, Crothersville, Sparksville, Clearspring, Houston, Freetown and Tampico are all pleasantly located villages. Clearspring is noted as having been the seat of a flourishing female seminary. Vallonia was, at an early day, a French trading post and the seat of block-houses and military operations when the State was in the condition of a territory. Maj. John Tipton was in charge of the fort at Vallonia in 1813 and made various marches from that point in pursuit of the Indians who were committing depredations on the exposed settlements. Near this village I was pointed to the spot where the Indians shot and killed a man who was riding along the bluff bank of a small ravine. The horse sprung into the ravine where the rider dropped from his back.*

When the Territorial government was moved from Vincennes to Corydon, in Harrison county, Vallonia came within one vote of being honored as the Capital of the Territory.

CONCLUSION.

In conclusion I desire to assure the citizens of Jackson county of my high appreciation of the kindness which has been uniformly extended to me while prosecuting the survey. Though it is not possible to give the names of all, still I should be wanting in courtesy should I fail to make mention

*See Dillon's History of Indiana, page 521.

of those who so obligingly left their own business to accompany me and aid the prosecution of the work. The Hon. A. P. Charles, Mayor of Seymour, James T. Gardner, Cashier First National Bank of Seymour, A. Andrews, Dr. Jas. H. Green, Samuel W. Stairs, J. H. Andrews and Jas. L. Galbraith of Seymour, were untiring in their endeavors to make my stay at Seymour pleasant and as profitable as possible to the county. Messrs. Charles and Gardner saw that I had a comfortable conveyance and accompanied me to every point of interest in the neighborhood. They also, in connection with Mr. A. H. Adams, his wife and daughter, arranged for a delightful dinner party at Mr. Adams' residence on Chestnut Ridge. There were present, on this enjoyable occasion, besides the above named gentlemen, Mr. H. C. Dannelle, J. P. Clark and Abraham Love, fruit growers on the Ridge; Mrs. G. H. Charlton and Mrs. J. H. Blish of Seymour. On the way to Mr. Adams' place, a section showing the geological structure of Chestnut Ridge was obtained at Mr. Dannelle's orchard and here the party took a rest while enjoying refreshments at Mr. Dannelle's hospitable home.

After partaking of Mr. Adams' sumptuous dinner and taking a look at his fine orchards and vineyards, we made a visit to Dr. Green's large peach orchard, and J. P. Clark's large and well kept vineyard, and after enjoying the kind hospitality of Mr. and Mrs. Clark the labors of a well spent day were terminated by returning to Seymour.

At Brownstown, I met with the same marked attention from the citizens. Mr. Baughman and Richard M. J. Cox piloted me to Baughman's ridge, south of Brownstown, and pointed out the most interesting exposures of rocks. Mr. Thomas J. Bowen, then sheriff of the county, drove me in his carriage to Freetown, Clear Springs, and a number of other interesting points north of White river. Judge Applewhite, Auditor of the county, assisted me on a trip to Mr. Kleinmier's artesian well in the south part of the county. Mr. George V. Benton, proprietor of the Mammoth store in Brownstown, with his characteristic courtesy

to visitors, stowed away in his carriage all the comforts essential to a protracted journey through unexplored geological regions, and drove me over the entire western half of the county.

I am also especially indebted to John Scott, Clerk of the Circuit Court, Hon. Geo. W. Carr, Hon. John F. Carr, Geo. W. Carr, Jr., Robert J. Esham, Colonel Samuel T. Wells, Dr. William Ireland, Jabez H. Nixon, Daniel P. Henderlinder, and his mother Mrs. Ellen Henderlinder, one of the early settlers on Pea Ridge, Josiah Shewmaker, another pioneer settler on the Ridge, Dr. Marshall, V. Wilson, Jno. R. Browning, Daniel B. Dodds, Dr. Geo. W. May, William Alexander and John Cummings, one of the county commissioners. Major Cummings lives on the road from Seymour to Brownstown, and has one of the best kept farms in the county. You approach his residence, which sets back some distance, through an avenue of trees and the grounds are richly adorned with shrubbery and flowers.

PROFESSOR E. T. COX:

State Geologist of Indiana:

DEAR SIR:—Herewith I hand you my report on Geology, etc., of Brown county. I join with you in felicitating the people of Lawrence county, on the deposits of Plastic Clay, which, developed by the opening of the iron beds, were not exposed at the time of my visit.

Yours, etc.,

JOHN COLLETT.

NEWPORT, December, 1874.