

who was appointed April 12, 1853. He published annual reports of progress in 1854, 1857, 1859 and 1861. In 1870, Albert D. Hazer was appointed state geologist; in 1871, Raphael Pumpelly took the position, and his report was published in 1873 by Julius Bien of New York. The most useful service that any of the geological surveys has rendered to Lafayette county will be found in Prof. Pumpelly's work, pages 40 to 59; also, pages 136, 193, 421, and several other places of incidental mention. Those specially interested in mining coal or quarrying stone in this county should study that work. We can only give here a few gleanings of popular interest.

In going from the east line of Lafayette county to Lexington, we pass in succession from the lower to the middle coal measures. At Henry Franke's mine, one and a half miles east of Concordia, or about two miles from the eastern and three miles from the southern county line, the following geological section was noted, belonging to the lower coal measures:

KIND OF FORMATION.	FT.	IN.
Earthy slope, bluff or loess.....	24	0
Sandstone.....	2	0
Pyritiferous limestone.....	1	2
Slate, enclosing pyritiferous concretions.....	5	6
Hard, dull, splintery, semi-bituminous, slaty cannel coal.....	0	3
Bituminous coal.....	1	8
Slate and coal.....	0	2
Fire clay.....	2	6
Clay and sandstones.....	0	0

A coarse, generally thick bedded, brown or buff sandstone, filled with small particles of mica, is found occupying the top of the lower coal series. It is seen near Aullville, on Gen. J. O. Shelby's land. The next place where it was observed, was on the McCausland farm,* two miles north of Higginsville. On this farm occur outcrops of bituminous sandstone, and borings were made to a depth of 800 feet for oil, but without success. Prof. Swallow made a geological section on this farm thus:

Buff and brown marls and clay.....	5 to 50 feet.
Blue and brown sandy shales.....	10 to 50 "
Bluish gray and brown sandstone, the oil stone.....	20 to 50 "
Blue and brown sandy shales.....	3 to 50 "

This oil stone on the McCausland farm is usually so saturated that it shows plainly on fresh fracture, and will burn well in the fire. The petroleum is found as solid asphaltum, breaking with a shiny fracture, as a dark, viscid fluid like tar, and as thin as amber-colored oil. Prof. Broadhead says of this oil rock that he regards it as of the same age as the Berlin sandstone, and that above the mouth of the Tabo, which would ge

*The McCausland farm included parts of sections 25 and 36, township 50, range 23, and sections 30 and 31, range 25.

to prove that there is a northerly dip of about fifty feet in nine miles. In its northern extension this lower coal-measure sandstone crops out at various points, low in the bluffs on the Missouri river, from the east line of Lafayette county to the mouth of Tabo creek. The Berlin sandstone, and that of the McCausland farm, and that at Warrensburg, may all be considered of the same geological age; but only on the McCausland farm was it observed to contain petroleum.

In Prof. Pumpelly's volume there are printed at least twenty-seven geological sections from different places in Lafayette county. We only aim to give such information as may be of interest to the general reader. The geological section at Franke's coal mines, as given above, was taken in 1872, and represents the lower coal measures. The following section was obtained in June, 1881, specially for this History of Lafayette County, at the air-shaft of the Lexington and Kansas City Coal Company's works, about a mile west of Lexington City; workmen were then engaged in sinking the air shaft, and their measurements were mainly relied upon. This section represents the upper coal measures, and its coal vein is by geologists called "the Lexington coal" wherever the same vein is met with:

KIND OF FORMATION.	FT.	IN.
Slope, loess or bluff formation, from mouth of air-shaft to first level of bluff, estimated vertical.....	50	00
Surface soil cut through.....	2	00
Loess.....	15	00
Gravel.....	—	8
Coarse brown sand.....	2	6
Shale (what the miners call soapstone).....	13	00
Dark-blue shell rock.....	1	6
Light-colored, flinty limestone, with occasional small shells, and minglings of calc spar.....	6	6
Shell marl, with nodules of chert.....	1	4
Fire clay.....	2	00
Dark-blue limestone, with shells and calc spar intermingled.....	—	3
Fire clay and soapstone (shale).....	2	00
Coarse, arenaceous limestone (roof of mine).....	6	00
Slate.....	1	6
Coal.....	1	8
Gray clay, varying from 6 inches to 3 feet in thickness.		

In 1872 Prof. G. C. Broadhead was assistant state geologist under Prof. Pumpelly, and examined nineteen different coal mines then being worked in Lafayette county. He found the coal two feet thick at Henry Franke's mine, half a mile north of Concordia, and at R. G. Tucker's mine at Lexington; 23 inches thick in mine east of the stone bridge at Lexington, and 22 inches in Gen. Graham's mine a little way above the stone bridge up Graham's branch. It was 21 inches thick at the Mulky mines, two and a