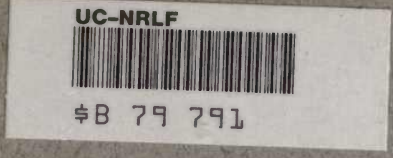


ILLINOIS GEOLOGICAL SURVEY.

ABSTRACT

OF A

REPORT ON ILLINOIS COALS;

WITH

DESCRIPTIONS AND ANALYSES,

AND A

GENERAL NOTICE OF THE COAL FIELDS.

[PUBLISHED BY ORDER OF THE GOVERNOR.]

BY J. G. NORWOOD, M. D.,
STATE GEOLOGIST.

CHICAGO:
CHICAGO DAILY PRESS STEAM PRINTING HOUSE, 45 CLARK STREET.
1858.

Yellow = Alluvial.
Pink = Silurian.
Indian Red = Devonian.
Blue = Carboniferous Lime
or Mountain "
Light Sepia = Millstone Grit.
Dark " = Coal Measures.
Green = Cretaceous.

DIAGRAM
of the State of
ILLINOIS.

Drawn by H.A. Ulffers.

Lith. of Ed. Mendel Chicago Ill.

Illinois Geological Survey

Table II

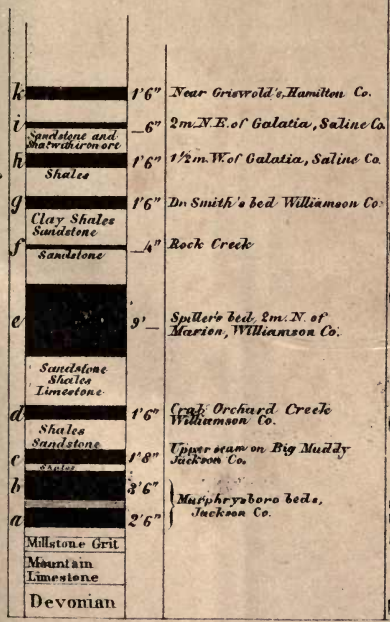
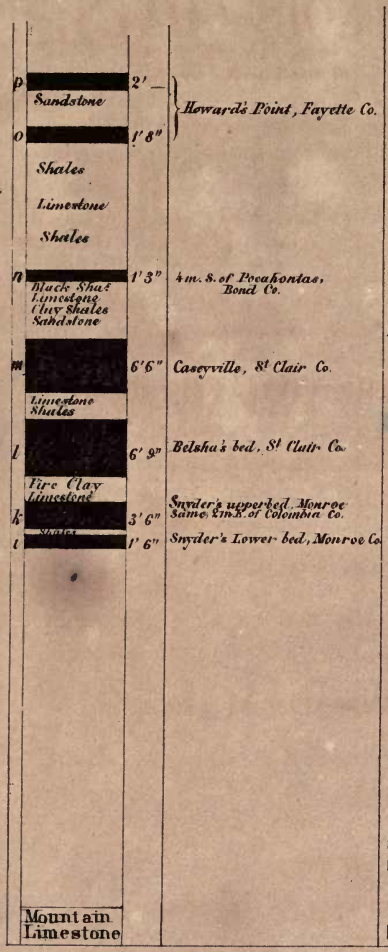


Table I

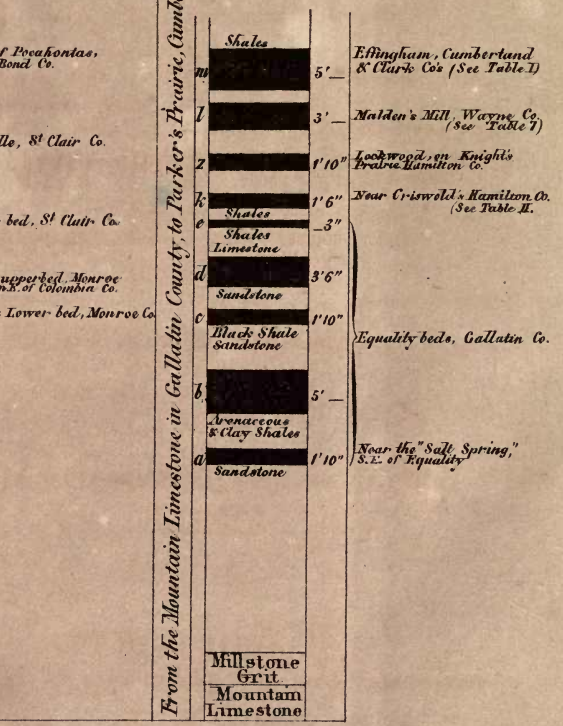
Illinois Geological Survey

Table IV *Table III*

Showing some of the beds from Monroe County to Fayette County



From the Mountain Limestone in Gallatin County, to Parker's Prairie, Cumberland County



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1857.

SPRINGFIELD, ILLINOIS,
August 7th, 1857.

HIS EXCELLENCY, W. H. BISSELL,
GOVERNOR OF ILLINOIS:

SIR:

In compliance with your order to prepare and submit to you, for publication, an abstract of the observations made in the Illinois Coal fields during the progress of the State Geological Survey, I respectfully beg leave to report, that I have attended to that duty.

In the following pages you will find a succinct, but complete, description of every Coal that has been analyzed in the State Laboratory up to this date; together with numerous sections of the rocks with which the beds are associated in different parts of the State.

Hoping that it may prove satisfactory to you, I am, Sir,

With the highest respect,

Your Obedient Servant,

J. G. NORWOOD.

ABSTRACT.

GALLATIN COUNTY.

SALINE MINES. UPPER BED. "LOCK RESERVE."

Bed four feet thick. Overlaid with six inches of black slate, which is capped with a bed of hard bluish-colored limestone, forming a good roof Coal dull to bright; hard; fracture hackly; layers thin; much sulphuret. of iron disseminated through it. Cleaves at angles of 50° and 130°.

Specific Gravity, 1·30
Loss in coking, 39.2
Total weight of coke, 60.8 = 100.0

Analysis:—Moisture,	8·5	
Volatile matters,	30·7	
Carbon in coke,	57·8	
Ashes,	3·0	
		100·0

Carbon in the coal, 66·30

SALINE MINES—UPPER BED.

Thickness, four feet.

Loss in coking, 42·4
Total weight of coke, 57·6 = 100·0

Analysis.—Moisture,	2·6	
Volatile matters,	39·8	
Carbon in coke,	56·1	
Ashes,	1·5	
		100·0

Carbon in the coal, 58·85

SALINE MINES, FIVE FEET SEAM.

Bed five feet thick. Coal hard; compact; bright; occasionally slightly iridescent; fracture hackly; layers thin. Contains thin vertical seams

of sulphuret of iron.—Covered with a roof of dark-colored shale. The floor was not exposed when the examinations were made.

Specific gravity, 1·2925
Loss in coking, - - - - - - - - 40·8
Total weight of coke,- - - - - 59.2 = 100·0

Analysis.—Moisture, - - - - - - - - - 8·0
Volatile matters, - - - - - - 32.8
Carbon in coke, - - - - - - - - 55·5
Ashes, - - - - - - - - - 3·7
100·0

Carbon in the coal, 63·10

SALINE MINES, SECOND BED.

Bed three feet six inches thick. Coal bright; hard; rather brittle; layers thin, and separated with carbonaceous clod. Contains vertical seams of carbonate of lime. Cleavage cubical.

Specific gravity, 1·2892
Loss in coking, 36·8
Total weight of coke, 63·2 = 100·0

Analysis.—Moisture, - - - - - - - - 6·5
Volatile matters, - - - - - 30·3
Carbon in coke, - - - - - - - 55·2
Ashes, - - - - - - - - - 8·0
100·0

Carbon in the coal, 60·7

BOWLES' MINE.—"MASON ENTRY."

Bed three feet six inches to four feet in thickness. Overlaid with a few inches of shale, which is covered with two feet six inches of limestone, forming a good roof. Underlaid with fire clay. Coal hard and compact; bright; in thin layers, with a very small amount of sulphuret of iron disseminated through the joints. Swells up and spatters in coking.

Specific gravity, 1·303
Loss in coking, 39·8
Total weight of coke, 60·2 = 100·0

Analysis.—Moisture, - - - - - - - - - 2.0
Volatile matters, - - - - - - - 37.8
Carbon in coke, - - - - - - - - 53·2
Ashes (white), - - - - - - - 7·0
100·0

Carbon in the coal

EQUALITY.—(LOWER BED.)

This bed is worked in the river bottom, at the old "Hicks Mill." The shaft is about fifty feet in depth. Thickness of the bed five feet. Coal bright; hard; compact; with numerous carbonized coal plants between the layers. Overlaid with black slate. Floor not ascertained, because of water in the shafts.

Specific gravity, 1·2953
Loss in coking, 35·8
Total weight of coke, 64·2 = 100·0

Analysis.—Moisture,	1·2	
Volatile matters,	34·6	
Carbon in coke,	52·2	
Ashes,	12·0	
		100·0

Carbon in the coal, 58·2

EQUALITY.—(TOP SEAM.—"MARTIN'S.")

Bed three feet six inches thick. Coal very bright; hard; compact; fracture even; layers thick, with partings of carbonaceous clod, and occasional vertical streaks of carbonate of lime. Cleavage rhomboidal. Overlaid with black slate, containing nodules and large masses of "bastard" limestone. Underlaid with clay and shales.

Specific gravity, 1·2758
Loss in coking, 41·38
Total weight of coke, 58·62 = 100·0

Analysis.—Moisture,	2·80	
Volatile matters,	38·58	
Carbon in coke,	51·92	
Ashes (drab),	6·70	
		100·00

Carbon in the coal, 62·5

EQUALITY (SAME BED.)

Specific gravity, 1.3054
Loss in coking, 37·7
Total weight of coke, 62·3 = 100

Analysis.—Moisture,	5·7	
Volatile matters,	32·0	
Carbon in coke,	59·8	
Ashes,	2·5	
		100·0

Carbon in the coal, 62·5

EAGLE CREEK MINE.

Thickness of the bed four feet six inches. Overlaid with ten inches of black slate, which is capped with clay shale, overlaid with eight feet of thin-bedded sandstone. Coal, in general appearance, bright; hard; compact; fracture even; layers thick, alternately bright and dull, and occasionally separated with carbonaceous clod. Contains short thin vertical seams of carbonate of lime.

	Specific gravity, 1·2364	
	Loss in coking, 37·0	
	Total weight of coke, 63·0 = 100·0	
Analysis:—Moisture,		1·0
Volatile matters,		36·0
Carbon in coke,		57·2
Ashes (gray),		5·8
		100·0
	Carbon in the coal, 67·01	

SALINE COUNTY.

COAL BRANCH OF BANKSTON CREEK.

Bed seven feet thick. Overlaid with one foot of black slate, and that with seven feet of bluish limestone, forming a good roof. Floor not ascertained. Coal variable, from dull to bright; hard; compact; fracture uneven; layers thick, with thin seams of sulphuret of iron between them. The joints contain, occasionally, vertical streaks of carbonate of lime.

	Specific gravity, 1·2873	
	Loss in coking, 39·8	
	Total weight of coke, 60·2 = 100·0	
Analysis:—Moisture,		5·3
Volatile matters,		34·5
Carbon in coke,		50·6
Ashes,		9·6
		100·0
	Carbon in the coal, 59·0	

"HAYS' MILL."—"LITTLE SALINE."

"At Hays' Mill, on the Little Saline," there is a coal seam in the bed of the creek, thickness unknown, as it has not been cut through. Its roof is a bed of fire clay, twenty-two inches thick. The roof of this bed is sandstone. Dip. 5°. N. W."—*Henry Pratten's Notes*, 1853.

Specific gravity, 1·4955
Loss in coking, 32·40
Total weight of coke, 67·60 = 100·0

Analysis:—Moisture,	4·1	
Volatile matters,	28·3	
Carbon in coke,	57·6	
Ashes (dark red),	10·0	
		100·0

Carbon in the coal, 57·6

WILLIAMSON COUNTY.

DR. SMITH'S MINE.

Thickness of bed one foot six inches. Coal dull; fracture hackly; layers thin, and separated with carbonaceous clod. The vertical joints contain plates of carbonate of lime. There is in this bed a seam of light-colored iron pyrites, which was mistaken for silver by those interested in the land. "Cokes badly."—*H. P.*

Specific gravity, 1·3197
Loss in coking, 39·38
Total weight of coke, 60·62 = 100·0

Analysis:—Moisture,	3·30	
Volatile matters,	36·08	
Carbon in coke,	51·92	
Ashes (reddish brown),	8·70	
		100·00

Carbon in the coal, 56·27

SPILLER'S MINE.—TWO MILES NORTH OF MARION.

Bed nine feet thick, with a band of iron pyrites three inches in thickness near the bottom of the seam. Overlaid with four feet of slate, which is capped with a bed of limestone. This magnificent coal seam has only been worked by stripping. Coal bright; iridescent; brittle to hard; layers thick, and separated with carbonaceous clod. Contains a few vertical seams of carbonate of lime, and a few vertical plates of sulphuret of iron.

Specific gravity, 1·2825
Loss in coking, 43·1
Total weight of coke, 56·9 = 100·0

Analysis:—Moisture,		6·2
Volatile matters,		36·9
Carbon in coke,		54·9
Ashes,		2·0
		100·0

Carbon in the coal, 57·5

JOHNSON COUNTY.

JOEL JOHNSON'S COAL BED.

Coal dull; soft; fracture uneven; layers thin and easily separable, with carbonaceous clod between them. Joints stained with oxide of iron. This bed of coal is exposed in the bottom of a creek in the N W ¼ of Sec 13, T 12 S, R 3 E. Thickness not known. Where it outcrops, it could only be worked by "stripping" for an area of many acres. The coke is good.

Specific gravity, 1·4446
Loss in coking, 25·06
Total weight of coke, 74·94 = 100·00

Analysis:—Moisture,		1·60
Volatile matters,		23·46
Carbon in coke,		47·84
Ashes (white,)		27·10
		100·00

Carbon in the coal, 61·2

JACKSON COUNTY.

MURPHRYSBOROUGH BED.—"BIG MUDDY."

This bed varies in thickness from seven feet six inches to nine feet. It is divided by a seam of black shale, from one foot eight inches to two feet in thickness. The average depth of the coal is six feet. Coal bright; hard; fracture hackly; layers separated with carbonaceous clod. Contains a few short vertical seams of carbonate of lime. Cleavage rhomboidal. Overlaid with twenty-two feet six inches of shales, and underlaid with clay.

Specific gravity, 1·2933
Loss in coking, 37·7
Total weight of coke, 62·3 = 100·0

Analysis:—Moisture,		6·5
Volatile matters,		31·2
Carbon in coke,		60·8
Ashes,		1·5
		100·0

Carbon in the coal,

HAMILTON COUNTY.

SHASTEEN'S MINE.

Thickness one foot six inches. Overlaid with black slate. Floor not ascertained. Coal rather dull, with a few bright spots; hard; compact; fracture even; layers alternately thick and thin. Contains a few vertical seams of carbonate of lime, and a very small amount of sulphuret of iron in the horizontal partings.

Specific gravity, 1·3233
Loss in coking, 38·94
Total weight of coke, 61·06 = 100·00

Analysis:—Moisture,		5·30
Volatile matters,		33·64
Carbon in coke,		53·56
Ashes (pale brown),		7·50
		100·00

Carbon in the coal, 54·85

PERRY COUNTY.

COL. ASHLEY'S DU QUOIN BED.

Thickness of coal six feet six inches. Overlaid with bituminous shale. Underlaid with fire clay. Coal, very bright; hard; compact; fracture even; layers thick, and separated with very thin streaks of carbonaceous clod. Contains a few vertical plates of carbonate of lime, which are, however, very short. Swells up and spatters in coking.

Specific gravity, 1·246
Loss in coking, 48·9
Total weight of coke, 51·1 = 100·0

Analysis:—Moisture		8·5
Volatile matters,		40·4
Carbon in coke,		48·1
Ashes (light gray),		3·0
		100·0

Carbon in the coal, 59·6

MONROE COUNTY.

SNYDER'S MINES.—UPPER BED.

Thickness of coal three feet six inches. Overlaid with a bluish-colored micaceous sandstone. Rests on a bed of white clay. This bed underlies the beds worked at Belleville, St. Clair county. Coal bright and dull in alternating layers; hard and brittle; fracture even; layers alternately thick and thin, with carbonaceous clod between them. The vertical joints contain carbonate of lime, stained with oxide of iron. Cleavage vertical.

Specific gravity, 1·246
Loss in coking, 42·9
Total weight of coke, 57·1 = 100·0

Analysis:—Moisture,	6·7	
Volatile matters,	36·2	
Carbon in coke,	52·6	
Ashes (white),	4·5	
		100·0

Carbon in the coal, 58·7

SNYDER'S MINES.—LOWER BED.

Thickness one foot six inches. Overlaid with seventeen feet of blue shale, which is capped with five feet of blue micaceous sandstone. This is the lowest bed in Monroe county, and underlies the beds worked in St. Clair county.

Specific gravity, 1·2825
Loss in coking, 41·0
Total weight of coke, 59·0 = 100·0

Analysis:—Moisture,	9·0	
Volatile matters,	32·0	
Carbon in coke,	52·2	
Ashes,	6·8	
		100·0

Carbon in the coal, 52·2

ST. CLAIR COUNTY.

CASEYVILLE MINES.—"ILLINOIS COAL COMPANY."

Thickness of coal, six feet. Overlaid with ten inches of slate, which is capped with over five feet of limestone. Underlaid with fire clay. Coal bright; hard; fracture even; layers alternately thick and thin, and separated with very thin seams of carbonaceous clod. The joints contain thick vertical seams of carbonate of lime. This bed is troubled with "horse-backs," and is occasionally interrupted with "clay slips." In some of the entries "creeps" occur. It is one of the best mines in the State, so far as locality and facility for working are concerned.

Specific gravity, 1·304
Loss in coking. 39·8
Total weight of coke, 60·2 = 100·0

Analysis:—	Moisture,	6·0	
	Volatile matters,	33·8	
	Carbon in coke,	55·2	
	Ashes (pale red),	5·0	
			100·0

Carbon in the coal, 55·3

ANDREAS PFEIFFER'S PLACE.

Thickness of coal, eight feet. Overlaid with one foot of bituminous slate, which is capped with six feet of limestone. Underlaid with fire clay. Coal dull on its vertical face; bright and iridescent in the horizontal seams; brittle; fracture uneven; layers thick. It contains a few short vertical plates of carbonate of lime.

Specific gravity, 1·293
Loss in coking, 44·3
Total weight of coke, 55·7 = 100·0

Analysis:—	Moisture,	8·5	
	Volatile matters,	35·8	
	Carbon in coke,	51·2	
	Ashes (red),	4·5	
			100·0

Carbon in the coal, 57·5

BELLEVILLE BED.—VARIOUS OPENINGS.

Thickness of coal varies from six to eight feet. Overlaid with a thin seam of shale, which is capped with four feet of limestone. Underlaid with fire clay. Coal very bright; hard; compact; layers thin, and not easily separable, with a small amount of carbonaceous clod between them. Contains thin vertical seams of carbonate of lime, which are very irregular in their distribution. Coke good.

Specific gravity, 1·268
Loss in coking, 45·0
Total weight of coke, 55.0 = 100·0

Analysis:—	Moisture,	5·5	
	Volatile matters,	39·5	
	Carbon in coke,	49·6	
	Ashes (gray),	5·4	
			100·0

Carbon in the coal, 54·6

BELSHA'S MIDDLE DRIFT.

Thickness of the coal, six feet nine inches. Overlaid with one foot nine inches of shales, which are capped with a bed of limestone. Underlaid with a few inches of fire clay, which rests on a bed of gray marl. Coal bright, with thin vertical seams of carbonate of lime.

Specific gravity, 1·2966
Loss in coking, 43·66
Total weight of coke, 56·34 = 100·00

Analysis:—	Moisture,	8·10	
	Volatile matters,	35·56	
	Carbon in coke,	47·74	
	Ashes (gray),	8·60	
			100·00

Carbon in the coal, 54·50

DILG & KEMPFF'S MINE.

Thickness of the bed, seven feet. Overlaid with three inches of coal shale, which is capped with fifteen feet of limestone. Underlaid with fire clay. Coal (top bed) bright; hard; compact; fracture conchoidal; layers thick. Contains thin seams of carbonate of lime in both the vertical joints and horizontal partings.

(*Top Coal.*)

Specific gravity, 1·2843
Loss in coking, 45·54
Total weight of coke, 54·46 = 100·00

Analysis:—Moisture,		5·10	
Volatile matters,		40·44	
Carbon in coke,		47·66	
Ashes (white),		6·80	
			100·00

Carbon in the coal, 59·09

DILG & KEMPFF'S MINE.

(*Middle Coal.*)

Specific gravity, 1·3847
Loss in coking, 42·38
Total weight of coke, 57·62 = 100·00

Analysis:—Moisture,		4·20	
Volatile matters,		38·18	
Carbon in coke,		49·02	
Ashes (white),		8·60	
			100·00

Carbon in the coal, 54·39

DILG & KEMPFF'S MINE.

(*Bottom Coal.*)

Coal rather dull; hard; compact; fracture even; layers thin and not easily separable, with occasional thin seams of carbonaceous clod between them. Contains thin vertical seams of carbonate of lime. Coke good.

Specific gravity, 1·3531
Loss in coking, 39·63
Total weight of coke, 60·37 = 100·00

Analysis:—Moisture,		4·00	
Volatile matters,		35·63	
Carbon in coke,		36·77	
Ashes (gray),		23·60	
			100·00

Carbon in the coal, 49·38

W. B. CHURCHILL'S MINE.

Thickness of the bed, six feet. Coal bright; hard; fracture even; layers thick, with partings of carbonaceous clod. Contains a few thin vertical seams of carbonate of lime, and thick horizontal ones of sulphuret of iron. Cleavage vertical. The undulation in this bed will not interfere, materially, with its being worked profitably. Overlaid with two inches of clay, capped with three feet of limestone. Underlaid with fire clay.

Specific gravity, 1·315
Loss in coking, 45·40
Total weight of coke, 54·60 = 100·00

Analysis:—Moisture,	6·00	
Volatile matters,	39·40	
Carbon in coke,	45·70	
Ashes (white),	8·90	
		100·00

Carbon in the coal, 52·63

MADISON COUNTY.

JEFFREY'S MINE.

Thickness of the bed, two feet six inches. Coal bright; hard; compact; fracture tolerably even; layers thin, regular, and separated, occasionally, with very thin seams of carbonaceous clod. There is but little carbonate of lime in the joints. Overlaid with eleven inches of black slate, which is capped with shales. Underlaid with fire clay.

Specific gravity, 1·2859
Loss in coking, 48·75
Total weight of coke, 51·25 = 100·00

Analysis:—Moisture,	11·00	
Volatile matters,	37·75	
Carbon in coke,	47·35	
Ashes (gray),	3·90	
		100·00

Carbon in the coal, 51·48

RICHARD CARTLIDGE'S MINE.

Thickness of the coal varies from four feet to six feet. Coal bright; brittle; layers thin, and alternately dull and bright, with occasional sepa-

rations of carbonaceous clod; easily separable in the horizontal partings. Fracture even to hackly. Contains thin vertical seams of sulphuret of iron. Overlaid with six inches of marly clay, which is capped with ten feet of limestone. Underlaid with fire clay.

Specific gravity, 1·3137
Loss in coking, 44·39
Total weight of coke, 55·61 = 100·00

Analysis:—Moisture,	8·30	
Volatile matters,	36·09	
Carbon in coke,	45.01	
Ashes (gray),	10·60	
		100·00

Carbon in the coal, 50·38

CHARLES GROSHANG'S MINE.

Thickness of the bed, from two feet six inches, to three feet. Coal alternately bright and dull; hard; fracture hackly; layers thick, wavy, and separated with thin layers of carbonaceous clod.

Specific gravity, 1·3221
Loss in coking, 37·55
Total weight of coke, 62·45 = 100·00

Analysis:—Moisture,	7.50	
Volatile matters,	30·05	
Carbon in coke,	54·85	
Ashes (brown),	7.60	
		100·00

Carbon in the coal, 56·27

DUNFORD'S MINE — (NEAR ALTON.)

Coal bright; hard; compact; fracture uneven; layers thick, with partings of carbonaceous clod. Contains thin vertical seams of carbonate of lime.

Specific gravity, 1·2587
Loss in coking, 47·26
Total weight of coke, 52·74 = 100-00

Analysis:—Moisture,		5·80	
	Volatile matters,	41·46	
	Carbon in coke,	47·44	
	Ashes (gray),	5·30	
			100·00

Carbon in the coal, 54·62

EMERSON & RYDER'S MINE.

Specific gravity, 1·3191
Loss in coking, 42·60
Total weight of coke, 57·40 = 100·00

Analysis:—Moisture,		10·30	
	Volatile matters,	32·30	
	Carbon in coke,	53·90	
	Ashes (reddish brown),	3·50	
			100·00

Carbon in the coal, 54·39

"WOOD RIVER COAL MINING COMPANY."

Thickness of the bed, six feet. Overlaid with a few inches of clay shale, capped with fourteen feet of limestone. Underlaid with fire clay. Troubled with "horse-backs;" not so much, however, as to prevent the mines from being worked profitably. It is one of the best mines in Madison county.

(*Top Coal.*)

Coal tolerably bright; brittle; layers thin, and separated with carbonized coal plants. Fracture even. Contains rather thick vertical seams of carbonate of lime, and a few streaks of sulphuret of iron between the horizontal layers.

Specific gravity, 1·2916
Loss in coking, 55·3
Total weight of coke, 44·7 = 100·0

Analysis:—Moisture,		11·0	
	Volatile matters,	44·3	
	Carbon in coke,	37·2	
	Ashes (gray),	7·5	
			100·0

Carbon in the coal, 45·45

"WOOD RIVER COAL MINING COMPANY."

(*Middle Coal.*)

Coal bright; brittle; fracture even; layers thin, and not easily separated, with very little carbonaceous clod between them. Contains thick vertical plates of carbonate of lime, and a few thin ones of sulphuret of iron.

Specific gravity, 1·3158
Loss in coking, 50·0
Total weight of coke, 50·0 = 100·0

Analysis:—Moisture,		10·0
Volatile matters,		40·0
Carbon in coke,		42·7
Ashes (pink),		7·3
		100·0

Carbon in the coal, 49·08

COOK'S MINE.

This is the same bed that is worked by the "Wood River Coal Mining Co.," and the appearance of the coal is the same. It differs slightly, however, in composition.

Specific gravity, 1·3017
Loss in coking, 51·15
Total weight of coke, 48·85 = 100·0

Analysis:—Moisture,		8·00
Volatile matters,		43·15
Carbon in coke,		38·85
Ashes (gray),		10·09
		100·00

Carbon in the coal, 47·1.

EDWARDSVILLE MINE.

This bed has not been examined by any one connected with the survey. The specimens brought to the state laboratory are bright; brittle; fracture uneven; layers alternately thick and thin. Contains vertical seams of carbonate of lime.

Specific gravity, 1·346
Loss in coking, 46·85
Total weight of coke, 53·15 = 100·00

Analysis:—Moisture,		10·00
Volatile matters,		36·85
Carbon in coke,		49·75
Ashes (purplish),		3·40
		100·00

Carbon in the coal, 53·07

RANDOLPH COUNTY.

RITCHIE'S COAL BED.

Thickness four feet six inches. Overlaid with limestone. Underlaid with clay. Coal hard and compact; fracture slightly conchoidal. Contains very minute seams of carbonate of lime in the joints, and thin seams of sulphuret of iron, disposed both vertically and horizontally.

Specific gravity, 1·3021
Loss in coking, 46·1
Total weight of coke, 53·9 = 100·0

Analysis:—Moisture,		8·0
Volatile matters,		38·1
Carbon in coke,		50·9
Ashes (very dark gray),		3·0
		100·0

Carbon in the coal, 54·17

CALHOUN COUNTY.

JOHNSON'S PLACE.

Thickness of the bed, two feet four inches. Overlaid with six inches of black slate, passing into gray shale. Floor not ascertained. Coal dull; brittle; fracture tolerably even; layers indistinct; slightly iridescent; joints much stained with oxide of iron, derived, probably, from the decomposition of a sulphuret of that metal. Coke tolerably good.

Specific gravity, 1·2631
Loss in coking, 45·7
Total weight of coke, 54·3 = 100·0

Analysis:—Moisture,		4·8
Volatile matters,		40·9
Carbon in coke,		49·1
Ashes (brown),		5·2
		100·0

Carbon in the coal, 53·06

MACOUPIN COUNTY.

HODGES' CREEK BED.

Thickness of the bed, five feet six inches. Overlaid with one foot of black slate, which is capped with two feet of bluish-colored limestone. Underlaid with shale. Coal bright; hard; compact; fracture uneven; layers thick, with partings of carbonaceous clod. Contains vertical seams of carbonate of lime. Coke good.

Specific gravity, 1·2797
Loss in coking, 43·48
Total weight of coke, 56·52 = 100·00

Analysis:—Moisture,	6·50	
Volatile matters,	36·98	
Carbon in coke,	48·72	
Ashes (brown),	7·80	
		100·00

Carbon in the coal, 53·8

PIKE COUNTY.

HOUSEWORTH'S COAL BED.

Thickness one foot six inches. Overlaid with clay, containing masses of rounded limestone. Underlaid with a bed of bluish-colored clay. Coal rather dull; brittle; layers alternately thick and thin; fracture uneven. Contains a great quantity of sulphuret of iron mixed with coal dust, disposed horizontally.

Specific gravity, 1·2203
Loss in coking, 49·5
Total weight of coke, 50·5

Analysis:—Moisture,	5·0	
Volatile matters,	44·5	
Carbon in coke,	45·5	
Ashes (white),	5·0	
		100·0

Carbon in the coal, 53·2

JACKSON'S MINE.

Thickness of bed one foot six inches, to one foot eight inches. Coal dull; brittle; fracture exceedingly irregular; layers thin, and separated

with carbonized coal plants. This bed is eight miles north of Pittsfield. The analysis was made of a portion of the bed that resembles, in appearance, carbonized wood. The bituminous portion is like Houseworth's coal.

Specific gravity, 1·7784
Loss in coking, 14·1
Total weight of coke, 85·9 = 100·0

Analysis:—Moisture,	2·0	
Volatile matters,	12·1	
Carbon in coke,	56·9	
Ashes (gray),	29·0	
		100·0

Carbon in the coal, 57·5

GREEN COUNTY.

DRAKE'S MINE.

Thickness of the bed, from two feet four inches, to two feet eight inches. Coal rather dull; brittle; fracture hackly; layers thin, and separated with carbonaceous clod. Contains vertical plates of carbonate of lime, which are confined principally to a thin bright band of the bed. There is a little sulphuret of iron disseminated through the mass of coal. Coal good, but dirty.

Specific gravity, 1·3083
Loss in coking, 40·47
Total weight of coke, 59·53 = 100·00

Analysis:—Moisture,	6·00	
Volatile matters,	34·47	
Carbon in coke,	48·93	
Ashes (gray),	10·60	
		100·00

Carbon in the coal, 59·79

SANGAMON COUNTY.

The beds of coal at present opened in this county vary from one foot eight inches, to two feet in thickness. All the coal is obtained by "stripping," or, to use another term, by quarrying. Fourteen or fifteen openings have been made. The coal taken from most of them is of the same quality.

SANDERS' COAL.

Coal rather dull; hard; somewhat brittle; fracture hackly; layers thick, with partings of carbonaceous clod. Contains vertical seams of both carbonate of lime and sulphuret of iron; also, a few thin horizontal layers of iron pyrites.

Specific gravity, 1·2463
Loss in coking, 48·14
Total weight of coke, 51·86 = 100·00

Analysis:—Moisture,		5·60	
Volatile matters,		42·54	
Carbon in coke,		42·86	
Ashes,		9·00	
			100·00

Carbon in the coal, 50·11

MINE NEAR SPRINGFIELD—(Owner not known).

Specific gravity, 1·2839
Loss in coking, 53·9
Total weight of coke, 46·1 = 100·0

Analysis:—Moisture,		12·0	
Volatile matters,		41·9	
Carbon in coke,		42·8	
Ashes (dark gray),		3·3	
			100·0

Carbon in the coal, 45·7

PUFFENBERGER'S MINE (NEAR SPRINGFIELD.)*

Specific gravity, 1·26
Loss in coking, 50·68
Total weight of coke, 49·32=100·0

Analysis:—Moisture,		11·50	
Volatile matters,		39·18	
Carbon in coke,		43·62	
Ashes (dark brown),		5·70	
			100·00

Carbon in the coal, 49·8

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*NOTE.—This coal contains a greal deal of sulphuret of iron.

SCHUYLER COUNTY.

PLEASANT VIEW.

Thickness of the coal 4 feet. Overlaid with sixteen feet of shale. Underlaid with fire clay. Coal bright; hard; fracture conchoidal; layers thin, some of them separated with extremely thin seams of carbonaceous clod. Contains a few vertical seams of carbonate of lime, which are slightly stained with oxide of iron. Coke good.

Specific gravity, 1·286
Loss in coking, 40·60
Total weight of coke, 59·40 = 100·00

Analysis:—Moisture,	- - - - - - - - -	6·0	
Volatile matters,	- - - - . - -	34·6	
Carbon in coke,	- - - - - - -	52·9	
Ashes (deep red),	- - - - - -	6·5	
			100·0

Carbon in the coal, 57·8

MINE NEAR RUSHVILLE.

Thickness of coal, four feet. Overlaid with three feet of black slate, which is capped with one foot of limestone. Coal rather dull; hard; somewhat brittle; fracture hackly; layers thin, with partings of carbonaceous clod. Contains irregular seams of carbonate of lime, stained with oxide of iron.

Specific gravity, 1·303
Loss in coking, 41·6
Total weight of coke, 58·4 = 100·0

Analysis:—Moisture,	- - - - - - - - -	4·5	
Volatile matters,	- - - - - - -	37·1	
Carbon in coke,	- - - - - - -	46·1	
Ashes (white),	- - - - - -	12·3	
			100·0

Carbon in the coal, 51·79

SCOTT COUNTY.

EXETER MINES.

Thickness of beds, two feet eight inches. Overlaid with slate. Underlaid with eight inches of clay, and that with thick beds of limestone.

Coal bright; brittle, fracture uneven; layers alternately thick and thin, with partings of carbonaceous clod. Contains thin vertical seams both of carbonate of lime and sulphuret of iron. Coke very good.

Specific gravity, 1·288
Loss in coking, 42·37
Total weight of coke, 57·63 = 100·00

Analysis:—		
Moisture,	12·10	
Volatile matters,	30·27	
Carbon in coke,	50·13	
Ashes (red),	7.50	
		100·00

Carbon in the coal, 52·42

SCOTT COUNTY.

BARKER'S COAL.

Coal bright; hard; fracture uneven; layers thin, and separated with carbonized fossil ferns. Contains thin vertical seams of carbonate of lime and sulphuret of iron.

Specific gravity, 1·2396
Loss in coking, 42·8
Total weight of coke, 57·2 = 100·0

Analysis:—		
Moisture,	5·5	
Volatile matters,	37·3	
Carbon in coke,	52·2	
Ashes (light brown),	5·0	
		100·0

Carbon in the coal, 54·8

FROST'S COAL.

Coal bright; hard; compact; layers thin, and separated with a little carbonaceous clod. Contains thin vertical seams of carbonate of lime and sulphuret of iron.

Specific gravity, 1·2883
Loss in coking, 46·37
Total weight of coke, 53·63 = 100·00

Analysis:—		
Moisture,	8·50	
Volatile matters,	37·87	
Carbon in coke,	46·53	
Ashes (red),	7·10	
		100·00

Carbon in the coal, 51·83

ADAMS COUNTY.

HIGBY'S COAL.

Thickness of the bed, two feet six inches. Overlaid with fifteen feet of gray shale. Underlaid with fire clay. Coal dull; hard, fracture even; layers thin, with very thin seams of carbonaceous clod between them. This bed is occasionally three feet in thickness, and has a capping of six inches of blue clay, with a bed of black slate overlaying it. (Further investigation is needed to ascertain whether there are not two beds of coal in the localities where the investigations were made by Mr. Worthen.)

Specific gravity, 1·3354
Loss in coking, 48·4
Total weight of coke, 51·6 = 100·0

Analysis:—Moisture,	- - -	10·0	
Volatile matters,	- -	38·4	
Carbon in coke,	- - -	41·2	
Ashes (yellow),	- -	10·4	
			100·0

Carbon in the coal, 48.

BASSETT'S COAL.

Thickness of the bed, from one foot four inches, to one foot six inches. Overlaid with one foot six inches of black slate. Floor not ascertained. Coal bright; brittle; fracture uneven; layers thick, and separated with a little carbonaceous clod. Contains a few very thin layers of sulphuret of iron, and some thin vertical seams of carbonate of lime.

Specific gravity, 1·2684
Loss in coking, 42·52
Total weight of coke, 57·48 = 100·00

Analysis:—Moisture,	- - -	9·20	
Volatile matters,	- -	33·32	
Carbon in coke,	- - -	51·48	
Ashes (pale red),	- -	6·00	
			100·00

Carbon in the coal, 55·91

JERSEY COUNTY.

LANGLEY'S MINE.

Thickness of the bed, five feet. Overlaid with two feet of black slate, which is capped with three feet of limestone. Underlaid with fire clay. (The death of the Geological Assistant in the Illinois State Survey, Mr. Henry Pratten, prevents me from giving at present more than this paragraph contains. Mr. Pratten analyzed the coal, but I have been unable to find the analysis in the notes returned to my office.) In quality it very nearly resembles the Madison county coal.

VERMILION COUNTY.

PAYNE'S MINE.

Thickness of the bed, six feet six inches. Overlaid with clay and drift. Underlaid with one foot four inches of clay. Below this there is another bed of coal one foot six inches thick, underlaid with four feet of fire-clay. Coal dull; brittle; fracture hackly; layers thick, and separated with a small amount of carbonaceous clod. Contains numerous thick vertical plates of carbonate of lime; also, thin seams of sulphuret of iron, disposed both horizontally and vertically. The following analysis is of coal taken from the main entry, sixty feet from the outcrop.

Specific gravity, 1·26
Loss in coking, 46·1
Total weight of coke, 53·9 =100·0

Analysis:—Moisture,		8·7
Volatile matters,		37·4
Carbon in coke,		43·9
Ashes (gray),		10·0
		100·0

Carbon in the coal, 50 38

PAYNE'S COAL—(OUT CROP.)

Specific gravity, 1·2833
Loss in coking, 47·0
Total weight of coke, 53·0 = 100·0

Analysis:—Moisture,	5·1	
Volatile matters,	41·9	
Carbon in coke,	47.5	
Ashes (gray),	5·5	
		100·0

Carbon in the coal, 55·5

HENSON'S MINE.

Thickness of the bed, seven feet. Overlaid with a soft fossiliferous sandstone. Underlaid with fire clay. Coal bright and dull, in the alternate layers; layers thick, and separated with carbonaceous clod; hard; fracture hackly. Contains vertical seams of carbonate of lime, very numerous and irregularly distributed.

Specific gravity, 1·311
Loss in coking, 43·5
Total weight of coke, 56·5 = 100·0

Analysis:—Moisture,	9·0	
Volatile matters,	34·5	
Carbon in coke,	50·0	
Ashes,	6·5	
		100·0

Carbon in the coal, 58·8

LAFFERTY'S MINE.

Thickness of bed, six feet. Overlaid with blue calcareous clay shale. Underlaid with fire clay. Coal bright on a fresh fracture, but weathers with a dull surface; fracture hackly; hard and compact; layers separated with carbonized coal plants. Contains a few vertical plates of carbonate of lime.

Specific gravity, 1·28
Loss in coking, 44·3
Total weight of coke, 55·7 = 100.0

Analysis:—Moisture,	8·5	
Volatile matters	35·8	
Carbon in coke,	48·7	
Ashes (gray),	7·0	
		100·0

Carbon in the coal, 51·7

CAROTHERS' MINE.

Thickness of the bed, six feet six inches. Overlaid with a hard, dark-colored fossiliferous clay shale, and underlaid with one foot three inches of blue clay. Below this there is one foot four inches of coal, which is underlaid with fire-clay. Coal rather hard and compact; lustre bright; fracture somewhat conchoidal; layers thin, but do not separate easily, with carbonized coal plants between them. Contains thick vertical plates of carbonate of lime; and, also, an abundance of bright yellow sulphuret of iron, disposed both horizontally and vertically.

Specific gravity, 1·213
Loss in coking, 50·8
Total weight of coke, 49·2 = 100·0

Analysis:—Moisture,		8·5	
Volatile matters,		42·3	
Carbon in coke,		46·2	
Ashes (grayish white),		3·0	
			100·0

Carbon in the coal, 51·1

GILBERT'S MINE.

Thickness of the bed, six feet six inches. Overlaid with clay shale; underlaid with fire-clay. Coal rather dull; brittle; fracture tolerably even; layers alternately thick and thin. Contains thick vertical seams of carbonate of lime, with occasional lumps of sulphuret of iron in them; also, a great number of thin seams of the last named mineral, causing a reticulated appearance on one of the horizontal faces of the coal.

Specific gravity, 1·213
Loss in coking, 51·4
Total weight of coke, 48·6 = 100·0

Analysis:—Moisture,		8·0	
Volatile matters,		43.4	
Carbon in coke,		45·6	
Ashes,		3·0	
			100·0

Carbon in the coal, ——

BUTLER'S MINE.

Thickness of the bed, one foot two inches. Overlaid with one foot ten inches of black slate, which is capped with limestone, (one foot of clay

shale intervening). Underlaid with six feet of fire clay. Coal rather dull; hard; brittle; fracture hackly; layers thin, with partings of carbonaceous clod. Contains a few thin vertical streaks of carbonate of lime. Cleavage cubical. Coke good. The bed is too thin to be mined profitably.

Specific gravity, 1·3943
Loss in coking, 40·1
Total weight of coke, 59·9 = 100·0

Analysis:—Moisture,	- - -	6·0	
Volatile matters,	- - -	34·1	
Carbon in coke,	- - -	47·9	
Ashes (white),	- - -	12·0	
			100·0

Carbon in the coal, 55·7

LEONARD'S MINE.

Thickness of the bed, six feet. Overlaid with three feet of very compact calcareous shale. Underlaid with five feet of fire clay. Coal bright; rather hard; the horizontal arrangement of the layers hardly perceptible; intersected in all directions by thin vertical seams of carbonate of lime and streaks of sulphuret of iron; breaks in any direction rather than horizontally. Contains thick irregular seams of sulphuret of iron, and also of carbonized coal plants.

Specific gravity, 1·3127
Loss in coking, 45·57
Total weight of coke, 54·43 = 100·00

Analysis:—Moisture,	- - -	6·40	
Volatile matters,	- - -	39·17	
Carbon in coke,	- - -	48·93	
Ashes (white),	- - -	5·50	
			100·00

Carbon in the coal, 53·0

WILLIAMS' MINE.

Thickness of the bed, six feet six inches. Overlaid with a heavy bed of hard clay shale. Underlaid with fire clay. Two parcels of coal were examined from this mine. Of the first, coal bright; hard; compact; fracture tolerably even; layers quite thin, but not easily separated, with a

little carbonaceous clod between them. Contains thin vertical seams of both carbonate of lime and sulphuret of iron. Cleavage rhomboidal. This coal has a brilliant horizontal fracture. Of the second, coal bright; hard; fracture somewhat conchoidal; layers thick, and not easily separated, with a small amount of carbonaceous clod between them. Contains thick vertical plates of carbonate of lime, and also many thin ones of iridescent sulphuret of iron.

Specific gravity, 1·2247
Loss in coking, 49·15
Total weight of coke, 50·85 = 100·00

Analysis:—Moisture,	2·80	
Volatile matters,	46·35	
Carbon in coke,	45·85	
Ashes,	5·00	
		100·00

Carbon in the coal, 50·58

ALEXANDER'S MINE.

Thicknes of the coal, between six and seven feet. Overlaid with yellow clay and gravel. Underlaid with fire-clay. Coal hard; dull; compact; fracture even; layers alternately thick and thin. Contains carbonate of lime and sulphuret of iron in thin vertical seams.

Specific gravity, 1·2636
Loss in coking, 43·5
Total weight of coke, 56·5 = 100·00

Analysis:—Moisture,	3·4	
Volatile matters,	40·1	
Carbon in coke,	40·5	
Ashes,	16·0	
		100·0

Carbon in the coal, 50·98

RUSSELL'S MINE.

Thickness of the coal, six feet six inches. Overlaid with clay shale; underlaid with fire clay. Coal dull to bright; moderately hard; layers alternately thick and thin, and separated with carbonaceous clod. Contains many thin plates of carbonate of lime, and a few seams of sulphuret of iron, both disposed vertically. Spatters in coking.

Specific gravity, 1·2148
Loss in coking, 49·0
Total weight of coke, 51·0 = 100·0

Analysis:—Moisture,		5·6	
Volatile matters,		43·4	
Carbon in coke,		39·0	
Ashes (gray),		12·0	
			100·0

Carbon in the coal, 52.0

"CHICAGO AND DANVILLE COAL COMPANY."

This is the same as "Payne's mine," of which two analyses have already been given—one from the outcrop, and one from coal taken from the mines at a point sixty feet within the main entry. The following analysis is of coal taken from the mine 400 feet from the outcrop. Thickness of the bed between six and seven feet. Coal bright; hard; compact; fracture uneven; layers thin and separated with carbonaceous clod. Contains vertical seams of carbonate of lime, and both vertical and horizontal streaks of sulphuret of iron.

Specific gravity, 1·2377
Loss in coking, 49·04
Total weight of coke, 50·96 = 100·00

Analysis:—Moisture,		8·60	
Volatile matters,		40·44	
Carbon in coke,		48·96	
Ashes (gray),		2·00	
			100·00

Carbon in the coal, 49.8

INNIS COOK'S MINE.

Thickness of the bed, three feet six inches. Overlaid with twelve feet of dark clay shale. Underlaid with clay. Coal dull; hard; fracture uneven; layers thick, and separated with carbonaceous clod. Contains thick vertical plates of carbonate of lime, and horizontal ones of sulphuret of iron. Coke good.

Specific gravity, 1·3376
Loss in coking, 47·3
Total weight of coke, 52·7 = 100·0

Analysis:—Moisture,		9·8
Volatile matters,		37·5
Carbon in coke,		47·7
Ashes (reddish gray),		5·0
		100·0

Carbon in the coal, 51·44

ELI THORNTON'S MINE.

The thickness of this bed varies from three to four feet. Overlaid with clay shale. Underlaid with fire clay. Coal rather slaty; not very hard; lustre dull; fracture uneven. Contains vertical plates of carbonate of lime, and horizontal layers of sulphuret of iron. The coal agglutinates in coking.

Specific gravity, 1·4027
Loss in coking, 42·27
Total weight of coke, 57·73 = 100·0

Analysis:—Moisture,		15·00
Volatile matters,		27·27
Carbon in coke,		55·73
Ashes (red),		2·00
		100·00

Carbon in the coke, 56·52

T. H. BLACKMORE'S MINE.

Thickness of the bed, four feet. Overlaid with clay shale. Underlaid with fire-clay. Coal bright and dull in the alternate layers; brittle; fracture uneven; layers alternately thick and thin, with thin separations of carbonaceous clod. Contains carbonate of lime and sulphuret of iron in thin vertical plates.

Specific gravity, 1·2901
Loss in coking, 44·5
Total weight of coke, 55·5 = 100·0

Analysis:—Moisture,		6·5
Volatile matters,		38·0
Carbon in coke,		47·1
Ashes (redish gray),		8·4
		100·0

Carbon in the coal, 53·6

MACDONOUGH COUNTY.

COLCHESTER MINE.

Thickness of the bed, two feet. Overlaid with shale. Underlaid with shale and sandstone. Coal hard; compact; bright; layers tolerably even and wavy. A first rate coal.

Specific gravity, 1·290
Loss in coking, 41·2
Total weight of coke, 58·8 = 100·0

Analysis:—Moisture,	5·4	
Volatile matters,	35·8	
Carbon in coke,	56·8	
Ashes (light gray),	2·0	
		100.0

Carbon in the coal, 60·10

TAZEWELL COUNTY.

NEARLY OPPOSITE PEORIA.

Thickness of the bed from three feet six inches to four feet. Overlaid with shale. Underlaid with clay. Coal rather bright; hard; compact; fracture even; layers thick and separated with carbonaceous clod. Contains a very few thick seams of carbonate of lime, and a little sulphuret of iron disposed horizontally.

Specific gravity, 1·263
Loss in coking, 43·4
Total weight of coke, 56·6 = 100·0

Analysis:—Moisture,	5·4	
Volatile matters,	38·0	
Carbon in coke,	48·6	
Ashes (gray),	8·0	
		100·0

Carbon in the coal, 52·0

MENARD COUNTY.

SALEM HILL MINE.

Thickness of the bed, two feet. Coal bright; brittle; separated with thin layers of carbonaceous clod; fracture somewhat conchoidal. Contains a few thin vertical plates of carbonate of lime.

Specific gravity, 1·26
Loss in coking, 46·0
Total weight of coke, 54·0 = 100.0

Analysis:—			
	Moisture,	9·5	
	Volatile matters,	36·5	
	Carbon in coke,	51·2	
	Ashes (dark red),	2·8	
			100·0

Carbon in the coal, 55·55

PEORIA COUNTY.

KICKAPOO MINES. (MOFFATT'S.)

Thickness of the bed, four feet to four feet six inches. Overlaid with shale. Underlaid with clay. Coal moderately bright; hard; compact; fracture uneven; layers tolerably thick, and separated with carbonaceous clod. Contains many thick seams of sulphuret of iron and of carbonate of lime. Coke very poor.

Specific gravity, 1·282
Loss in coking, 47·7
Total weight of coke, 52·3 = 100·0

Analysis:—			
	Moisture,	11·5	
	Volatile matters,	36·2	
	Carbon in coke,	46·3	
	Ashes (gray),	6·0	
			100·0

Carbon in the coal, 53·2

No special examination has been made of the Kingston mines by any one connected with the State Survey. The specific gravity of the coal is 1·216. The thickness of the bed is from four feet to four feet ten inches, No analysis of that coal has been made in the State Laboratory. Before the next report is made, the beds at Kingston, as well as two other beds in Peoria county will be examined, and the analyses of the coals furnished to the proper department.

KNOX COUNTY.

MCMURTRY'S MINE.

Thickness of the bed, five feet. "Alluvial covering where it is worked. True roof not ascertained." Coal very brittle; bright on a fresh fracture.

but soon becoming dull when exposed to the weather, especially on its vertical face. Contains thick vertical seams of carbonate of lime, with sulphuret of iron disposed both horizontally and vertically.

"EIGHT INCH PART OF THE SEAM."

Coal tolerably hard; fracture uneven; splits easily into thin layers, in consequence of very minute seams of carbonized coal plants being interposed between them; lustre rather dull. Contains carbonate of lime in vertical plates, and sulphuret of iron in horizontal layers.

"MIDDLE PART OF THE BED."

Coal of a bright metallic lustre, somewhat resembling graphite; horizontal arrangement very irregular; presents nowhere a regular surface or face; brittle; layers rather thick. Hardly any foreign matters visible, except a few thin seams of carbonate of lime.

Specific gravity, 1·216
Loss in coking, 50·5
Total weight of coke, 49·5 = 100·0

Analysis:—Moisture,	- - -	11·0	
Volatile gases,	- - -	39·5	
Carbon in coke,	- - -	45·5	
Ashes (nearly black),	- - -	4·0	
			100·0

Carbon in the coal, 55·5

LOOMIS' MINE. (WATAGA.)

Thickness of the bed, from four feet to four feet six inches. This coal is overlaid with from three to eight inches of cannel coal, separated with an inch of pyritous shale. Roof of the mine, black slate; floor, fire-clay.

BITUMINOUS COAL.

Coal hard; bright; fracture hackly; layers thin, and separated with carbonized coal plants. Contains thin vertical plates of carbonate of lime, and a small amount of sulphuret of iron in the horizontal partings.

Specific gravity, 1·286
Loss in coking, 44·4
Total weight of coke, 55·6 = 100·0

Analysis:—Moisture,		11·0
Volatile matters,		33·4
Carbon in coke,		51.1
Ashes (pink),		4·5
		100·0

Carbon in the coal, 54·1

LOOMIS' CANNEL COAL.

Coal dull; hard; compact; fracture tolerably even. Contains a few thick vertical plates of carbonate of lime. Coke good.

Specific gravity, 1·33
Loss in coking, 42·4
Total weight of coke, 57·6 = 100·0

Analysis:—Moisture,		6·5
Volatile matters,		35·9
Carbon in coke,		33·6
Ashes (gray),		24·0
		100·0

Carbon in the coal, 42·6

WARREN COUNTY.

SMITH'S MINE.

Thickness of the bed, three feet. Overlaid with two feet six inches of black slate. Underlaid with one foot of black slate, resting on sandstone. Coal rather bright; hard; fracture tolerably even; layers thin, slightly undulating, and separated with many carbonized coal plants. Contains vertical and horizontal seams of sulphuret of iron. Near the outcrop the sulphuret has been converted into oxide of iron. Coke good.

Specific gravity, 1·24
Loss in coking, 43·1
Total weight of coke, 56·9 = 100·0

Analysis:—Moisture,		6·1
Volatile matters,		37·0
Carbon in coke,		51·7
Ashes (red),		5·2
		100·0

Carbon in the coal, 54·55

TUCKER'S MINE.

Thickness of the bed, two feet two inches. Overlaid with five feet six inches of shale, which is capped with three feet of black slate. Underlaid with clay. Coal dull, with a few bright layers; hard; fracture hackly; layers thick and separated with carbonaceous clod. Contains a few thick vertical seams of carbonate of lime. Also, vertical and horizontal seams of sulphuret of iron.

Specific gravity, 1·227
Loss in coking, 44·8
Total weight of coke, 55·2 = 100·0

Analysis:—Moisture,	8·0	
Volatile matters,	36·8	
Carbon in coke,	51·0	
Ashes (red),	4·2	
		100·0

Carbon in the coal, 57·0

BUREAU COUNTY.

SHEFFIELD COMPANY'S MINE.

This bed varies from four to five feet in thickness. Underlaid with indurated clay containing nodules of limestone. Overlaid with a few inches of black slate, which is capped with indurated clay. Coal bright; hard; compact; fracture inclining to conchoidal; layers thin and separated with very minute seams of carbonaceous clod. Contains a few thin vertical seams of carbonate of lime. Slacks on exposure to the weather.

Specific gravity, 1·1986
Loss in coking, 47·5
Total weight of coke, 52·5 = 100·0

Analysis:—Moisture,	7·0	
Volatile matters,	40·5	
Carbon in coke,	47·5	
Ashes (white),	5·0	
		100·0

Carbon in the coal, 53·4

TISKILWA MINES.

"*Coal Valley.*"

This bed is of the same age as the middle workable seam of La Salle county; and like that bed is frequently interrupted with clay "slips."

The portion of the bed examined is on L. D. Whiting's place. Coal very bright; hard; compact; layers generally thick, and separated with carbonaceous clod, sometimes nearly indistinct; fracture conchoidal. Contains a very few thin seams of carbonate of lime, with occasional thin scales of sulphuret of iron. Swells but little in coking.

Specific gravity, 1·363
Loss in coking, 43·0
Total weight of coke, 57·0 = 100·0

Analysis:—Moisture,	- - -	7.5	
Volatile matters,	- - -	35·5	
Carbon in coke,	- - -	48·9	
Ashes (white),	- - -	8·1	
			100·0

Carbon in the coal, 57·0

ROCK ISLAND COUNTY.

CUTLER, EDWARDS & COMPANY'S "CANNEL COAL."

Thickness of the bed, six feet six inches, with six inches of black slate in the seam. Overlaid with indurated clay and drift. Underlaid with fire clay. This is rather a highly *bituminous shale* than a *coal.* It burns with a free, bright flame, and is so highly inflammable that, at the outcrop, which is covered with grass, it has, at some previous period, become ignited from the annual prairie burnings, the effects of which are to be seen for a distance of more than a rod from the opening. Shale dull; grayish; hard and tough; splits into thin laminæ, in consequence of thin layers of coal plants intervening. In the tracing of this bed it is highly probable that it may be found to graduate into a bed of bituminous coal. This shale is suitable for the manufacture of all the oils and solid matters at present derived from real cannel coal. For other purposes it is, in my opinion, entirely useless.

Specific gravity, 1·441
Loss in coking, 31·3
Total weight of coke, 68·7 = 100·0

Analysis:—Moisture,	- - -	4·5	
Volatile matters,	- - -	26·8	
Carbon in coke,	- - -	46·7	
Ashes (light red),	- - -	22·0	
			100·0

Carbon in the shale, 48·9

CARBON CLIFF MINE. (LOWRY, THOMAS & CO.)

Thickness of the bed, three feet eight inches, to five feet three inches. Overlaid with black shale, which is capped with sandstone. Underlaid with fire clay. Troubled occasionally with "horse-backs." Coal bright; hard; compact; fracture uneven; layers rather thick, with a little carbonaceous clod between them. Contains irregular vertical seams of carbonate of lime, and a few vertical streaks of sulphuret of iron. Coke good.

Specific gravity, 1·247
Loss in coking, 43·7
Total weight of coke, 56·3 = 100·0

Analysis:—Moisture,	7·0	
Volatile matters,	36·7	
Carbon in coke,	52·8	
Ashes (white),	3·5	
		100·0

Carbon in the coal, 55·3

CORCORAN'S MINE.

At John H. Ely's opening, the bed of coal is from three feet six inches to four feet in thickness. Overlaid with black slate. Underlaid with fire-clay. Coal bright; brittle; fracture uneven; layers thick, with partings of carbonaceous clod. Contains vertical seams of sulphuret of iron, with a little carbonate of lime in the same seams.

Specific gravity, 1·2656
Loss in coking, 47·2
Total weight of coke, 52·8 = 100·0

Analysis:—Moisture,	8·0	
Volatile matters,	39·2	
Carbon in coke,	50·3	
Ashes (black),	2·5	
		100·0

Carbon in the coal, 57·7

HENRY COUNTY.

ROBBINS, LAWSON & COMPANY'S MINE.

Bituminous Coal.

Thickness of the bed, four feet. Overlaid with black slate. Underlaid with fire-clay. Of two specimens examined, the coal of the *first* is brittle;

dull; layers tolerably thick; fracture very uneven. Contains vertical plates of carbonate of lime, accompanied with a small quantity of sulphuret of iron. Of the *second*, the coal is bright; hard; compact; layers thick, and separated with carbonized coal plants. Contains thick plates of carbonate of lime, some of which are vertical, and others inclined at an angle of about 50°. This is the same as Serrell's bed. Coke good.

Specific gravity, 1·224
Loss in coking, 49·7
Total weight of coke, 50·3 = 100·0

Analysis:—Moisture,	12·5	
Volatile matters,	37·2	
Carbon in coke,	47·1	
Ashes (blackish gray),	3.2	
		100·0

Carbon in the coal, 53·0

ALDRICH'S MINE.

Thickness of the bed, from three feet six inches, to four feet eight inches. Overlaid with a few inches of shale, which is capped with a hard, blue, shelly limestone. Underlaid with fire-clay. Coal bright; hard; fracture even; layers thin, with much carbonaceous clod between them. Contains vertical seams of carbonate of lime.

Specific gravity, 1·261
Loss in coking, 43.1
Total weight of coke, 56·9 = 100·0

Analysis:—Moisture,	6·0	
Volatile matters,	37·1	
Carbon in coke,	49·9	
Ashes (brown),	7·0	
		100·0

Carbon in the coal, 54·1

SERRELL'S MINE. (KEWANEE.)

Thickness of the bituminous portion of the bed, four feet. Overlaid with cannel coal. Underlaid with fire-clay. Coal bright and dull in alternating layers; hard; compact; fracture tolerably even. Contains thick seams of carbonate of lime, which cross each other at nearly right angles, causing the coal to break into slightly irregular cubes. Has sulphuret of iron disposed both horizontically and vertically. The layers of coal are thick, and separated with carbonaceous clod. Coke very bright and good, but swells in coking.

Specific gravity, 1·232
Loss in coking, 42·2
Total weight of coke, 57·8 = 100·0

Analysis:—Moisture,	9·0	
Volatile matters,	33·2	
Carbon in coke,	52·8	
Ashes (gray),	5·0	
		100·0

Carbon in the coal, 58·2

SERRELL'S CANNEL COAL.

Thickness of the bed, from eight inches to one foot. Overlaid with black slate. Underlaid with four feet of bituminous coal. No analysis of this coal has yet been made; but, judging from its texture and general appearance, it does not differ much from the Wataga cannel coal. The coal is dull; hard; compact; fracture slightly conchoidal; layers thick. Contains bright yellow vertical plates of sulphuret of iron.

ALLEN'S MINE. (GENESEO.)

Thickness of the bed at the outcrop, one foot six inches. Underlaid with fire-clay. The roof could not be ascertained. Coal bright; iridescent on its horizontal faces; hard; fracture even. Contains a few thin vertical seams of carbonate of lime. Cleavage rhombohedral.

Specific gravity, 1·321
Loss in coking, 41·24
Total weight of coke, 58·76 = 100·00

Analysis:—Moisture,	6·50	
Volatile matters,	34·74	
Carbon in coke,	52·76	
Ashes (brown),	6·00	
		100·00

Carbon in the coal, 55·3

MERCER COUNTY.

THORNTON & PARK'S MINE.

Thickness of the bed, four feet. Overlaid with "blue limestone." Floor not ascertained. Coal tolerably hard; bright; brittle; fracture nearly

even; layers thin, and separated with carbonized coal plants. Contains vertical plates of both carbonate of lime and sulphuret of iron.

Specific gravity, 1·244
Loss in coking, 45·8
Total weight of coke, 54·2 = 100.0

Analysis:—Moisture,	7·7	
Volatile matters,	38·1	
Carbon in coke,	49·7	
Ashes (white),	4·5	
		100·0

Carbon in the coal, 53·2

LA SALLE COUNTY.

OTTAWA BED.

Mr. N. Perley "strips" this bed of coal on Cushman's place, one mile above Ottawa. It is the same as the "lower bed" worked east of La Salle; and is, really, the lowest bed in the State of Illinois, or in any of the Western States in the same latitude. Overlaid with clay. Underlaid with clay resting on the older sandstone (Lower Silurian). Coal bright; brittle; fracture hackly; layers thick, and separated with carbonaceous clod; intersected with numerous vertical seams of carbonate of lime, with thin streaks of sulphuret of iron running in all directions. Coke good, but agglutinates in coking.

Specific gravity, 1·2672
Loss in coking, 43·7
Total weight of coke, 56·3 = 100·0

Analysis:—Moisture,	7·8	
Volatile matters,	35·9	
Carbon in coke,	52·3	
Ashes (white),	4·0	
		100·0

Carbon in the coal, 54·6

WARD'S MINE. (MARSEILLES.)

Thickness of the bed, from three feet six inches, to four feet. This seam is very unequal in quality. A portion of the bed will rank with the best coals in the State, while other benches will be among the lowest.

Coal dull; friable; fracture uneven; layers thick, with much cardonaceous clod between them. Contains thick vertical plates of carbonate of lime, as well as thick horizontal seams of sulphuret of iron.

Specific gravity, 1·3144
Loss in coking, 45·6
Total weight of coke, 54·4 = 100

Analysis:—Moisture,	5·0	
Volatile matters,	40·6	
Carbon in coke,	33·4	
Ashes (white),	21·0	
		100·0

Carbon in the coal, 47·0

I. R. HITT'S VERMILION MINE.

Thickness of the bed, three feet six inches. Overlaid with shales. Underlaid with clay resting on shaly sandstone. Coal dull; rather hard; compact; layers thick, and separated with carbonaceous clod. Contains a great many thin seams of carbonate of lime, with sulphuret of iron very sparingly disseminated.

Specific gravity, 1·2989
Loss in coking, 46·9
Total weight of coke, 53·1 = 100·0

Analysis:—Moisture,	4·5	
Volatile matters,	42·4	
Carbon in coke,	40·3	
Ashes (white),	12·8	
		100·0

Carbon in the coal, 47·5

KIRKPATRICK'S MINE.

Thickness of the bed, eight feet. Coal bright; compact; hard; layers rather thin; fracture nearly even; a small quantity of carbonaceous clod between the layers. Contains a few vertical plates of carbonate of lime, and some sulphuret of iron.

Specific gravity, 1·202
Loss in coking, 48·2
Total weight of coke, 51·8 = 100·0

Analysis:—Moisture,		7·0	
Volatile matters,		41·2	
Carbon in coke,		49·3	
Ashes (gray),		2.5	
			100·0
Carbon in the coal, 54·6			

IRELAND'S MINE.

Thickness of the bed, from two feet eight inches, to three feet six inches. Overlaid with twelve feet of blue shale. Underlaid with clay resting on the lower sandstone. This was the first coal mined in La Salle county. Coal dull on the face; bright and iridescent in the horizontal layers, which are thin; fracture irregular. Contains thin vertical seams of carbonate of lime running in every direction, with a few very thin seams of sulphuret of iron.

Specific gravity, 1·237			
Loss in coking, 46·7			
Total weight of coke, 53·3 = 100·0			
Analysis:—Moisture,		6·8	
Volatile matters,		39·9	
Carbon in coke,		50·3	
Ashes (gray),		3·0	
			100·0
Carbon in the coal, 55·1			

SEELY'S MINE. (NEAR LOWELL.)

Average thickness of the bed, three feet six inches. It is undulating. Coal rather dull; hard; compact; fracture even; layers thin, and slightly waving. Contains thin vertical seams of carbonate of lime, and some of sulphuret of iron, with thick horizontal deposits of the last named mineral. The coke is good.

Specific gravity, 1·2234			
Loss in coking, 42·6			
Total weight of coke, 57·4 = 100·0			
Analysis:—Moisture,		8·0	
Volatile matters,		34·6	
Carbon in coke,		41·4	
Ashes (brick red),		16·0	
			100·0
Carbon in the coal, 53·0			

KIRKPARICK'S CANNEL COAL.

(*Lower Bed.*)

Thickness of the bed, from six to nine inches. This coal is exposed in the bed of the "Big Vermilion of the Illinois river," for the distance of two miles. Overlaid with five feet of sandy shale. Underlaid with argillaceous sandy shale. Coal dull; hard; compact; fracture even, inclining to conchoidal; layers rather thin for a cannel coal. This is the best cannel coal I have met with in Illinois. The bed is too thin to work profitably. It is the only cannel coal we have, that approaches, in external appearance, to the celebrated "Breckinridge coal" of Kentucky. In hand specimens no one could tell the difference. Coke good.

Specific gravity, 1·434
Loss in coking, 39·6
Total weight of coke, 60·4 = 100·0

Analysis:—Moisture,		3·0
Volatile matters,		36.6
Carbon in coke,		30·4
Ashes (gray),		30·0
		100·0

In order that the difference between this coal and the Kentucky cannel coal may be seen at a glance, I subjoin an analysis of the "Breckenridge coal," made in the State Laboratory.

Specific gravity, 1·1766
Loss in coking, 64·6
Total weight of coke, 35·4 = 100·0

Analysis:—Moisture,		1·7
Volatile matters,		62·9
Carbon in coke,		27·9
Ashes (gray),		7·5
		100·0
Carbon in the coal, 35·0		

As the use of cannel coal is attracting much attention at present, I give, below, an analysis of the Virginia cannel coal from the Kanawha, made, also, in the Illinois State Laboratory. Coke good.

Specific gravity, 1·2592
Loss in coking, 45·78
Total weight of coke, 54·22 = 100·00

Analysis:—Moisture,	- - -	·70	
Volatile matters,	- : -	45·08	
Carbon in coke,	- - -	47·92	
Ashes (white),	- - -	6·30	
			100·00

Carbon in the coal. 59·09

EAGLE CREEK MINE.

Thickness of the bed, five feet. This is one of the best coals for blacksmith purposes that I have met with in the State. All the coal taken from the bed at that locality, so far as I know, has been quarried from the bed of the creek. Coal hard; brittle; lustre from dull to bright; fracture hackly; layers rather thick, and separated with carbonized coal plants, among which is disseminated a few patches of sulphuret of iron. Contains a few short vertical plates of carbonate of lime, none of them exceeding an inch in length.

Specific gravity, 1·2265
Loss in coking 46·7
Total weight of coke, 53·3 = 100·0

Analysis:—Moisture,	- - -	7·5	
Volatile matters,	-	39·2	
Carbon in coke,	- - -	45·8	
Ashes (dark red),	- - -	7·5	
			100·0

Carbon in the coal, 57·7

"BUFFALO ROCK" MINE.

This bed of coal is worked by the three brothers Mitchell. It is "stripped," not mined. The coal rests directly on the lower sandstone. The bed varies in thickness from one foot six inches, to two feet ten inches. Overlaid with indurated clay. Underlaid with sandstone, with a very thin clay parting.

Specific gravity, 1·289
Loss in coking, 45·0
Total weight of coke, 55·0 = 100·0

Analysis:—Moisture,	6·2	
Volatile matters,	38·8	
Carbon in coke,	50·5	
Ashes (pale red),	4·5	
		100·0

Carbon in the coal, 54·8

BIG VERMILION. (REYNOLDS' MINE.)*

Thickness of the bed, four feet. This is the same bed as the one worked at "Hitt's Vermilion mine;" and the external characters of the coal about the same. Swells much in coking.

Specific gravity, 1.242
Loss in coking, 51·4
Total weight of coke, 48.6 = 100·0

Analysis:—Moisture,	12·0	
Volatile matters,	39·4	
Carbon in coke,	47·1	
Ashes,	1·5	
		100·0

Carbon in the coal, 54·8

EGLESTON'S CANNEL COAL.

Thickness of the bed, from one foot to one foot three inches. Overlies the middle workable seam of La Salle county. Below the cannel coal, and separated with a very thin seam of shale and sulphuret of iron, is from five feet to five feet six inches of bituminous coal. Coal dull; hard; compact; fracture conchoidal; no lines of deposit visible. Contains a few vertical plates of sulphuret of iron. The coke is excellent; its shape is not at all altered in coking.

Specific gravity, 1·41
Loss in coking, 44·5
Total weight of coke, 55·5 = 100·0

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*NOTE.—This is one of the best coals in La Salle county, so far as the lower bed is concerned.

Analysis:—Moisture, - - 6·0
Volatile matters, - - - 38·5
Carbon in coke, - - - 41·5
Ashes, - - - - 14·0
100·0

Carbon in the coal, 44·4

FIELD & ROUNDS' MINE.

Thickness of the bed, from two feet three inches, to three feet eight inches. This is the lowest La Salle county bed. Coal very bright; hard; rather brittle; fracture even; layers thin, and separated with carbonaceous clod. Contains a few thin vertical streaks of carbonate of lime, and some minute specks of sulphuret of iron disposed horizontally. Cleavage rhomboidal.

Specific gravity, 1·222
Loss in coking, 48·1
Total weight of coke, 51·9 = 100·0

Analysis:—Moisture, - - - 6·7
Volatile matters, - - - 41·4
Carbon in coke, - - - 46·7
Ashes (red), - - - - 5·2
100·0

Carbon in the coal, 53·4

KIRKPATRICK'S CANNEL COAL.

(*Upper Bed.*)

Thickness of the bed, from one foot six inches, to three feet four inches, Coal slaty; dull; hard; fracture rather even; layers thin, and separated with a little earthy matter stained with oxide of iron. Coke good; resembles Egleston's.

Specific gravity, 1·266
Loss in coking, 45·2
Total weight of coke, 54·8 = 100.0

Analysis:—Moisture, - - - 6·0
Volatile matters, - - - 39·2
Carbon in coke, - - - 40·1
Ashes (blackish gray), - - - 14·7
100·0

Carbon in the coal, 48·0

EGLESTON'S MINE.

Thickness of the bed, two feet three inches. This is the lower La Salle county bed, and is worked near the outcrop, in the bluffs of "Little Vermilion" river. Coal rather dull; hard; compact; fracture even; layers thick. Contains thin vertical seams of carbonate of lime. Cleavage cubical.

Specific gravity, 1·21
Loss in coking. 48·25
Total weight of coke, 41·75 = 100·00

Analysis:—Moisture,		5·50
Volatile matters,		42·75
Carbon in coke,		48·45
Ashes (gray),		3·30
		100·00

Carbon in the coal, 52·63

HARTSHORNE'S MINE.

Thickness of the bed, two feet seven inches. Overlaid with sixteen feet of indurated clay. Underlaid with five feet of fire-clay, which separates it from the lower sandstone. Coal bright and dull in the alternating layers; hard; somewhat brittle; fracture nearly even; layers thin, with partings of carbonaceous clod. Contains a few thin vertical seams of sulphuret of iron. Coke good.

Specific gravity, 1·2748
Loss in coking, 42·5
Total weight of coke, 57·5 = 100·0

Analysis:—Moisture,		4·9
Volatile matters,		37·6
Carbon in coke,		49·7
Ashes (brown),		7·8
		100·0

Carbon in the coal, 54·16

"LA SALLE COAL MINING COMPANY'S" MINE.

Thickness of the bed, four feet six inches. Overlaid with black slate. Underlaid with six feet of fire-clay. The following analysis was made of coal taken from the outcrop, in "Swanson ravine." This bed is the upper one, considered workable, in La Salle county.

Specific gravity, 1·26
Loss in coking, 52·51
Total weight of coke, 47·49 = 100·00

Analysis:—Moisture,	10·00	
Volatile matters,	42·51	
Carbon in coke,	40·49	
Ashes (brown),	7·00	
		100·00

Carbon in the coal, 47·44

The analysis given below is from the coal in the shaft sunk by that company. It is *under cover*, and is about equal to the specimens of "upper bed" coal in the shaft near the railroad bridge at La Salle, and the shaft at Peru. Coal very bright; rather hard; brittle; layers thin, and separated with very thin seams of carbonaceous clod. Contains vertical plates of carbonate of lime, with a few specks of sulphuret of iron. Coke good.

Specific gravity, 1·2515
Loss in coking, 42·93
Total weight of coke, 57·07 = 100·00

Analysis:—Moisture,	6·50	
Volatile matters,	36·43	
Carbon in coke,	50·07	
Ashes (purplish),	7·00	
		100.00

Carbon in the coal, 54·39

HENRY D. GORBET'S MINE.

This is the same bed as the one worked at Ottawa, and as the lower bed worked at La Salle. Thickness of the bed, from one foot three inches to two feet four inches. It is worked by "stripping." Overlaid with hard blue shales. Underlaid with indurated clay, full of vegetable impressions. Coal dull; hard; compact; layers thick; fracture nearly even. Contains a few thin seams of carbonate of lime, with thin vertical partings of sulphuret of iron.

Specific gravity, 1·2517
Loss in coking, 45·18
Total weight of coke, 54·82 = 100·00

Analysis:—Moisture,	- - -	5·60
Volatile matters,	- - -	39·58
Carbon in coke,	- - -	47·12
Ashes (red),	- - - -	7·70
		100·00

Carbon in the coal, 55·55

PERU.

The following analysis has nothing to do with the workable coal beds underlaying that city. My attention was called to the coal noticed below by Dixwell Lathrop, Esq., the originator of all coal-mining operations in La Salle county. It is only noticeable on account of its occurring in thin lenticular sheets in the upper shales, and on account of its extraordinary crystalline form. Coal dull; soft; brittle; layers none; structure columnar, with thin partings of lime between the columns. This is the most curious disposition of carbonaceous matter I have ever met with. It is of no economical value.

Specific gravity, 1·539
Loss in coking, 28·68
Total weight of coke, 71·32 = 100·00

Analysis:—Moisture,	- - -	6·00
Volatile matters,	- - -	22·68
Carbon in coke,	- - -	40·32
Ashes (brown),	- - -	31·00
		100·0

Carbon in the coal, 45·06

GRUNDY COUNTY.

WATSON'S MINE.

Thickness of the bed five feet, only four feet of which is worked, one foot of coal being left for a roof. Underlaid with clay. Coal bright; hard; compact; fracture conchoidal; layers thin, with impressions of coal plants between them. One bench of this bed makes good coke. Contains a few thin horizontal seams of sulphuret of iron.

Specific gravity, 1·259
Loss in coking, 45·5
Total weight of coke, 54·5 = 100·0

Analysis:—Moisture, - - - 9·0
Volatile matters, - - - 36·5
Carbon in coke, 47·8 - - 47·8
Ashes (pink), - - - 6·7
100·0

Carbon in the coal, 51·3

GEORGE TURNER'S MINE.

Thickness of the bed, two feet five inches. Overlaid with clay. Underlaid with fire-clay. Worked by "stripping" from seven to fifteen feet of clay and soil. Coal dull to bright; hard; compact; fracture even, breaking into rhombohedrons; layers alternately thick and thin, and separated with a little carbonaceous clod. Contains vertical plates of carbonate of lime, and a few specks of sulphuret of iron. Coke good.

Specific gravity, 1·227
Loss in coking, 48·5
Total weight of coke, 51·5 = 100·0

Analysis:—Moisture, - - - 7·0
Volatile matters, - - - 41·5
Carbon in coke, - - - 49·0
Ashes (white), - - - 2·5
100·0

Carbon in the coal, 54·1

COAL EIGHT MILES FROM WILMINGTON.

In the prairie between Wilmington, Will county, and "Goose Lake," Grundy county, there are various outcrops of coal. At every opening the coal is quarried, or "stripped." It is all of one quality. Coal tolerably bright; rather hard; fracture even; layers indistinct, and separated with carbonaceous clod. Contains vertical seams of carbonate of lime, with bright sulphuret of iron disposed both vertically and horizontally.

Specific gravity, 1·2165
Loss in coking, 47·95
Total weight of coke, 52·05 = 100·00

Analysis:—Moisture, - - - 4·00
Volatile matters, - - - 43·95
Carbon in coke, - - - 49·15
Ashes, - - - - 2·90
100·00

Carbon in the coal, 50·00

TELFIR'S MINE.

This is the same bed as the one worked by Turner at the outcrop near the railroad, and by G. W. Oliver near the canal. Overlaid with indurated shale. Underlaid with fire-clay. Thickness of the bed from two feet six inches to two feet eight inches. The brothers Telfir work the bed by a shaft fifty-eight feet six inches deep. Coal somewhat hard; rather dull; fracture very uneven; layers thin, with carbonized coal plants between them. Contains vertical seams of carbonate of lime, and an abundance of sulphuret of iron. Coke good.

	Specific gravity, 1·216		
	Loss in coking	44·5	
	Total weight of coke,	55·5 = 100·0	
Analysis:—	Moisture,	8·0	
	Volatile matters,	36·5	
	Carbon in coke,	53·5	
	Ashes (purplish),	2·0	
			100.0
	Carbon in the coal, 57·77		

ROBERT DAVIDSON'S MINE.

Thickness of the bed, two feet six inches. Overlaid with fourteen feet of indurated clay. The bed is is worked by "stripping." Coal bright; hard; compact; fracture even; layers thick, with thin seams of carbonaceous clod between them. Contains vertical seams of carbonate of lime.

	Specific gravity, 1·2408		
	Loss in coking,	49·25	
	Total weight of coke,	50·75 = 100·0	
Analysis:—	Moisture,	12·00	
	Volatile matters,	37·25	
	Carbon in coke,	48·75	
	Ashes (pink),	2·00	
			100·00
	Carbon in the coal, 55·55		

SOUTHERN ILLINOIS COAL.

☞ The Coals marked with an asterisk * are good Coking Coals.

MINE.	COUNTY.	Specific Gravity.	Moisture.	Volatile Gases.	Carbon in Coke.	Ash.	Carbon in Coal.	Color of Ash.
Saline River, upper bed	Gallatin		2.6	39.8	56.1	1.5	58.85	
do. do. second bed	do	1.2892	6.5	30.3	55.2	8.0	60.7	
do. do. lowest bed worked	do	1.2925	8.0	32.8	55.5	3.7	63.1	
do. do. upper bed, Lock Reserve	do	1.3000	8.5	30.7	57.8	3.0	66.3	
Eagle Creek	do	1.2364	1.0	36.0	57.2	5.8	67.01	Gray.
Bowles's	do	1.303	2.0	37.8	53.2	7.0		White.
Equality, lower bed	do	1.2953	1.2	34.6	52.2	12.0	58.2	
do. upper bed	do	1.3054	5.7	32.0	59.8	2.5	62.5	
do top bed, Martin's	do	1.2758	2.8	38.58	51.92	6.7	62.5	Drab.
Coal Branch of Bankston Creek	Saline	1.2873	5.3	34.5	50.6	9.6	59.0	
Hays' Mill, Little Saline River	do	1.4955	4.1	28.3	57.6	10.0	57.6	Dark Red.
Dr. Smith's	Williamson	1.3197	3.3	36.08	51.92	8.7	56.27	Reddish Brown.
Spiller's	do	1.2825	6.2	36.9	54.9	2.0	57.5	
Joel Johnson's*	Johnson	1.4446	1.6	23.46	47.84	27.1	61.2	White.
Murphreysboro'	Jackson	1.2933	6.5	31.2	60.8	1.5	67.0	
Shasteen's*	Hamilton	1.3233	5.3	33.64	53.56	7.5	54.85	Pale Brown.
Du Quoin	Perry	1.285	8.5	40.4	48.1	3.0	59.6	Gray.
Schneider's	Monroe	1.246	6.7	36.2	52.6	4.5	58.7	White.
do. lower bed	do	1.2825	9.0	32.0	52.2	6.8	50.2	
Caseyville, six feet bed	St. Clair	1.304	6.0	33.8	55.2	5.0	55.3	Pale Red.
Pfeiffer's	do	1.293	8.5	35.8	51.2	4.5	57.5	Red.
Belleville*	do	1.268	5.5	39.5	49.6	5.4	54.6	Gray.
Belsha's, middle drift	do	1.2966	8.1	35.56	47.74	8.6	54.5	Gray.
Dilg & Kempff's, Belleville, middle	do	1.3847	4.2	38.18	49.02	8.6	54.39	White.
do. do. top Coal	do	1.2843	5.1	40.44	47.66	6.8	59.09	White.
do. do. bottom Coal*	do	1.3531	4.0	35.63	36.77	23.6	49.38	Gray.
W. B. Churchill's	do	1.315	6.0	39.4	45.7	8.9	52.63	White.
Jeffrey's	Madison	1.2859	11.0	37.75	47.35	3.9	51.48	Gray.
Cartlidge's	do	1.3137	8.3	36.09	45.01	10.6	50.38	Gray.
Groshang's	do	1.3221	7.5	30.05	54.85	7.6	56.27	Brown.
Dunford's, near Alton	do	1.2587	5.8	41.46	47.44	5.3	54.62	Gray.
Emerson & Ryder's	do	1.3191	10.3	32.3	53.9	3.5	54.39	Reddish Brown.
Wood River, middle bench	do	1.3158	10.0	40.0	42.7	7.3	49.08	Pink.
do. upper bench	do	1.2916	11.0	44.3	37.2	7.5	45.45	Gray.
Cook's	do	1.3017	8.0	43.15	38.85	10.0	47.1	Gray.
Edwardsville	do	1.346	10.0	36.85	49.75	3.4	53.06	Purplish.

MIDDLE ILLINOIS COAL.

☞ The Coals marked with an asterisk * are good Coking Coals.

MINE.	COUNTY.	Specific Gravity.	Moisture.	Volatile Gases.	Carbon in Coke.	Ash.	Carbon in Coal.	Color of Ash.
Johnson's	Calhoun	1.2631	4.8	40.9	49.1	5.2	53.06	Brown.
Near Carlinville*	Macoupin	1.2797	6.5	36.98	48.72	7.8	53.8	Gray.
Houseworth's, near Pittsfield	Pike	1.2203	5.0	44.5	45.5	5.0	53.2	White.
Jackson's, eight miles north of Pittsfield	do	1.7784	2.0	12.1	56.9	29.0	57.5	Gray.
Drake's*	Green	1.3083	6.0	34.47	48.93	10.6	59.79	Gray.
Sanders', three miles north of Springfield	Sangamon	1.2463	5.6	42.54	42.86	9.0	50.11	
Springfield	do	1.2839	12.0	41.9	42.8	3.3	45.7	Dark Gray.
Puffenberger's	do	1.26	11.5	39.18	43.62	5.7	49.8	Dark Brown.
Pleasant View*	Schuyler	1.286	6.0	34.6	52.9	6.5	57.8	Deep Red.
Rushville	do	1.303	4.5	37.1	46.1	12.3	51.79	White.
Exeter*	Scott	1.288	12.1	30.27	50.13	7.5	52.42	Red.
Barker's	do	1.2396	5.5	37.3	52.2	5.0	54.8	Light Brown.
Frost's	do	1.2883	8.5	37.87	46.53	7.1	51.83	Red.
Higby's	Adams	1.3354	10.0	38.4	41.2	10.4	48.0	Yellow.
Bassett's	do	1.2684	9.2	33.32	51.48	6.0	55.91	Pale Red.
Payne's, in entry	Vermilion	1.2833	5.1	41.9	47.5	5.5	55.5	Gray.
do. in outcrop	do	1.26	8.7	37.4	43.9	10.0	50.38	Gray.
Henson's	do	1.311	9.0	34.5	50.0	6.5	58.8	
Lafferty's, six feet bed	do	1.28	8.5	35.8	48.7	7.0	51.7	Gray.
Carother's	do	1.213	8.5	42.3	46.2	3.0	51.1	Grayish White.
Gilbert's	do	1.213	8.0	43.4	45.6	3.0		
Butler's*	do	1.3943	6.0	34.1	47.9	12.0	55.7	Gray.
Leonard's	do	1.3127	6.4	39.17	48.93	5.5	53.0	White.
Williams'	do	1.2247	2.8	46.35	45.85	5.0	50.58	
Alexander's	do	1.2636	3.4	40.1	40.5	16.0	50.98	
Russell's	do	1.2148	5.6	43.4	39.0	12.0	52.0	Gray.
Chicago & Danville Coal Co.	do	1.2377	8.6	40.44	48.96	2.0	49.8	Bluish Gray.
Cook's*	do	1.3376	9.8	37.5	47.7	5.0	51.44	Reddish Gray.
Eli Thornton's	do	1.4027	15.0	27.27	55.73	2.0	56.52	Red.
T. H. Blackmore's	do	1.2901	6.5	38.0	47.10	8.4	53.6	Reddish Gray.
Colchester	McDonough	1.290	5.4	35.8	56.8	2.0	60.1	Light Gray.
Opposite Peoria	Tazewell	1.263	5.4	38.0	48.6	8.0	52.0	Gray.
Salem Hill	Menard	1.26	9.5	36.5	51.2	2.8	55.55	Very Dark Red.

NORTHERN ILLINOIS COAL. ☞ The Coals marked with an asterisk * are good Coking Coals.

MINE.	COUNTY.	Spec. Gravity.	Moisture.	Volatile Gases.	Carbon in Coke.	Ash.	Carbon in Coal.	Color of Ash.
Kickapoo	Peoria	1.282	11.5	36.2	46.3	6.0	53.2	Gray.
McMurtry's	Knox	1.216	11.0	39.5	45.5	4.0	55.5	Nearly Black.
Loomis', Wataga	do	1.286	11.0	33.4	51.1	4.5	54.1	Pink.
Loomis', Cannel Coal *	do	1.33	6.5	35.9	33.6	24.0	42.6	Gray.
Smith's *	Warren	1.24	6.1	37.0	51.7	5.2	54.55	Red.
Tucker's *	do	1.227	8.0	36.8	51.0	4.2	57.0	Red.
Sheffield	Bureau	1.1986	7.0	40.5	47.5	5.0	53.4	White.
Tiskilwa*	do	1.363	7.5	35.5	48.9	8.1	57.0	White.
Rock Island, Shale,	Rock Island	1.441	4.5	26.8	46.7	22.0	48.9	Light Red.
Carbon Cliff *	do	1.247	7.0	36.7	52.8	3.5	55.3	White.
Corcoran's	do	1.2656	8.0	39.2	50.3	2.5	57.7	Black.
Robbins' *	Henry	1.224	12.5	37.2	47.1	3.2	53.0	Blackish Gray.
Aldrich's	do	1.261	6.0	37.1	49.9	7.0	54.1	Brown.
Kewanee *	do	1.232	9.0	33.2	52.8	5.0	58.2	Gray.
Geneseo	do	1.321	6.5	34.74	52.76	6.0	55.3	Brown.
Thornton & Park's	Mercer	1.244	7.7	38.1	49.7	4.5	53.2	White.
Perley's, Ottawa*	La Lalle	1.2672	7.8	35.9	52.3	4.0	54.6	White.
Ward's, Marseilles	do	1.3144	5.0	40.6	33.4	21.0	47.0	White.
Hitt's Vermilion Mine	do	1.2989	4.5	42.4	40.3	12.8	47.5	White.
Kirkpatrick's, Big Vermilion	do	1.202	7.0	41.2	49.3	2.5	54.6	Gray.
Ireland's	do	1.237	6.8	39.9	50.3	3.0	55.1	Gray.
Seeley's, Lowell *	do	1.2234	8.0	34.6	41.4	16.0	53.0	Bright brick Red.
Kirkpatrick's Cannel Coal *	do	1.434	3.0	36.6	30.4	30.0		Gray.
Eagle Creek	do	1.2265	7.5	39.2	45.8	7.5	57.7	Dark Red.
Buffalo Rock	do	1.289	6.2	38.8	50.5	4.5	54.8	Pale Red.
Big Vermilion	do	1.242	12.0	39.4	47.1	1.5	54.8	
Egleston's Cannel Coal *	do	1.41	6.0	38.5	41.5	14.0	44.4	
Field and Rounds'	do	1.222	6.7	41.4	46.7	5.2	53.4	Red.
Kirkpatrick's Cannel Coal	do	1.266	6.0	39.2	40.1	14.7	48.0	Blackish Grey.
Egleston's	do	1.21	5.5	42.75	48.45	3.3	52.63	Gray.
Hartshorne's *	do	1.2748	4.9	37.6	49.7	7.8	54.16	Brown.
Kentucky Coal Mining Co., upper bed	do	1.2515	10.0	42.51	40.49	7.0	47.44	Brown.
Gorbet's	do	1.2517	5.6	39.58	47.12	7.7	55.55	Red.
Kentucky Shaft, La Salle*	do	1.26	6.5	36.43	50.07	7.0	54.39	Purplish.
Peru	do	1.539	6.0	22.68	40.32	31.0	45.06	Brown.
Watson's	Grundy	1.259	9.0	36.5	47.8	6.7	51.3	Pink.
Turner's, Morris*	do	1.227	7.0	41.5	49.0	2.5	54.1	White.
Eight miles southwest of Wilmington	do	1.2165	4.0	43.95	49.15	2.9	50.0	

ANALYSES OF AMERICAN COALS,

SOME OF WHICH ARE USED IN THE WEST.

STATE.	LOCALITY.	NAME OF BED.	Specific Gravity.	Volatile Matter.	Carbon.	Ashes.
Pennsylvania	Venango County....	Sandy Ridge.....		43.20	49.80	7.00
do.				52.78	29.54	17.68
do.	Beaver County.....			36.00	30.12	33.88
do.	Crawford Connty....			38.75	59.45	1.80
do.	Mercer County.....		1.275	40.50	57.80	1.70
do.	Orangeville.....			43.75	53.45	2.80
do.	Blossburg.....	Coal Run.....	1.371	16.40	75.40	8.20
do.	Blossburg.....	Bloss' Coal.....		32.80	62.80	5.20
Ohio.	Portland County....	Upson's.....	1.264	44.298	53.404	2.288
do.	Jackson County.....		1.283	47.327	49.882	2.221
do.	Jackson County.....		1.560	44.800	39.950	14.620
do.	Pomeroy.....			18.70	76.70	4.60
do.	Briar Hill.....		1.320	38.13	58.41	3.46
Indiana.	Parke County.....	Foundry.....	1.219	21.00	75.00	4.00
do.	Vermilion County...		1.270	39.00	52.00	9.00
do.	Vigo County.....		1.240	27.50	70.00	2.50
do.	Sullivan County.....	Lick Fork.....	1.240	28.00	70.00	2.00
do.	Terre Haute.....		1.240		50.80	
Iowa.	Duck Creek.....		1.270	44.00	48.50	7.50
Missouri.	Calloway County....	Mammoth Vein....	1.250	34.20	50.78	15.02
do.	Cote-sans-dessein....	Mastodon Vein...	1.252	34.06	50.81	15.13

ANALYSES OF FOREIGN COALS,

USED IN THE MANUFACTURE OF IRON.

COUNTRY.	LOCALITY.	NAME OF BED.	Volatile in Coking.	Carbon.	Ashes.	Color of Ash.
England.	Forest of Dean.....	Cinderford.....	36.00	62.0	2.0	Red.
do.	Parkend.....	Cinderford.....	39.00	58.5	2.5	Ochre.
do.	Coleford.....	High Delf.....	32.03	63.72	4.25	Red.
do.	Starkey.....		36.72	61.53	1.75	Red.
do.	S. Staffordshire.....	New Mine Top....	45.100	52.775	2.125	Pink.
do.	S. Staffordshire.....	Fire Clay.....	46.35	51.40	2.25	Buff.
do.	Bentley.....	Ten Yard.....	34.18	63.57	2.25	White.
do.	Lane End.....	Bassey Mine.....	38.70	58.30	3.00	Pink.
do.	(N. Staffordshire)					
do.	Lane End (*best furnace*), N. Staffordshire.....	.....	32.30	65.20	2.50	White.
do.	Golden Hill.....	Spendcroft.....	39.58	58.67	1.75	
do.	Golden Hill.....	Little Row Bed....	34.53	62.47	3.00	Gray.
do.	Shrophshire.....	Randle Coal.....	32.81	64.19	3.00	White.
do.	Shrophshire.....	Double Coal.....	41.38	57.87	0.75	Fawn.
North Wales	Brymbo.....	Three Yard.....	35.70	62.70	1.6	Light.
	Brymbo.....	Brassey Vein.....	34.100	64.582	1.318	Gray.
England.	Churchway.....		35.67	60.33	4.0	Brown.
do.	Churchway.....		34.740	64.135	1.125	Fawn.
do.	S. Staffordshire.....	Corbyn's Hall (Tow Coal).....	40.6	51.9	7.5	Gray.
do.	S. Staffordshire.....	Do. do. (Heathing Coal).....	43.33	54.17	2.50	Buff.
do.		Do. (Bottom Vein)	32.00	62.870	5.125	Pink.
do.	do. Bentley	(Five ft. Splint Coal)	45.83	49.42	4.75	Red.
do.	N. Staffordshire.....	Ten Feet Coal.....	39.11	58.89	2.0	Gray.
do.	Golden Hill.....	Great Row Coal....	37.70	60.80	1.75	Gray.
do.						

SECTIONS.

The following tabular view of sections of Rocks in various parts of the State, is designed, more especially, to show their relative position with regard to the coal beds. They are details of the illustrations prepared for and intended to elucidate the Geological Report. As no appropriation has yet been made for engraving or lithographing maps or sections, it has been deemed best to furnish such information, in the present form, as may probably aid those interested in the economical matters now being published.

ALEXANDER COUNTY.

SEC. 2, T. 14 S., R. 11 W.	FEET	IN.
White quartzose limestone,...	30	
Buff colored shale,.....	10	
	40	
2 MILES BELOW THEBES.		
Mottled limestone,.....	30	
Blue limestone,.....	25	
Slate,.....	45	
	100	

5½ MILES NORTH OF THEBES, NORTH SIDE OF SEXTON'S CREEK.	FEET	IN.
Cherty beds,.....	150	
Red shelly limestone,..	10	
Limestone,.....	30	
	190	
GRAND CHAIN.		
Drift clay.....	30	
Sandstone,.....	35	
Shale,.....	10	
Massive grey limestone,.....	70	
	145	

PULASKI COUNTY.

BIG CHAIN, 3 MILES ABOVE CALEDONIA.	FEET	IN.
Hidden,.....		
Yellow clay,.....	20	
Sandstone,.....	3	
White clay,.....	20	
Slaty sandstone,.....	4	
Shale, with fossils,.....	30	
Hidden,.....	10	
	87	

POPE COUNTY.

SLOAN'S HILL.	FEET	IN.
Sandstone,.....	20	
Limestone,.....	90	
Hidden,.....	20	
Slaty limestones and marlites,	38	
	168	

CARROLL'S PLACE.	FEET
Archimedes limestone,.....	16
Hidden,.....	6
Shale and clay, ...	14
	36

HARDIN COUNTY.

BLUFF AT ROSICLARE.	FEET	IN.
Sandstone,	35	
Limestone,	100	
Sandstone,	6	
Limestone,	60	
	201	

GALLATIN COUNTY.

4 MILES WEST OF SHAWNEETOWN.	FEET	IN.
Mountain limestone and millstone grit,		
Slope,	48	9
Sandstone,	21	8
Rocks covered,	87	3
Limestone,	3	
Covered,	35	
Black limestone,	6	
Covered,	?	
	201	8

3½ MILES N. E. OF SHAWNEETOWN. *Dip 7° N. 15° W.*		
Conglomerate,		3
Limestone,	9	
Black shale and black limestone	?	
Slope,	23	
Sandstone,	30	4
Clay shale,	35	
Black slate,	1	6
Iron with fossils (Grayville bed)		4
Coal,		3½
Fire clay,		6
Clay shale,	10	10
Covered,	15	

NEW HAVEN.	FEET	IN.
Limestone,	4	
Black slate, with nodules of black limestone,	1	
Gray clay shale,	2	6
Alternation of sandy and clay shales,	12	

SALINE COUNTY.

MEEK'S FARM.	FEET	IN.
Millstone grit		
Hard Quartzite,	45	9
Altered shale cont'g coal plants	19	3
Hard quartzite,	8	
Coarse sandstone,	13	
Shale,	13	
Thin-bedded sandstone,	10	6
Covered,	28	
Shaly limestone with Archimedes,	6	
Light blue limestone,	4	4
Brown marl,	1	4
Yellow veined limestone,	1	6
Covered,	15	
Sandstone,	10	
	174	8

SOUTH PART OF SALINE COUNTY. Section showing the denudation the mountian limestone and the millstone grit have undergone, prior to the deposition of the coal measures.	FEET	IN.
Hard quartzite,	8	
Coarse sandstone,	13	
Shale,	13	
Thin-bedded sandstone,	10	6
Covered,	28	
Limestone with Archimedes,	10	10
Brown marl,	1	4
Limestone,	1	6
Covered,	15	
Sandstone,	10	
	111	2

WILLIAMSON COUNTY.

CRAB ORCHARD CREEK, BETWEEN MARION AND MURPHYSBORO.	FEET	IN.
Shale and clay,	27	
Black slate and coal,	2	6
Shale,	11	
Sandstone,	15	
Shale,	12	
	67	6

SALINE CREEK, ON MARION AND GOLCONDA ROAD.	FEET	IN.
Drift,	60	
Sandstone,	16	
Shale,	10	
Sandstone,	15	
	101	

WHITE COUNTY.

GRAYVILLE.	FEET	IN.
Drift clay,		
Shale,	4	
Clay slate, with iron ore,	3	
Shaly sandstone,	10	
	17	

JACKSON COUNTY.

DEVIL'S BAKE-OVEN.	FEET	IN.
Gray limestone,	64	
	64	
BALD ROCK.		
Limestone,	107	
Chert,	100	
	200	

HOLMAN & SMITH'S COAL BANK, MURPHYSBORO'.	FEET	IN.
Hidden,	50	
Shale,	10	
Coal,	3	
Shale,	1	6
Coal,	2	
	66	6

FRANKLIN COUNTY.

SEC. 5, T. 6, S. R., 2 E.	FEET	IN.
Sandstone,	4	
Shale,	1	
Coal,	1	
	6	

½ MILE SOUTH OF BENTON.	FEET	IN.
Shaly sandstone,	3	
Iron conglomerate,	1	
Coal, ...6 to		8
	4	8

RANDOLPH COUNTY.

3 MILES BELOW PRAIRIE DU ROCHER.	FEET	IN.
Hidden,		
Sandstone,	80	
Limestone,	10	
	90	
CHESTER.		
Drift clay,	70	
Limestone,	70	
Shale,	48	
Limestone,	54	
	242	

1 MILE BELOW CHESTER.	FEET	IN.
Hidden,	110	
Limestone,	35	
Sandstone,	22	
Limestone,	35	
	202	
PRAIRIE DU ROCHER.		
Hidden,	120	
Limestone,	90	
	210	
S. W. ¼ SEC. 2, T. 8, S. R. 6 W.		
Massive sandstone,		
Hidden,	54	
Limestone,	27	
Shale,	54	
Limestone,	52	
	187	

ST. CLAIR COUNTY.

BELSHA'S COAL BANK.	FEET	IN.
Limestone,	4	
Marly slate,	1	
Coal slate,		9
Coal,	6	9
Fire clay,	6	
Gray marl,		
	18	6

FISCHER'S QUARRY.		
Soil,	5	
Alluvial clay,	21	6
Shaly limestone,	1	9
Arenaceous limestone,	1	6
Blue limestone with seams of ferruginous clay,	8	6
	38	3

HARRISON'S QUARRY.		
Soil,	6	
Alluvial Clay,	32	6
Yellow clay,		8
Marly clay,	2	9
Blue limestone,	4	
	45	11

HAZEL CREEK QUARRY.		
Micaceous sandstone,	1	8
Ferruginous shale,		10
Seam of iron ore,		1½
Micaceous sandstone,	5	
Gray sandstone,	4	
	11	8

Soil,	?	
Alluvial clay,	3	
Slaty fire clay,		9
Limestone,	4	
Ferruginous marly slate,		3
Coal slate,		7
Coal,	?	
	8	7

WILSON'S SHAFT.		
Soil and alluvial clay,	30	
Variegated clay,	10	
Arenaceous clay,	15	
Shaly limestone,	6	
Blue limestone,	6	
Hard blue rock,	38	
Coal,	6	
Fire clay,		6
Gray limestone,	?	
	111	6

BIG CANTEEN CREEK.	FEET	IN.
Soil,	4	
Alluvial clay,	9	
Arenaceous marly slate,	3	6
Sandstone,	12	6
Slaty ferruginous clay,	1	6
Arenaceous shaly limestone,	3	
Gray hard limestone,	5	6
Fire-clay,	15	
	54	

QUARRY NEAR CASEYVILLE.		
Soil,	3	
Alluvial clay,	3	
Argillaceous sandstone,	9	6
Silicious sandstone,	2	6
Argillaceous sandstone,	?	
	18	

CHURCHILL'S COAL BANK.		
Soil,	?	
Limestone,	3	
Soapy Clay,		2
Coal,	6	
Fire-Clay,	?	
	9	2

ANDERSON'S SHAFT.		
Soil and alluvial clay,	38	
Yellow clay,	15	
White limestone,	6	
Marly slate,	2	
Blue limestone,	5	
Dark calcareous rock,	7	
Coal,	7	6
Fire-clay,	?	
	80	6

Soil,	3	6
Alluvial clay,	3	
Limestone,	13	
Fire-clay,	6	
	25	6

COAL BANK OF ILLINOIS COAL CO.		
Soil,	15	
Gray limestone,	3	
Coal slate,	1	
Coal,	6	
Fire-clay,	?	
	25	

ST. CLAIR COUNTY (Continued).

COAL BANK OF ILLINOIS COAL CO.	FEET	IN.
Soil,	3	4
Alluvial clay,	1	8
Slaty marly limestone,	1	
Limestone,	5	1
Blue marly slate,		3
Coal slate,		7
Coal,	6	
Fire-clay,	?	
	17	11
Soil,	?	
Limestone,	4	6
Coal Slate,		5
Coal,	5	
	9	11
Soil,	?	
Coal Slate,	1	6
Coal,	6	
Fire-clay,	?	
	7	6
Soil,	1	6
Gray limestone,	2	6
Marly slate with limestone,	2	6
Gray limestone,	1	8
Limstone with marly slate,	1	6
Gray limestone,	1	3
Coal slate,		5
Coal,	4	
	15	4

A WELL 208 FEET N. E. OF THE NORTH ENTRY NEAR CASEYVILLE		
Drift clay,	26	8
Limestone,	1	6
Blue marly clay,	1	10
	30	

1 MILE S. OF BOLL'S PLACE.		
Soil and clay,	?	
Shaly sandstone,	2	
Marly slate,	10	
Coal slate,	1	10
Coal,	3	6
Fire-clay,	6	
	23	4

¾ MILE S. E. OF BOLLES PLACE.		
Soil,	1	1
Clay, sand and gravel,	2	2
Sandstone,	6	2
	9	5

STONE CREEK.	FEET	IN.
Arenaceous limestone,	7	
Limestone,	4	
Marly slate,	4	6
Limestone,	2	4
	17	10

PFEIFFER'S PLACE.		
Soil and clay,	17	6
Limestone,	6	
Coal slate,	1	
Coal,	8	
Fire-clay,	?	
	32	6

BELLEVILLE.		
Drift clay,	20	
Limestone,	8	
Marly clay,	7	
Sandstone,	16	
Limestone,	1	
Clay slate,	6	
Limestone,	3	
Coal,	7	
	68	

BECHHOLZ'S COAL BANK.		
Soil and alluvial clay,	10	
Marly slate,	5	
Blue limestone,	2	3
Fire-clay,		6
Coal,	5	6
Fire-clay,	?	
	24	3

ROCK CREEK, SEC. 9, T. 9, S. R. 4 E.		
Shale,	10	
Black slate and coal,	1	
Fire-clay,	2	
	13	

WILSON'S COAL BANK.		
Soil,	?	
Alluvial clay,	42	
Marly slate,	1	
Marly slate,	7	
Black slate,	2	
Blue limestone,	6	
Coal slate,		6
Coal,	6	
Fire-clay,	?	
	64	6

DILG & KEMPFF'S SHAFT.		
Soil and alluvial clay,	29	
Limestone,	15	
Coal slate,	3	
Coal,	7	
Fire-clay,	?	
	54	

MADISON COUNTY.

SHOAL CREEK.	FEET	IN.
Clay shale and impure iron stone,	15	
Limestone,		3
Clay shale and iron stone,	4	
Sandy shale,	4	
	23	3

SILVER CREEK, EAST OF MARINE.	FEET	IN.
Limestone,	3	
Black slate, containing black limestone,		8
Sandy clay shale,	6	
	9	8

CALHOUN COUNTY.

CAP AU GRES.	FEET	IN.
Hidden,	50	
Fine-grained sandstone,	70	
Hidden,	10	
Sandstone,	4	
Hidden,	54	
Sandstone,	26	
	214	
1 MILE BELOW GILEAD.		
Sandstone,	2	
Gray limestone,	12	
Magnesian limestone,	10	
Blue clay, mostly hidden,	?	
	24	
HART'S PLACE, N. E. ¼ SEC. 20, T. 8, S. R., 3 W.		
Fine grained, compact, fossiliferous limestone,	20	
Slate,	8	
Dark slate,	11	
Gray shale,	14	
	53	
½ MILE ABOVE CAP AU GRES.		
Hidden,	54	
Gray limestone with fossils,	24	
Slaty limestone,	6	
Fine grained sandstone,	65	
Fawn colored sandstone,	6	
Ash colored sandstone,	12	
	167	

HAMBURG.	FEET	IN.
Loess and drift,	80	
Crinoidal limestone,	60	
Hidden,	125	
Oolitic limestone,	6	
Compact bluish limestone,	10	
Shelly limestone,	6	
Compact gray limestone,	4	
	291	
MISSISSIPPI BLUFF, NORTH LINE OF THE COUNTY.		
Blue clay,	14	
Arenaceous bed,	3	
Hidden,	12	
	29	
N. E. ¼ SEC. 35, T. 12, S. R. 2 W. *Dip* 24° *S.* 20° *E.*		
Hidden,	60	
Crinoidal limestone,	25	
Hidden,	30	
	115	

CUMBERLAND COUNTY.

EMBARRAS RIVER.	FEET	IN.
Sandstone and soil,	33	
Coarse sandstone,	2	8
Sandy shale,	2	
Greenish clay shale and thin layers of black coaly matter,	13	
Ferruginous limestone,		8
Clay with iron stone,	1	6
	52	10

	FEET	IN.
Bro't forward,	52	10
Hard sandstone,		10
Nodular sandy shale,	3	
Thin sandy shale,	6	4
Coarse sandstone,	2	
Sandy shale,	4	
Covered,	13	
	82	

VERMILION COUNTY.

PARIS'S MILL.	FEET	IN.
Yellow Sandstone,	15	
Micaceous sandy shale,	2	
Yellow sandstone,	3	
Sandy shale,	2	
	22	

DR. FITHIAN'S QUARRY.		
Soil and drift,	11	
Sandstone,	15	
Silicious clay shale,	10	
Clay shale,	4	
Coal (Seam No. 6),	1	9
	41	

THORNTON'S MILL.		
Soil and drift,	44	
Clay shale,	16	
Coal,	3	6
Blue fire-clay,	7	
Indurated shale,	1	3
Sandy shale,	5	
Sandstone,	11	
	87	9

NORTH FORK, W. OF DANVILLE.		
Soil and drift clay,	?	
Bluish gray limestone,	2	
Clay shale,	4	
Coal (Seam No. 2),	2	
Fire-clay,	5	
Sandy shale,	23	
	36	

N. W. FRAC. ¼ SEC. 1, T. 18, R. 11.		
Soil and drift clay,	34	
Dark calcareous slate,	3	
Black bituminous slate,	3	
Clay shale,	1	8
Calcareous sandstone,	1	3
Blue sandy shale,	2	
Sandstone,	7	
Hidden,	11	
	62	11

CHICAGO & DANVILLE COAL. CO.		
Clay shale,	48	
Dark clay shale,	3	
Coal,	7	3
Coal and clay,	1	5
Coal,	1	2
Fire-clay,	4	3
Silicious clay,	6	1
Limestone,	3	
Calcareous slate,	4	6
Coal,	2	6
Fire-clay,	4	6
Sandstone,	16	
	101	8

COOK'S MINE.	FEET	IN.
Soil and drift,	20	
Sandy shale,	18	
Dark clay shale,	12	
Coal,	3	6
Hidden,	5	
	58	6

JOSIAH SANDUSKY'S.		
Sandy Shale with thin seams of sandstone,	65	
Sandy shale,	11	
Silicious clay shale with nodular iron ore,	16	
Clay shale with nodular iron ore,	11	
Fossil bed,		3
Coal,	6	6
Fire-clay,	2	
Coal,	1	6
	113	3

ALEXANDER'S COAL MINE.		
Soil and drift clay,	9	
Fossiliferous clay shale,	1	
Fossil bed,		2
Coal (No. seam 4),	6	6
Fire-clay,	1	2
Coal (seam No. 3),	1	1
Fire-clay,	5	
Silicious clay,	8	
Limestone,	2	
Clay shale,	4	
Coal (seam No. 2),	1	2
Fire-clay,	6	
Sandy shale and shaly sandstone	25	
	70	1

SEC. 26, T. 19, R. 13.		
Soft sandstone,	12	
Sandy shale,	12	
	24	

HANGING ROCK.		
Soil and drift clay,	9	
Heavy bedded sandstone,	32	
Dark clay shale with nodular iron ore,	12	
Black slate,	3	
Black bituminous shale,		4
Coal,	1	8
Fire-clay,		10
Coal,	1	
Fire-clay,	3	
Hidden,	8	
	70	10

SEC. 25, T. 19, R. 13.		
Brecciated limestone,	12	
	13	

VERMILION COUNTY (Continued).

MOUTH OF STONY CREEK.	FEET	IN.
Sandstone with sandy shale,	16	
Sandy shale,	4	
Clay shale,	2	
Bituminous slate,	2	
Coal (seam No. 5),		6
	24	6

SNAKE DEN.		
Drift clay,	30	
Yellow sandstone,	10	
Micaceous sandy shale,	12	
	52	

ELLIS'S BRANCH, NEAR GEORGETOWN.		
Drift,	?	
Clay shale,	18	
Coal,	3	6
Fire-clay,	?	
Brown sandstone,	3	
Calcareous sandstone,	12	
Shaly sandstone,	15	

LAFFERTY'S COAL MINE.		
Soil and drift,	40	
Black clay shale,	6	
Coal (Seam No. 2),	5	6
Fire clay,	5	
Hidden,	6	
	62	6

MAJOR VANCE'S MINE.		
Drift,	20	
Sandy shale and thin bedded sandstone,	40	
Silicious clay with nodular iron ore,	22	
Clay shale with nodular iron ore	28	
Fossil bed,		2
Coal,	6	6
	116	8

S. E. ¼ S. E. ¼ SEC. 19, T. 19 R. 12 W.		
Soil and drift,	28	
Sandy shale, with brown calcareous sandstone,	22	
Silicious clay shale, with nodules of iron ore,	50	
	100	

MAKERSON'S BRANCH.	FEET	IN.
Drift,	?	
Thick bedded yellow sandstone	32	
	32	

HENSON'S COAL MINE, GRAPE CR.		
Thin bedded sandstone,	3	
Thick bedded sandstone,	11	
Sandy shale,	16	
Soft white sandstone,	5	
Coal (Seam No. 1),	7	
Hidden,	3	
	45	

GRIFFITH'S COAL MINE.		
Soil and drift,	20	
Thin bedded sandstone,	8	
Silicious clay shale,	39	
Clay shale,	28	
Fossil bed,		2
Coal (Seam No. 4),	6	6
	101	8

LEONARD'S COAL MINE.		
Soil and drift clay,	28	
Blue limestone, fossiliferous,	1	10
Black slate, containing nodules of blue fossiliferous limestone,	3	
Coal (seam No. 2,)	6	
Fire clay,	5	
Sandy shale,	6	
Hard calcareous sandstone,	12	
Sandy shale,	3	
	64	10

1 MILE ABOVE STATE-LINE.		
Soil and drift clay,	65	
Black slate,	4	
Bluish white clay shale,	1	6
Calcareous sandstone,	1	4
Sandy shale,	8	
	79	10

1 MILE ABOVE MOUTH OF STONY CREEK.		
Soil and drift clay,	2	
Thin bedded sandstone,	14	
Light gray sandy shale with nodular iron ore,	66	
	82	

BLACKAMORE'S MINE.		
Hidden slope,	44	
Black clay shale,	4	
Coal,	4	
	52	

VERMILION COUNTY (Continued).

2 MILES ABOVE STATE LINE.	FEET	IN.
Soil and drift clay,	?	
Black slate,	4	
Red clay shale,	1	8
Micaceous sandstone,	1	4
Sandy shale,	1	8
Sandstone,	10	
Hidden,	22	
	40	8
SEC. 22, T. 19, R. 13.		
Soil and drift,	28	
Hard micaceous sandstone,	3	
Sandy shale,	15	
Thin-bedded micaceous sandstone,	15	
Sandy shale,	7	
	68	
BUTLER'S MILL.		
Drift clay,	?	
Thick-bedded sandstone,	13	
Clay shale with nodular iron ore,	4	6
Arenaceous limestone,	2	
Clay shale,	1	
Black slate,	1	10
Coal,	1	2
Fire-clay,	6	
Micaceous sandstone,	?	
	28	6
SALT FORK, ½ MILE ABOVE NORTH FORK.		
Soil and drift clay,	20	
Silicious clay shale,	20	
Fossiliferous clay shale,	20	
Coal (seam No. 4),	6	
Fire-clay,	1	4
Coal (seam No. 3),	1	2
Fire-clay,	4	
Silicious clay shale,	10	
Blue limestone,	2	6
Black slate (fossiliferous), coal (seam No. 2),	4	3
Fire-clay,	4	
Sandy shale,	11	
	108	3

H. BECKWITH'S COAL MINE.	FEET	IN.
Sandy slope,	23	
Clay shale,	34	
Coal (seam No. 4),	6	8
Fire-clay,	1	2
Coal (seam No. 3),		10
Fire-clay,	4	
Silicious clay shale,	12	
Blue limestone,	2	6
Dark clay shale,	4	
Coal (seam No. 2),	3	
	91	2
CAROTHERS & BALL'S COAL MINE.		
Soil and drift,	25	
Clay shale, fossiliferous,	8	2
Fossil bed,		6
Coal (seam No. 4),	6	3
Fire-clay,	1	4
Coal (seam No. 3),	1	
Fire-clay,	5	
Silicious clay,	9	
Blue limestone, fossiliferous,	2	
Black slate with nodules of blue fossiliferous limestone,	4	
Coal (seam No. 2),	4	
Fire-clay,	5	
Sandy shale,	6	
Sandstone, irregularly bedded,	14	
Sandy shale with nodular iron ore,	11	
	102	3
LEONARD'S QUARRY.		
Soil and drift clay,	25	
Thin-bedded sandstone,	3	
White sandstone, thick-bedded,	14	
Sandy shale,	24	
	66	

SCHUYLER COUNTY.

S. W. ¼ SEC. 36, T. 2 N., R. 1 W.	FET	IN.
Drift clay,.....	?	
Limestone,.....	1	
Black slate,.....	3	
Coal,.....	4	
Fire-clay,.....	5	
Limestone,.....	1	6
Shaly sandstone,.....	40	
	54	6
N. W. ¼ SEC. 12, T. 3 N., R. 1 W.		
Drift clay,.....	?	
Sandstone,.....	15	
Coal,.....	2	6
Hidden,.....	8	
Limestone,.....	12	
	37	6

¼ MILE E. OF CAMDEN.	FEET	IN.
Drift clay,.....	?	
Shale,.....	3	
Black slate,.....		6
Shale,.....	5	
Sandstone,.....	40	
	48	6
MCKEE'S MILL, SUGAR CREEK.		
S. W. ¼ SEC. 17, T. 2 N., R. 1 E.		
Drift clay,.....	?	
Shale,.....	33	
Sandstone,.....	25	
Shale, with iron ore,.....	7	6
Limestone,.....	8	
	73	6

CALHOUN COUNTY.

N. E. ¼ SEC. 23, T. 12 N., R. 2 W.	FEET	IN.
Dip 4° *N*, 10° *W.* (*lower beds.*)		
Hidden,.....	60	
Chert,.....	10	
Limestone, the lower part slaty and ash colored,.....	65	
Hidden,.....	60	
Magnesian limestone,.....	41	
Hidden,.....	20	
	256	

BATT'S PLACE, SEC. 14, T. 11 S., R. 2 W.	FEET	IN.
Drift clay,.....	?	
Crinoidal limestone,.....	?	
Ash colored, slaty limestone,..	94	
Blue clay,.....	18	
Gray fossilsiferous limestone,..	12	
Magnesian limestone,.....	6	
Hidden,.....	44	
	174	
½ MILE ABOVE HARDIN.		
Upper beds mostly hidden,....	?	
Gray limestone,.....	6	
Hidden,.....	21	
Shale,.....	8	
Crystalline limestone,.....	5	
Blue clay,.....	?	
Gray limestone with fossils,...	27	

JERSEY COUNTY.

8 MILES BELOW GRAFTON, BATES' WOOD YARD.	FEET	IN.
Loess and drift,	?	
Crinoidal limestone,	44	
Ash-colored shaly and cherty beds,	75	
Limestone,	20	
	139	

RIVER BLUFF, 3 MILES BELOW MACOUPIN CREEK.		
Drift and loess,	?	
Crinoidal limestone,	30	
Ash-colored shaly bed,	15	
Hidden,	78	
	123	

SAVAGE'S COAL BANK, SEC. 17, T. 7 N., R. 10 W.		
Drift,	?	
Black slate,	?	
Coal,	2	6
Fire-clay,	?	

LANGLEY'S COAL BANK, S. W. ¼ SEC. 10, T. 7 N., R. 10 W.	FEET	IN.
Drift,	?	
Limestone in fragments,	3	
Black slate,	2	
Coal,	5	
Fire-clay,	?	
	10	

ON PIASA, 1 MILE S. OF DELHI.		
Drift,	?	
Coarse-grained sandstone,	8	
Chert,	5	
Fine grained sandstone,	20	
	33	

SEC. 9, T. 6 N., R. 13 W.		
Drift clay,	?	
Magnesian limestone,	40	
Gray limestone, with fossils,	20	
	60	

HAMILTON COUNTY.

N. W. ¼ SEC. 28 T. 4 S., R. 5 W.	FEET	IN.
Shale,	12	
Slate,	1	
	13	

Bro't up.	13	
Coal,	1	6
Slate	1	
	15	6

BOND COUNTY.

4 MILES SOUTH OF POCAHONTAS.	FEET	IN.
Limestone,	3	
Black slate,	1	6
	4	6

Bro't up.	4	6
Clay shale,	9	
Coal,	1	6
	15	

FAYETTE COUNTY.

12 MILES NORTH OF VANDALIA.	FEET	IN.
Clay,	10	
Limstone (with spirifer Lamarckii),	3	6
	13	6

Bro't up.	13	6
Clay,	1	
Limestone,	3	
	17	6

CLARK COUNTY.

CROOKED CREEK 1½ MILES W. OF TERRE HAUTE.	FEET	IN.
Rocks covered with sand, etc.	30	
Alternations of clay and sandy shales,	15	
Black clay and pyrites,		7
Black slate,	3	
Coal,	1	
Clay,	10	
	59	7

LIVINGSTON.		
Slope,	30	
Thin broken limestone,	9	
Thin bedded limestone,	10	
Blue clay,	5	
Coal,	1	6
Clay,	?	
Sandy shale,	7	
Ripple-marked sandstone,	2	
Clay shale,	8	
Iron ore,		1
Clay shale,	3	
Ferruginous limestone,		5
Alternations of clay shale, with a layer of large blocks of nodular limestone,	60	

1½ MILES EAST OF AUBURN.	FEET	IN.
Soil,	4	
Sandstone,	20	
Black slate and coal,		8
Sandy clay shale,	8	
Dark clay shale,		6
Sandy shale,	1	6
Clay shale,	2	
Sandstone,	4	
	40	8

1 MILE SOUTH OF AUBURN.		
Covered,	20	
Sandstone,	25	
Black limestone,		8
Clay shale,	4	
	49	8

GREENE COUNTY.

RANDALL'S MILL, SEC. 2, T. 9 N., R. 10 W.	FEET	IN.
Drift clay,	?	
Shale,	4	
Sandstone,	9	
Shale,	12	
	25	

2¼ MILES N. E. OF WHITEHALL.		
Drift,	?	
Shale,	10	
Black slate,	1	6
Coal,	2	4
Hidden,	6	
Limestone,	4	
	23	10

BLANCHARD'S COAL BANK.	FEET	IN.
Drift,	?	
Sandstone,	8	
Slate,		2
Coal,	2	8
Fire-clay,	?	
	10	10

RIVER BLUFF, N. SIDE OF MACOUPIN CREEK.		
Drift,	?	
Crinoidal limestone,	68	
Ash-colored shale,	10	
Hidden,	45	
	123	

ADAMS COUNTY.

NEAR MENDON.	FEET	IN.
Drift clay,	?	
Sandstone,	10	
Concretionary limestone,	12	
Arenaceous bed,	16	
Magnesian bed,	6	
Hidden,	6	
	50	
QUINCY CITY (LOWER PART).		
Loess and drift,	62	
Limestone,	33	
Hidden,	28	
	123	

S. E. ¼ SEC. 36, T. 3 S., R. 8 W.	FEET	IN.
Loess and drift,	40	
Chert in fragments,	18	
Crinoidal limestone,	31	
Arenaceous bed,	6	
Hidden,	41	
	136	
S. E. ¼ SEC. 12, T. 2 N., R. 8 W.		
Drift,	?	
Gray shale,	15	
Coal,	2	6
Fire-clay,	?	
	17	6

SCOTT COUNTY.

EXETER.	FEET	IN.
Slate,	3	
Coal,	2	8
Clay,	6	
Limestone,	22	
Hidden,	12	
	45	8
N. E. ¼ SEC. 14, T. 13 N., R. 12 W.		
Sandstone,	6	
Slate,	3	6
Coal,	2	8
Fire-clay,	4	
Limestone,	6	
	22	2

SEC. 31, T. 15, N. R. 16 W.	FEET	IN.
Drift and loess,	?	
Slaty clay with geodes,	30	
	30	
WINCHESTER.		
Limestone,	14	
Conglomerate,	16	
Magnesian bed,	26	
	56	

BROWN COUNTY.

MT. STERLING ROAD, 2 MILES S. OF CAMPBELL'S COAL.	FEET	IN.
Drift clay,	20	
Limestone,	2	
Fire-clay,	3	
Gray shale,	56	
	81	
CAMPBELL'S COAL BANK, SEC. 5, T. 1 N., R. 3 W.		
Drift clay,	?	
Shale,	10	
Slate,		6
Coal,	2	
Iron clay,	2	
	14	6
LITTLE MISSOURI CREEK.		
Drift clay	?	
Shale,	12	
Limestone,	5	
Blue shale,	?	
	17	

2 MILES N. OF MT. STERLING.	FEET	IN.
Drift clay,	40	
Limestone,	10	
	50	
3 MILES N. OF MT. STERLING.		
Drift clay,	?	
Limestone,	2	
Clay,	5	
Gray shale,	25	
	32	
BLUFFS AT LAGRANGE.		
Drift clay,	105	
Shale,	15	
Limestone,	1	
Shale,	3	
Coal,	2	6
Fire-clay,	7	
Limestone,	6	
Shale,	8	
Blue clay,	6	
Shale,	25	
Sandstone,	22	
Hidden (lower coal seam),	20	
	220	6

PIKE COUNTY.

1½ MILES FROM THE MOUTH OF FISH-HOOK CREEK.	FEET	IN.
Drift clay,	4	
Blue marlites,	14	
Magnesian bed,	6	
Hidden,	24	
	48	
ROCKPORT.		
Drift clay,	?	
Crinoidal limestone,	15	
Hidden,	30	
Shale,	3	
Oolitic conglomerate,	4	
Slope,	80	
	132	
KINDERHOOK		
Loess and drift clay,	?	
Crinoidal limestone,	13	
Buff-colored arenaceous bed, with fossils,	23	
Concealed,	56	
	92	
WELLS' PLACE, SEC. 17, T. 7 S., R. 4 W.		
Magnesian limestone,	10	
Gray limestone,	12	
Hidden,	30	
	52	
1½ MILES BELOW ATLAS.		
Drift,	?	
Crinoidal limestone,	12	
Arenaceous bed,	8	
Hidden,	18	
Shale,	36	
Slaty limestone with fossils,	2	
Blue clay,	44	
Hidden,	27	
	147	

SEC. 9, T. 4 S., R. 7 W.	FEET	IN.
Crinoidal limestone,	16	
Arenaceous bed,	23	
Hidden,	72	
	111	
N. E. ¼ S. 16, T. 5 S., R. 4 W.		
Drift,	?	
Shale,	6	
Black slate,	3	
Coal,	1	6
	10	6
¼ MILE WEST OF BARRY.		
Crinoidal limestone,	15	
Ash colored shale,	3	
Hidden,	24	
	42	
MONTEZUMA.		
Drift clay,	?	
Crinoidal limestone, 30′ to	50	
	50	
N. W. ¼ SEC. 18, T. 3 S., R. 4 W.		
Gray shale,	12	
Fossiliferous slate,	3	6
Black slate,	4	2
Coal,	1	6
	21	2
1½ MILES N. W. OF PERRY.		
Magnesian bed,	18	
Geode bed,	45	
Limestone,	4	
	67	

McDONOUGH COUNTY.

2 MILES N. W. OF MACOMB.	FEET	IN.
Shaly sandstone,	5	
Sandstone,	10	
Coal,		1
Clay,	1	
	16	1
N. W. ¼ SEC. 13, T. 5 N., R. 4 W. STARKEY & DAVIS' COAL BANK.		
Drift clay, 40′ to	50	
Shale,	20	
Clay slate,	1	6
Coal, 2′ 6″ to	3	
	74	6

N. W. ¼ SEC. 33, T. 4 N., R. 3 W.	FEET	IN.
Drift clay, 30′ to	40	
Shale,	2	
Coal,	2	
	44	
CROOKED CREEK, CARTHAGE AND MACOMB ROAD.		
Drift clay, 40′ to	60	
Sandstone,	6	
Shale,	5	
Concretionary limestone,	8	
Hidden,	53	
	132	

McDONOUGH COUNTY (CONTINUED).

LOWRY'S COAL BANK.	FEET	IN.
Shaly sandstone,	4	
Coal,	2	
Shaly sandstone,	16	
Concretionary limestone, 12′ to	15	
	37	

S. W. ¼ SEC. 11, T. 5 N., R. 4 W.	FEET	IN.
Drift,	?	
Shale,	3	
Coal,	2	
Hidden,	44	
Black slate,	1	
Fire-clay,	9	
Shale with iron ore,	6	
Concretionary limestone,	15	
	80	

WARREN COUNTY.

N. W. ¼ SEC. 16, T. 11 N., R. 11 W.	FEET	IN.
Drift clay, 10′ to	20	
Shale,	6	
Black slate,	3	
Coal,	2	
	31	
N. E. ¼ SEC. 14, T. 14 N., R. 11 W.		
Drift,	10	
Shaly sandstone,	3	
Limestone,	6	
Coal,	4	6
	23	6
TUCKER'S COAL BANK, N. W. ¼ SEC. 9, T. 8 N., R. 1 W.		
Slate, 30′ to	40	
Septaria,	1	
Shale with iron ore,	3	6
Black slate,	3	
Shale, 5′ to	6	
Coal,	2	2
	55	8

N. E. ¼ SEC. 26, T. 9, N. R. 1 W.	FEET	IN.
Sandstone and shale,	3	
Blue slaty limestone,	8	
Black slate,	2	6
Coal,	3	
Slate,	1	
Sandstone,	2	
	19	6
CEDAR CREEK, 3 MILES N. OF MONMOUTH.		
Drift clay,	15	
Black slate,	2	
Shale,	8	
Crinoidal limestone,	36	
	61	
SEC. 19, T. 9 N., R. 3 W.		
Shaly sandstone,	12	
Massive sandstone,	14	
Dark blue slate with iron ore,	8	
	34	

HENDERSON COUNTY.

ON HENDERSON RIVER, 2½ MILES S. E. OF OQUAWKA.	FEET	IN.
Drift clay,	?	
Crinoidal limestone,	30	
Ash-colored grit-stones,	20	
	50	4

ROCK ISLAND COUNTY.

BLUFFS OF ROCK RIVER, OPPOSITE CAMDEN.	FEET	IN.
Drift clay,.....50′ to	75	
Shaly sandstone,.....	10	
Black slate,.....	4	
Coal,.....	1	4
Shaly limestone,.....	4	
Massive sandstone,.....	20	
Devonian limestone,.....	10	
	124	4

HANCOCK COUNTY.

1 MILE ABOVE THE STEAMBOAT LANDING, NAUVOO.	FEET	IN.
Drift clay,.....	20	
Sandstone,.....	12	
Concretionary limestone,.....	5	
Arenaceous bed,.....	25	
Geode bed,.....	38	
Limestone,.....	16	
	116	
CARTHAGE ROAD, 2 MILES S. E. OF NAUVOO.		
Concretionary limestone,.....	10	
Magnesian limestone,.....	9	
Geode bed,.....	10	
	29	

BLUFFS BACK OF APPANOOSE.	FEET	IN.
Drift,.....		
Concretionary limestone,.....	?	
Arenaceous bed,.....	42	
Geode bed,.....	28	
	30	
S. W. ¼ SEC. 24, T. 4 N., R. 6 W.	100	
Drift,.....		
Sandstone,.....	?	
Concretionary limestone,.....	18	
Arenaceous limestone and marlites,.....	24	
	20	
	62	

SCHUYLER COUNTY.

KING'S MILL, N. W. ¼ SEC. 15, T. 3 N., R. 4 W.	FEET	IN.
Sandstone,.....	12	
Black slate,.....	3	
Hidden,.....	34	
Magnesian bed,.....	10	
Geode bed,.....	24	
	83	
S. E. ¼ SEC. 17, T. 3, N. R. 4 W.		
Drift clay,.....	?	
Black slate,.....	2	
Coal and shale,.....	1	6
Sandstone,.....	6	
Concretionary limestone,.....	10	
	19	6

BIRMINGHAM.	FEET	IN.
Drift,.....	20	
Quartzose sandstone,.....	14	
Concretionary limestone,.....	18	
Arenaceous bed,.....	16	
Magnesian bed,.....	10	
Geode bed,.....	40	
Limestone,.....	16	
	134	
N. E. ¼ SEC. 18, T. 2 N., R. 1 W.		
Shale,.....	6	
Limestone,.....	1	
Black slate,.....	3	
Coal,.....	4	
	14	

HANCOCK COUNTY.

MONTEBELLO COAL SEAM, S. W. ¼ SEC. 5, T. 5 N., R. 8 W.	FEET	IN.
Drift clay,	? p	
Shale,	25	
Slate,	5	
Coal,	1	
Sandstone,	25	
	56	

BLUFFS, OLD FORT EDWARDS, WARSAW.		
Drift clay,	20	
Magnesian beds,	10	
Geode beds,	45	
Limestone,	16	
	91	

GRAVEYARD CREEK, WARSAW.		
Concretionary limestone,	5	
Arenaceous beds, with marlites,	25	
Magnesian beds,	10	
Geode bed,	45	
Limestone,	10	
	95	

3 MILES N. E. OF WARSAW.		
Drift clay,	20	
Limestone and marlites,	25	
Cherty beds,	56	
Light gray limestone,	12	
	113	

OLD MILL, MONTEBELLO.	FEET	IN.
Drift clay,	?	
Magnesian bed,	2	
Geode bed,	20	
Limestone,	40	
	62	

LITTLE'S COAL BANK, S. W. ¼ SEC. 7, T. 5 N., R. 3 W.		
Drift clay,	?	
Shale with fossils,	6	
Iron ore,		
Septaria,		9
Black slate,		6
Gray shale,	38	
Clay slate,	1	6
Coal, 2′ 6″ to	3	
	50	1

WILLIAMS' CREEK, 1 MILE OF PULASKI.		
Drift,	?	
Sandstone,	14	
Shale,	16	
Coal,	2	6
Hidden,	8	
Fire-clay,	3	
	43	6

½ MILE BELOW HIBBARD'S, NAUVOO.		
Geode bed,	10	
Limestone and marlites,	30	
Cherty beds,	20	
	60	

LA SALLE COUNTY.

ONE MILE EAST OF OTTAWA, PERLEY'S.	FEET	IN.
Soil and alluvium	4	
Indurated clay	6	
Coal	1	6
Clay	6	
Sandstone		?
Limestone		?
Indurated clay	2	6
Sandstone, Silurian		?

LA SALLE, CORNER OF BEELEN AND LA SALLE STREETS.	FEET	IN.
Gray crystalline limestone	7	
Blue shale	5	
Limestone, with earthy partings	7	8
Black slate	10	
Coal	6	
Shale		?

VERMILION COUNTY.

PAINE'S COAL MINE.—DANVILLE.	FEET	IN.
Soil and drift clay	15	
Coal (Seam No. 4.)	6	6
Fire clay	1	4
Coal (Seam No. 3.)	1	6
Fire clay	5	
Silicious clay	9	
Blue limestone	2	
Black slate, with nodules of blue fossiliferous limestone	4	
Coal (Seam No. 2)	4	
Fire clay	5	
Sandy shale	9	
Hard calcareous sandstone	14	
Sandy shale with nodular iron ore	12	
Hidden	10	
	98	4

BELOW MOUTH OF GRAPE CREEK.		
Soil and drift clay	6	
Light sandy shale with nodular iron ore	22	
Clay shale	28	
Blue calcareous slate	3	
Black bituminous slate	3	
	62	

VERMILION COUNTY, IND.

The following sections in Indiana are given, because the coal beds which crop out at the places named extend into some of the counties of Illinois.

ONE MILE ABOVE EUGENE.		
Soil and drift clay	11	
Black bituminous shale with nodular iron ore	12	
Black slate	3	
Coal	2	
Hidden	12	
	43	

PERRYSVILLE.	FEET	IN.
Soil and drift clay	?	
Clay shale	3	
Coal	1	3
Black clay shale	2	
Blue limestone	3	6
Dark clay shale	16	6
Light silicious clay shale	17	
	43	3

HORSE-SHOE BEND.		
Soil and drift clay	?	
Clay shale	5	
Black bituminous shale		8
Coal	4	6
Fire-clay	4	
Sandy shale	19	
Arenaceous limestone	5	
Coal	?	
	38	2

EUGENE.		
Sand and gravel	11	
Black slate	1	
Coal	1	3
Clay shale	1	
Blue sandy shale	8	
	22	3

WILLAMSPORT.		
Heavy bedded sandstone	20	
Yellow shaly sandstone	6	
Blue and red limestone	1	
Sandy shale	5	
	32	

LA SALLE COUNTY.

PERU COAL MINING COMPANY.	FEET	IN.
Common clay	29	8
Blue sandstone		7
Blue shale	39	1
Red shale	3	
Brown shale	10	2
Black slate	11	
Coal	4	6
Fire-clay	6	4
Carried forward	104	4

	FEET	IN.
Brought forward	104	4
Sandstone	20	
Blue shale	2	
Sandstone	92	
Blue shale		8
Sandstone	16	
Brown shale	8	
Blue slaty shale	5	
Carried forward	248	

LA SALLE COUNTY (Continued).

	FEET	IN.
Brought forward	248	
Black slate	3	
Bluish slate	3	
Brown shale	6	
Gray limestone	4	
Dark brown shale	1	6
Hard blue shale	1	6
Black slaty shale	2	
Black slate	3	10
Coal		6
Brown slaty shale	1	9
Dark shale	1	
Limestone		8
Bluish slaty shale	8	3
Limestone	1	10
Gray slaty shale	8	
Brown shale	3	8
Dark Brown shale	7	
Blackish slaty shale	11	
Dark brown shale	1	
Black slate	8	4
Coal	3	6
	329	4

ADAMS AND PULSIFER'S BORING, NORTH OF LA SALLE.

Soil and drift	59	
Limestone	17	
Blue shale	2	6
Red shale	8	
Blue shale	10	
Coal		4
Blue shale	6	
Limestone	3	6
Blue shale	24	
Red shale	3	
Blue shale	4	
Limestone	1	6
Blue shale	12	
Limestone	6	
Shale	9	6
Black shale	9	
Red shale	3	
Limestone	3	
Shale	65	
Slate	7	
Shale	3	6
Coal	4	4
	261	2

J. A. ROCKWELL'S BORING, NEAR THE CANAL BASIN, LA SALLE.

Alluvium	53	
Limestone	1	6
Indurated clay	18	
Carried forward	72	6

	FEET	IN.
Brought forward	72	6
Coal		
Indurated clay	19	6
Sandstone	18	
Shale	19	
Black slate	6	
Coal	5	
Fire-clay	6	
Sandstone	20	
Limestone	1	
Shale	16	
Black slate	10	
Coal	6	
Fire-clay	2	6
Limestone	6	
Clay shale	2	
Limestone	3	
Shale	50	6
	263	

BORING IN SEC. 11, T. 31 N., R. 3 E., FOR A. CAMPBELL.

Soil and drift	70	
Indurated clay	20	
Limestone	6	
Indurated clay	9	
Black slate	3	
Coal		4
Clay	9	
Sandstone	12	
Indurated clay	11	
Black slate	1	6
Limestone	2	6
Shale	2	6
Black slate	8	
Coal	7	
	161	10

BORING AT MENDOTA.

Clay	5	
Quicksand	2	
Clay	23	
Gravel	8	
Clay	48	
Sand	2	
Indurated clay	32	
Limestone	10	
Indurated clay	3	
Sandstone	5	
Clay	8	
Sand	1	
Limestone	33	
	180	

LA SALLE COUNTY (Continued).

PERU, HILL EAST OF "CHAMBER'S HOUSE."	FEET	IN.
Soil and slope		
Yellowish limestone	5	
Reddish shale	5	
Blue shale	5	
Limestone	4	
Black slate	1	8
Shales, with carbonaceous matter	6	6
Coal		5
Blue shale	11	
Fragmentary limestone	10	
	48	7

MITCHELL'S PLACE, BUFFALO ROCK.	FEET	IN.
Soil and sand	2	6
Clay and sand	5	
Yellow indurated clay	3	
Blue indurated clay	4 to 6	
Coal	1, 6 to 2	10
Clay	1 to	6
Sandstone, Silurian	133	6
	153	4

WHITE COUNTY.

NEAR GRAYVILLE.	FEET	IN.
Soil,	3	
Shale,	14	
Black slate,	6	
Fossil bed,		3
Black slate,	1	8
Shale,	4	
	28	11

RIVER BANK, NEAR GRAYVILLE.		
Soil,	2	
Shale,	14	
Black slate,	1	8
Impure limestone,	3	
Coal,		8
Shale,	3	
	24	4

ARTESIAN WELL, GRAYVILLE.		
Soil and clay,	18	
Sand and gravel,	4	
Blue shale,	18	
Sandstone,	2	
Blue shale,	3	
Sandstone,	4	
Shale,	26	
Black slate,		10
Shale,	12	
Flinty bed,	1	4
Sandstone,	7	
	96	2

CARMI.		
Shale,	8	
Clay slate,	5	
Black slate,	1	
Coal,		8
Clay,	2	
Carried forward,	16	8

	FEET	IN.
Brought forward,	16	8
Sandstone,	2	
Slate,	1	6
Slaty clay,	2	
Reddish gray shale,	1	6
Sandstone,	5	
Gray shale,	2	
Sandstone,	2	
Sandy slate,	6	
Coal,	1	9
Clay,	1	6
Gray shale,	10	
Sandstone,	8	
Clay shale,	5	
Clay,	8	
	72	11

HIGHT'S SHOALS.		
Gray sandstone,	30	
Brown sandstone,	20	
Shaly sandstone,	15	
Sandstone,	30	
Slate,	4	
Coal,	1	
Sandstone,	20	
	120	

CHERRY'S FARM.		
Clay, with iron ore,	7	
Coal,		3
Sandstone,	3	
Shale,	3	6
Dark gray slate,	8	
Sandstone,	2	
Sandy clay,	2	6
Clay, with iron ore,		3
Slaty clay,	6	
	32	6

GALLATIN COUNTY.

N. W. ¼ SEC. 15, T. 10 S., R. 8 E.	FEET	IN.
Sandstone,	14	
Thin bedded sandstone,	8	
Clay shale,	3	8
Black slate,		10
Coal,	4	6
Covered with sandstone debris	77	
	108	

TALBOT ENTRY, E. OF SALINE RIVER.		
Sandstone,	3	6
Clay shale,	5	6
Limestone,	3	
Coal,	3	9
	15	9

N. E. ¼ S. W. ¼ SEC. 33, T. 10 S., R. 8 E.		
Conglomerate,		?
Sandy shale,	8	
Arenaceous slate,	11	
Limestone, with archimedes,	12	
	31	

N. W. ¼ S. E. ¼ SEC. 34, T. 10 S., R. 8 E.		
Sandstone,	18	
Shaly sandstone,	33	
Clay shale,	7	4
Black slate,		10
Coal,		8
Fire-clay,		?
Clay shale,	3	6
Sandstone,		?

EQUALITY.	FEET	IN.
Soil,	6	
Clay,	15	
Sandy Clay,	4	
Clay,	2	6
Shale (covered),	?	
Coal,	3	6
Sandstone,	44	
Coal,	1	10
Covered slope,	17	
Shaly sandstone,	3	
Clay shale,	7	
Gray shaly sandstone,	2	
Black sandstone,	1	4
Gray shaly sandstone,	4	
Covered slope (includes black shale and beds of limestone,	56	
Coal,	4	8

NORTH FORK OF SALINE RIVER, SEC. 18, T. 7 S., R. 8 E.		
Covered slope,	34	
Blue clay,	4	6
Argillaceous iron ore,	1	
Clay shale,	5	6
Coal,		3
Shale,	3	
Sandy limestone,	2	6
Shaly sandstone,	3	
	53	9

EDWARDS COUNTY.

BRISSENDEN'S FARM, SECTION OF WELL.	FEET	IN.
Soil and clay bed	16	0
Yellow limestone		8
Blue limestone		6
Coal		1
	17	3

RAILROAD CUT, NEAR ALBION.		
Soil	3	0
Sandy shale	4	6
Sandstone flags	1	5
Sandy shale	3	2
Sandstone, thin plates		9
Sandstone	5	0
Sandy shale	10	6
	28	4

BRANCH, EAST OF AND NEAR TO ALBION.	FEET	IN.
Thick bedded sandstone	4	0
Sandy shale	8	0
Hard sandstone, blue,	7	0
Blue limestone	2	3
Clay shale	2	0
Sandy shale	5	0
Sandstone flags	1	5
	29	8

The two last beds are the upper ones at the R.R. cut.

EDWARDS COUNTY (Continued).

NORTHERN LIMIT OF ALBION.	FEET	IN.
Sandy shale	5	0
Sandstone	7	0
Sandstone, blue	4	0
Sandstone flags	2	0
Sandstone	6	4
Iron ore	0	2
Coal	2	3
Fire-clay	0	?
	26	9

ORANGE'S FARM, N.W. ¼ S.W. ¼ SEC. 24, T. 2 S., R. 10 E.		
Soil and clay	5	5
Sandstone	9	0
Hard sandstone	6	0
Black slate	6	0
Clay shale	5	0
	31	5

BENNINGTON MILLS, N. W. ¼ SEC. 17, T. 1 N., R. 10 E.	FEET	IN.
Soil and clay	20	0
Sandstone	11	0
Coal	0	3
Fire-clay	0	4
Brown shale, with coal	1	7
Blue clay shale	1	4
Sandstone, ferruginous,	1	4
Coal	0	5
Blue clay shale	3	6
Iron ore	0	3
Blue clay shale	6	6
	46	6

WABASH COUNTY.

HARTMAN'S PLACE, S. ½ S. W. ¼ SEC. 5, T. 1 S., R. 12 E.	FEET	IN.
Clay shale	9	10
Indurated brown clay	0	3
Black slate	4	8
Black limestone	1	8
Coal	1	6
	17	1

D. BIEHL'S MILL.	FEET	IN.
Brown sandstone	1	9
Black slate	2	0
Coal	0	10
Clay shale	1	8
Gray sandstone		?
	6	3

RICHLAND COUNTY.

CLAREMONT.	FEET	IN.
Soil and clays	22	0
Indurated blue clay	10	0
Sandstone	5	0
Bastard limestone	4	0
Sandstone	6	0
Pebbly limestone	5	0
Blue slate, with thin coal	4	6
Gray fragmentary limestone	13	6
	70	0

JOHN COLLINS' PLACE, N.W. ¼ N. E. ¼ SEC. 30, T. 4 N., R. 14 W.		
Sandstone	?	
Black slate	3	0
Coal	0	8
Fire-clay	?	

BRICKLEY'S FARM, S. E. ¼ N. E. ¼ SEC. 32, T. 4 N., R. 14 W.	FEET	IN.
Sandy shales	3	0
Thick bedded sandstone	2	6
Sandy shales	2	6
Soft yellow sandstone	3	0
Blue clay		
	11	0

BAKER'S PLACE, N. E. ¼ S. W. ¼ SEC. 9, T. 4 N., R. 14 W.		
Soil and clay	6	0
Sandy limestone, shaly	?	
Pebbly limestone	3	6
Blue clay	?	

LAWRENCE COUNTY.

EMBARRAS RIVER, LAWRENCEVILLE.	FEET	IN.
Sandy shales, with iron ore...	5	0
Black clay shales.....	4	6
Impure limestone.....	1	6
Black slate, with thin coal....	0	
	11	0

SEC. 9, T. 3 N., R. 10 W. *Exact thickness of the beds not ascertained.*		
Clay shales,.....		
Shaly sandstone,.....		
Compact sandstone,.....		
Clay shales,.....		
Black slate,.....		
Black limestone,.....		
Clay shale,.....		
Impure limestone,.....		
Black slate,.....		
Total thickness,.....	182	

BANK OF WABASH RIVER, SEC. 33, T. 4 N., R. 10 W. *Indiana shore.*		
Soil,.....		
Marly clays,.....	40	
Shaly sandstone,.....	6	
Thick bedded sandstone,.....	55	
	10	

N. E. ¼ S. W. ¼ SEC. 13, T. 3 N., R. 11 W.		
Yellow clay shale,.....	5	6
Blue clay shale,.....	2	6
Coal,.....		8
Fire-clay,.....		?
	8	

SEEDS' QUARRY, N. E. ¼ S. W. ¼ SEC. 13, T. 3 N., R. 12 W.	FEET	IN.
Argillaceous shale.....	6	0
Yellow sandstone.....	3	0
Blue micaceous sandstone....	2	0
	11	0

S. H. CLUBB'S QUARRY, SEC. 5, T. 3 N., R. 11 W.		
Covered slope,.....	15	
Sandy shale,.....		6
Yellow sandstone,.....	1	6
Blue sandstone,.....		?
	17	

EMBARRAS-RIVER, PLANK ROAD BRIDGE.		
Sandstone,.....	4	6
Sandy shale,.....	6	10
Shaly sandstone,.....	5	
Clay shales, 8 bands of iron ore	19	8
Fossil bed, pyritous,.....	1	
Shales with iron ore,.....	3	
Black slate,.....	3	
Impure limestone,.....	1	4
Black slate,.....		6
Clay shales,.....	29	6
	74	6

POPE COUNTY.

ONE MILE AND A HALF BELOW JAMES CARROLL'S PLACE.	FEET	IN.
Sandstone.....	10	
Limestone.....	8	
Marly slate.....	4	
Limestone.....	6	
Shale.....	5	
Limestone.....	11	
Sandstone.....	10	6
	54	6

LUSK'S CREEK, NEAR GOLCONDA.	FEET
Sandstone.....	8
Limestone.....	24
Shale.....	42
Limestone.....	8
Marlite.....	11
Limestone.....	11
	104

POPE COUNTY. Continued).

CAMPBELL'S FARM.	FEET	IN.
Sandstone	45	
Limestone	22	
Marly slate		6
Limestone		9
Slope	5	
	73	3

JOINER'S FARM.		
Sandstone	80	
Limestone	1	10
Covered slope	8	
	89	10

MICHAEL H. KAYLOR'S PLACE.		
Conglomerate	30	
Sandstone	32	
Limestone	6	
Covered slope	13	
	81	

RIVER BANK, NEAR GOLCONDA.		
Sandstone	25	
Covered slope	21	
Limestone	1	6
	47	6

MORGANTOWN.	FEET	IN.
Sandstone	6	
Limestone	10	10
	16	10

D. FLANNERY'S PLACE.		
Sandstone	5	5
Limestone	7	
Shale	2	
Clay slate	3	
	17	5

WILLIAM ALLISTON'S, NEAR GOLCONDA.		
Sandstone	55	
Limestone	43	
Covered	30	
Clay slate	5	
	133	

WILLIAMSON COUNTY.

DR. SMITH'S PLACE.	FEET	IN.
Soil and drift	20	
Sandstone	28	
Clay shale	8	
Coal	1	6
Alternations of clay shales, fire clay, sandstone and sandy shales	22	
Shaly sandstone	12	
Limestone	3	
	94	6

ROCK CREEK, SEC. 9, T. 9 S., R. 4 E.		
Clay slate	8	10
Bituminous slate	1	6
Coal	4 to	6
Fire clay	2	
	12	10

FOZARD'S PLACE, SEC. 20, T. 9 S., R. 1 E.	FEET	IN.
Shales	8	
Coal	3	
	11	

E. N. SPILLER'S PLACE, S. E. ¼, S. W. ¼ SEC. 6, T. 9 S., R. 3. E.		
Soil and clay	?	
Limestone	?	
Bituminous slate	4	
Coal	9	
	13	

MARION COUNTY.

BORING AT CENTRALIA.	FEET	IN.		FEET	IN.
Soil	3		Brought forward	237	
Blue clay and sandstone	20	6	Limestone	6	
Sandstone	1	10	Indurated clay	83	6
Blue clay (light colored)	10		Bituminous slate	2	
Blue clay (dark)	55	8	Coal	3	
Bituminous slate		8	Limestone	20	
Blue clay, with gravel	3	6	Indurated clay	151	
Blue slate	25	6	Sandstone	25	
Indurated clays	91	4	Black slate	6	6
Limestone	7		Indurated clay	65	
Coal	6		Iron stone, with chert	3	6
Indurated clay	12		Indurated clay	?	
Carried forward	237			602	6

PERRY COUNTY.

ASHLEY'S MINE, DU QUOIN.	EEET	IN.		FFET	IN.
Yellow clay	18		Brought forward	47	6
Sand	2		Bluish impure limestone	2	
Blue clay	6		Bituminous shale	6	10
Shale	10		Light colored shale	10	
Drab limestone	3	9	Coal	6	
Fire clay	6		Fire clay	?	6
Light colored shale	1	6			
Carried forward	47	6		72	10

MADISON COUNTY.

LONG'S PLACE, CLIFTON QUARRY.	FEET	IN.		FEET	IN.
Covered slope	170		Brought forward	261	
Limestone	2		Shale	40	
Shale	3	6	Sandstone	9	
Limestone	40	6	Limestone	20	
Sandstone	45		Shaly limestone	9	
Carried forward	261			339	

ALEXANDER COUNTY.

THEBES.	FEET	IN.	SILURIAN ROCKS OF ALEXANDER COUNTY.	FEET	IN.
Clays	42		Sandstone	22	
Sandstone	24		Cherty bed	8	
Covered slope	30		Buff colored shale	10	
	96		Cherty beds	248	
GILES WHITTAKER'S PLACE.			Mottled limestone	20	
Clay and shale	10		Blue limestone	25	
Cherty beds	170		Shales and slate	70	
	180		Sandstone	35	
			Shale	10	
ORCHARD CREEK.			Limestone	70	
Ferruginous conglomerate	37		Sandstone	18	
Sandstone	42			535	
Blue clay	?				

HARDIN COUNTY.

LEAD HILL.	FEET	IN.
Sandstone	20	
Limestone	59	6
Oölitic limestone	30	
Crystalline limestone	2	
Bluish limestone	57	
	168	6

ONE MILE BELOW "CAVE IN ROCK."		
Cavernous limestone	20	
Covered	10	
Shelly limestone	4	
Limestone with corals	20	
	54	

PARKINSON'S PLACE.	FEET
Sandstone	23
Limestone	60
Sandstone	4
Limestone	22
	109

PULASKI COUNTY.

CALEDONIA.	FEET	IN.
Yellow clay	20	
Micaceous sandstone	3	
White sandy clay	18	
Sandstone	4	
Gray clay	30	
Conglomerate	?	

CEDAR POINT.		
Yellow clay	16	
Red clay	10	
Ferruginous sandy shale	12	
Ferruginous sandstone	2	6
White sandy clay	27	6
Bluish clay shale	23	6
	91	6

ONE MILE NORTH-EAST OF CALEDONIA.	FEET
Ferruginous conglomerate	?
Black clay shale, with carbonaceous matter	
Gray indurated clay	33
Sandy shales	21
Soft sandstone	16
	71

MASSAC COUNTY.

FLETCHER'S PLACE.	FEET	IN.
Alluvium	12	0
Clay	5	0
Sandstone conglomerate	4	0
Conglomerate	17	6
	38	6

JAMES COPPER'S PLACE.	FEET
Conglomerate	5
Covered slope	35
Limestone	8
	48

RANDOLPH COUNTY.

HALF A MILE ABOVE CHESTER.	FEET	IN.
Limestone	35	0
Marlite	1	6
Limestone	2	0
Marlite	1	6
Cherty beds	6	0
Limestone	5	0
Marlite	2	6
Limestone	1	0
Marlite	3	0
	57	0

MANSKER'S PLACE.	FEET
Covered slope	31
Sandstone	108
Limestone	27
Shale	54
Limestone	52
	272

RANDOLPH COUNTY (Continued),

DETAILS OF THE CHESTER BEDS.	FEET	IN.
Clay beds stratified	12	6
Limestone	7	2
Alternations of limestone and marlite	9	3
Marlite	2	6
Limestone	4	0
Covered	38	0
Blue shale, with thin bands of limestone	48	0
Limestone, with cherty bands.	18	0
Shaly limestone,	3	0
Carried forward	142	5

	FEET	IN.
Brought forward	142	5
Sandy shales	9	0
Shaly sandstone	10	0
Sandstone	12	0
Limestone	3	6
Blue clay shale	3	0
Shaly limestone	9	8
Blue clay	0	4
Shaly limestone	21	1
Limestone, in thick beds	17	6
	228	6

ROCK ISLAND COUNTY.

ALONZO BLOSSOM'S PLACE.	FEET	IN.
Soil and drift		
Shaly sandstone		
Bluish sandstone	2	6
Blue shale		7
Coal	4	6
Black shale		4
Fire clay		

HALF A MILE EAST OF A. BLOSSOM'S PLACE.	FEET	IN.
Soil and drift		
Cherty limestone	5	
Shaly sandstone (calcareous),	2	6
Bituminous slate, with bastard limestone	1	
Blue shale	1	
Coal	4	
Clay		

HENRY COUNTY.

ALLEN'S PLACE, NEAR GENESEO.	FEET	IN.
Soil and drift		
Limestone, with arragonite		
Indurated clay		
Sandstone		
Carried forward		

	FEET	IN.
Brought forward		
Clay		
Coal	1	6

FRANKLIN COUNTY.

S. W. ¼ S. W. ¼ SEC. 20, T. 7 S. R. 2 E.	FEET	IN.
Shale	4	
Sandstone	1	9
Clay slate	1	6
Sandstone	1	
Gray shale	4	
Bituminous slate	1	
Carried forward	13	3

	FEET	IN.
Brought forward	13	3
Coal		8
Fire-clay		
Micaceous shale	4	
Clay iron ore	1	2
Shale	6	

MADISON COUNTY.

W. ½ S.E. ¼ SEC. 6, T. 6 N., R. 10 W. MUHLMANN'S PLACE.	FEET	IN.
Soil and drift		
Shale	5	8
Bituminous slate		6
Coal	2	6
Fire clay	2	5
Cherty beds	3	5
	14	6

S. W. ¼ SEC. 8, T. 4 N., R. 5 W. FERGUSON'S PLACE.	FEET	IN.
Bluish limestone	2	8
White clay		8
Bituminous slate	3	4
Shale	10	
Coal	2	10
	19	6

SANGAMON COUNTY.

ILES' COAL BANK, SUGAR CREEK.	FEET	IN.
Soil and drift		
Light colored clay shale	7	
Hard blue limestone		8
Black slate	3	6
Black limestone	1	
Coal	2	
	14	2

BALL'S MILL, SUGAR CREEK.		
Soil and drift		
Limestone	2	
Marly clay shale	1	2
Sandy and black clay shale	8	4
Limestone	1	6
Sandy shale		10
Calcareous sandstone	2	
Yellow sandstone	2	8
Sandy shale	4	6
	23	

MAGRADY'S OLD MILL.		
Soil and drift		
Limestone	4	
Blue shale	16	6
Sandstone	4	
Sandy shale	1	6
	26	

BELL'S MILL, SUGAR CREEK.		
Soil and drift		
Sandy shale	11	
Thin-bedded sandstone	4	
	15	

LANGFIELD'S COAL BANK.		
Soil and drift		
Limestone	1	
Blue shale	7	9
Coal	1	10
Covered to river level	11	8
	22	3

BRANNER'S MILL SANGAMON RIVER.		
Soil and drift		
Limestone	6	
Carried forward	6	

	FEET	IN.
Brought forward	6	
Blue calcareous clay	2	
Hard blue limestone	2	
Clay shale	1	6
Black slate	1	
Clay slate		8
Coal		3
Fire-clay	?	
	13	5

MENARDS MILL, SANGAMON RIVER.		
Soil and drift clay		
Shaly sandstone with calcareous nodules	14	
Blue sandy shale	6	
Sandstone	2	
	22	

YOCUM'S MILL, SANGAMON RIVER.		
Soil and drift clay		
Argillaceous limestone	1	6
Sandy shale	20	
	21	6

MUD LAKE.		
Soil and drift		
Sandy shale	4	8
Thin bedded sandstone	3	
Sandstone	10	
Shaly sandstone	5	
Black slate	1	
Coal	1	10
Covered to lake level	15	
	40	6

CARPENTER'S BRIDGE, SANGAMON RIVER.		
Soil and drift		
Blue sandy shale	16	8
Sandstone, irregularly bedded,	11	
Sandstone in regular layers	14	
Sandstone, thin-bedded	3	
Sandstone	2	7
Sandstone flags	8	4
	55	

SANGAMON COUNTY (Continued).

NEW BRIDGE, SANGAMON RIVER.	FEET	IN.
Soil and drift		
Sandy shale	4	
Sandstone, thin-bedded	7	
Sandy shale	16	6
Covered to river level	27	6
	55	

RAUCH'S QUARRY, SUGAR CREEK.		
Soil and drift		
Sandstone	9	
Limestone	9	2
Black slate	2	
Limestone	17	
	37	2

HILL'S QUARRY, SUGAR CREEK.		
Soil and drift		
Micaceous sandstone	3	
Sandstone	3	6
Sandy shale	1	6
Limestone	4	
Dark clay shale	1	
Limestone	4	
	17	

NEW BRIDGE, SUGAR CREEK.		
Soil and drift		
Limestone	2	6
Sandy shale	4	6
Limestone,	1	
Sandy shale	3	
Sandstone	1	
Micaceous sandstone		6
	12	6

LLOYD & EVAN'S COAL BANK.		
Soil and drift		
Black slate	2	10
Coal	1	10
Sandy shale	11	
Sandstone, hard	3	2
Shaly sandstone	4	4
Soft sandstone	2	8
Sandy shale	6	6
	32	4

MILLER'S PLACE, HORSE CREEK.	FEET	IN.
Soil and drift		
Sandy shale	2	
Arenaceous limestone	1	6
Shaly sandstone	18	6
Clay shale		6
Coal		4
	22	10

STOVER'S COAL BANK, LICK CREEK.		
Soil and drift		
Black slate, with black limestone	3	
Coal	1	8
Limestone	4	
Blue shale	12	
	20	8

GREENWOLD'S PLACE, BRUSH CREEK.		
Soil and drift		
Limestone,	6	
Marly shale		6
Black slate,	1	
Clay shale	1	6
Limestone	6	
	15	

PEACOCK & CUMMINGS' SHAFT, SPRING CREEK.		
Soil	5	
Blue sandy shale	45	
Dark clay shale	5	
Coal		2
Fire-clay	3	
Argillaceous limestone and clay	4	
Red and green clay shale	8	
Black shaly slate	2	6
Purple clay shale,	5	
	77	8

JONES' WELL, HORSE CREEK.		
Soil and drift clay	19	
Sandy shale	12	
Clay shale	12	
	43	

MACOUPIN COUNTY.

N. E. ¼ SEC. 29, T. 10 N., R. 9 W.	FEET	IN.
Impure limestone		
Black shale	1	3
Coal	1	
Light colored shale	3	
Carried forward	5	3

	FEET	IN.
Brought forward	5	3
Blue limestone	2	
Black shale	1	
Coal	5	6
	13	9

IRELAND'S RAVINE, SOUTH OF ILLINOIS RIVER, NEAR "LITTLE ROCK," LASALLE CO.	FEET	IN.
Soil	6	
Sandstone	15	
Indurated clays and shales	49	
Black slate	2	
Indurated clay	5	
Black "figure stone"	1	
Fire-clay	6	
Sandstone, upper part calcareous, lower part micaceous,	8	
Dark indurated clay	12	
Black shale, with fossils	6	
Coal		6
Sandstone, with coal plants,	2	
Grayish-blue shale, with septaria	7	
Blue shale	2	
Black slate	3	
Blue shale	12	
Coal	3	6
	140	

The lower seventy-five or eighty feet of the above section represents, very nearly, the shaft of the "Little Rock Coal Mining Company," which is situated a short distance west of Ireland's ravine.

BORING AT DE SOTO, JACKSON COUNTY.

In the Artesian well sunk at this point, several beds of coal were penetrated at various depths, as follows:

1st coal at the depth of 68 ft.	3	
2d " " " 93 "	2	
3d " " " 135 "	9	
4th " " " 165 "	2	
5th " and shale " 216 "	9	
	25	

Making a total thicknes of coal of between 16 and 25 feet, the thickness of the shale associated with the lower bed not having been ascertained.

SHAFT OF THE NORTHERN ILLINOIS COAL AND IRON CO.	FEET	IN.
Blue shale	6	
Coal		5
Brown shale	8	
Lime rock	1	6
Blue shale	12	
Blue limestone	3	2
Black shale		6
Fire-clay	1	2
Black shale		5
Brown shale	3	2
Limestone	3	10
Brown shale	4	6
Blue shale	9	4
Grey limestone	2	4
Black Shale	1	5
Blue "	10	
Limerock	3	3
Blue shale	10	3
Black limestone	2	10
Blue shale	6	
Shale with nodules	4	6
Blue shale	10	6
Red shale	6	
Blue shale	1	6
Red shale	14	4
Blue shale	11	
Sandstone	6	
Blue shale	12	
Blue shale	15	
Black slate	4	6
Coal	5	
Fire-clay	6	
Limestone	4	6
Blue shale	10	
Sandstone	10	
Blue shale	14	
Black slate	8	
Coal	6	
Fire-clay	1	8
Limestone	4	6
Shale, brown	64	
Black slate, mixed with coal	3	6
Limestone	1	
Blue shale		6
Limestone	3	6
Shale	2	6
Black slate	3	4
Blue shale	14	
Sandstone	8	6
Blue shale	18	
Black slate	8	
Soapstone	14	
Coal	4	
	389	11

GENERAL REMARKS.

The preceding pages contain only a portion of the sections made during the progress of the Geological survey. Many sections made in the counties named are not given; while a number of counties in which work has been done, are omitted entirely, in consequence of the impracticability of connecting their geology with the coal deposits, without the aid of horizontal sections, and these can only be represented by engravings. They will all be embodied in the final report, together with minute descriptions of the vertical sections now given.

Since the organization of the survey, I have been assisted in the field work by Messrs. A. Varner (deceased), A. H. Worthen, Henry Pratten (deceased), A. H. Ulffers, and J. H. McChesney; and from their notes and reports, most of the sections given were compiled. In the laboratory, Mr. H. Pratten has been the only assistant. The analyses of the Illinois coals were made by him, as well as those of our iron ores.

The colored diagram of the state is intended to represent, as nearly as so small a scale will allow, the different geological formations found in its borders, and will assist those who may desire to know the geological position of the rocks given in the printed vertical sections.

The portions colored *yellow*, on the Wabash, Ohio, Mississippi and Illinois rivers, represent the rich alluvial bottoms which border those streams.

The *pink* color, found in Alexander, Union, Jersey, Calhoun, Pike, Bureau, La Salle, Grundy, Will, Cook, Kankakee and Iroquois, represents rocks of the *Silurian* age.

The portions colored with *Indian red*, represent rocks of the *Devonian* epoch, and are to be found in Pulaski, Union, Jersey, Calhoun, Pike, Rock Island and La Salle.

The *blue* color, found in our southern and western borders, in the counties of Gallatin, Saline, Hardin, Pope, Johnson, Massac, Pulaski, Union, Jackson, Randolph, Monroe, St. Clair, Madison, Jersey, Greene, Scott, Calhoun, Pike, Brown, Schuyler, Adams, Hancock, McDonough, Henderson, Warren and Mercer, represents the great *Carboniferous limestone series*, or

"*Mountain Limestone*," as it is termed by many geologists. In England beds of coal are found in this series of rocks. In this country no coal has yet been discovered in them.

In portions of Gallatin, Hardin, Pope, Saline, Johnson, Massac, Williamson, Union, Jackson, Randolph and Monroe, the "Mountain limestone" series is overlaid with heavy beds of sandstone and sandstone-conglomerate, answering to the "*Millstone grit*" of some geologists. It is represented by a *light* shade of *sepia* skirting the Mountain limestone. This is the base of the coal measures in southern Illinois, no coals existing either in it or below it.

The *dark* tint of *sepia*, covering about two-thirds of the area of the state, and including either in whole or in part eighty-one counties, represents the true *coal measures* of Illinois. The coal measures consist of beds of sandstones, limestones, shales, slates, clays and bands of iron ore, intercallated with beds of coal, from one inch to nine feet in thickness.

In the counties of Massac, Pulaski and Alexander, beginning on the Ohio river south of New Liberty, and following that stream to a point below Caledonia, and then crossing Alexander county in a westerly direction to the Mississippi, near the village of Santa Fe, is a portion of the map colored *green*. It represents a deposit belonging to the *Tertiary* period. At one place it contains a thin seam of carbonaceous matter, which was mistaken, by those residing in the vicinity, for coal of the carboniferous era. This, however, is a mistake. It is of no value.

The margin of the coal measures can be easily traced on the diagram in the northern and western counties. On our eastern border, from Iroquois to Gallatin county, they pass over into Indiana, and on the south into Kentucky. In the west, between Keithsburg in Mercer county, and Drury's Landing in Rock Island county, they cross the Mississippi into Iowa. Coal is also found cropping out on the banks of the Mississippi above Rock Island city. A thin seam of coal, associated with clays and shales, was observed at Sterling, in Whiteside county, on the banks of Rock river. What connection it has with the coals of Rock Island and Henry counties, has not been ascertained.

Beginning in Rock Island county and proceeding eastward, the northern limit of the coal (leaving out Whiteside, as just referred to) is found in the counties of Henry, Bureau, La Salle, Grundy and Will, and its northeastern boundary in Kankakee and Iroquois.

In proceeding northerly, in the Mississippi river counties, the "millstone grit," disappears in Munroe county, and the coal measures are separated from the "mountain limestone" by only a few feet (comparatively) of sandstones, shales and clays. Before reaching Rock Island county, the

"mountain limestone" disappears, and on Rock river the coal measures rest on rocks of the Devonian and Silurian epochs; while still further east, in the counties of La Salle, Grundy and Will, the coal beds rest directly on lower Silurian rocks, being separated from them, at some points, by only a few inches of clay.

Workable beds of coal, however, do not underlay the whole area marked as "coal measures." Illinois is not one "great coal field," as has been represented in maps and geological reports made previous to the commencement of the State Geological Survey. While it contains within its borders more coal than any other state in the union, with, perhaps, the exception of Pennsylvania, the coal does not rest in one great basin. So far as the state survey has thrown any light on the subject, it has been found that the rocks beneath the coal measures, instead of showing a nearly horizontal section from east to west, as was formerly believed by some of our geologists, have been in reality as much disturbed by internal convulsions as those of any volcanic district in the United States. The beds of the lower formations, including the mountain limestone and millstone grit, are found, at various localities, displaced and tilted up at every angle from a few degrees to the vertical. These displacements are not confined to any one section. They occur in every district, from the northern limits of the coal beds, to the southern border of the state. In the irregular valleys and basins formed by these disturbances, our lower coal measures were formed. Subsequent to that period, the then existing coal beds were displaced, and eroded, forming new valleys and new basins, which have been filled with new deposits of coal, and so on up to the termination of the carboniferous epoch. An outline of these basins and valleys, so far as ascertained, will be given in the geological report. It must, however, remain imperfect for years to come, as every reëxamination of a coal field develops new facts, which no reasoning from previous data could have brought to light.

The *tables* of coal beds, from I to IV, were prepared in 1854, and were designed to show the number and thickness of different coal beds found in southern Illinois, along certain lines south of a line drawn from Illinois Town, St. Clair county, to the state boundary in Clark county, west of Terre Haute.

Table I shows the existence of twenty-five beds of coal, varying in thickness from three inches to seven feet, on a direct line drawn from the Ohio river, in the counties named, to "Howard's Point" in Fayette county. Of these beds, nine may be considered as workable by mining, in the proper sense of the term. Of the remaining sixteen, ten are, or may be, worked by "stripping" near their outcrop, where they are cov-

ered by a few feet only of soil and other deposits. The beds capable of being mined, contain forty feet and nine inches of coal. If to this be added the beds capable of furnishing coal by "stripping," this section will show a thickness of available coal of over fifty-five feet.

Table II shows the number of beds found on a line drawn from a point on Big Muddy river, near Murphrysborough, Jackson county, to Griswold's, in Hamilton county. These beds vary from four inches to nine feet in thickness. Two of these beds, amounting to fifteen feet, can be mined profitably, while five of them, from one foot six inches to one foot eight inches in thickness, may be made available, at various places, by either mining or "stripping." The total thickness of coal in this section is twenty-three feet six inches.

Table III exhibits the coal beds found on a line from the "Old Salt Spring," south-east of Equality, Gallatin county, to Parker's Prairie, in Cumberland county. Of these beds, four are workable by mining, varying in thickness from three feet to five feet, and amounting in all to sixteen feet six inches. Four of the others, with a total thickness of seven feet, may be "stripped" in favorable situations. All the beds in this section, sum up a total of twenty-three feet nine inches.

Table IV contains some of the beds found in a section from a point north of Waterloo, Monroe county, to Howard's Point, in Fayette county. Of these, three are from three feet six inches, to six feet nine inches thick, and are mined profitably, the united thickness being sixteen feet nine inches. The other beds vary from one foot three inches to two feet in thickness. The total amount of coal in this section is twenty-three feet two inches.

Since these tables were prepared, other discoveries of coal have been made in several of the counties embraced in them. These cannot now be added, but will be noticed in the detailed geological report. As the tables now stand, however, they are sufficient to show the great number and importance of the coal beds of the district to which they relate.

No tabular view of the coals of middle and northern Illinois has yet been prepared, nor, in fact, has it been desirable to do so up to this time, as new discoveries are constantly being made in those districts, which are calculated to modify, somewhat, the opinions first formed in relation to them.

By reference to the pages of analyses, and the tables on pages 55, 56 and 57, as well as to the vertical sections of the counties in the districts referred to, it will be seen that their coal beds have not been neglected, but have, on the contrary, received their full share of attention in all respects.

In order to embrace as much matter in relation to more recent discov-

eries as possible, some of the oldest, best and most profitable mines in the state have been passed without notice in this abstract. In the final report they will receive their due share of attention.

In the printed sections, many localities of coal are given in addition to those noticed in the first half of this abstract, together with the thickness of the beds and the character of the rocks associated with them. These coals have not yet been analyzed.

The relative value of Illinois coals can be ascertained by comparing the analytical results given on the pages referred to; and their position with regard to some other American coals, as well as to a few British coals used in the manufacture of iron, can be seen at a glance by consulting the tables on page 58. These analyses show that we have a number of beds of coal in this state, which equal, in every respect, the very best coals of the Mississippi and Ohio valleys. In thickness and other requisites for cheap and profitable mining, they are not surpassed by those of any other portion of the west, and there is only needed enterprise, capital and energy, to develop a source of wealth in our state, at present scarcely thought of, and which is incalculable. The markets are already here, and the supply is so inadequate to the demand, that one Illinois city alone imports annually from other states coal to the amount of over 134,000 tons.

In Knox, Henry and La Salle counties, cannel coal occurs in connection with bituminous beds. Its value may be estimated by comparing the analyses of the different seams, with those given of the same variety of coal from Virginia and Kentucky.

So far as means for the transportation of coal to both home and distant markets are concerned, no state in the union is superior to Illinois. The Ohio, Mississippi and Illinois rivers, Lake Michigan, and all our railroads can be made tributary to this great interest.

J. G. NORWOOD.

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