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HISTORICAL INTRODUCTION

After discovery of the Waterloo oil field in 1920, the Illinois State Geological Survey undertook a systematic study of geologic structure in southwestern Illinois. At a result of this work the pronounced Maeystown or Posten School structure and other structures were discovered.

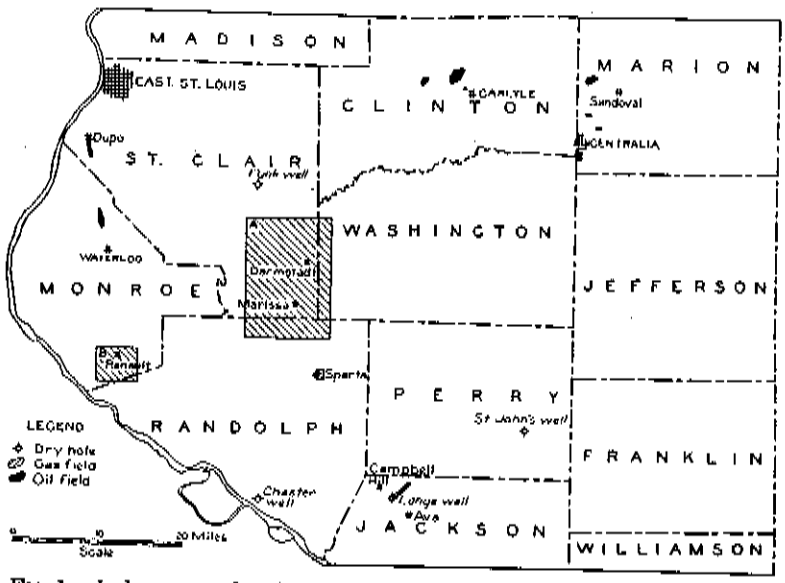

FIG. 1. Index map showing (A) the location of the Darmstadt area mapped in figure 2, and (B) the location of anticlinal areas near Renault, and their relation to nearby oil and gas fields.

Two oil-tests that were drilled on the high part of the Posten School structure struck water in the Kimmswick limestone, probably because the Kimmswick formation crops out a few miles from the high part of the structure and is therefore readily accessible to surface water. Additional drilling

along the axis of the Waterloo field, on the Posten School anticline, and in various other parts of southwestern Illinois failed to discover oil, and interest in the region dissipated. The commercial success of the Dupo oil field,[1] in St. Clair County, discovered in November, 1928, has renewed oil operators' interest in the area, and it now appears that several wells may be drilled regardless of geologic conditions. For that reason, it is believed that the publication of data referring to the Darmstadt anticline and related structures in St. Clair County and to anticlinal areas near Renault in southern Monroe County, is timely. (See fig. 1.)

THE DARMSTADT ANTICLINE AND RELATED STRUCTURES, ST. CLAIR COUNTY

By Alfred H. Bell

Introduction

Maps and descriptions of the Darmstadt anticline have been published[2] but new data which have been made available through the courtesy of Mr. H. E. Willson of Marion, Illinois, make revision of the maps possible at this time. Mr. Willson kindly supplied elevations run by transit for the majority of coal tests drilled by him (table 2 and fig. 2). Illinois State Geological Survey planetable parties determined the elevations of most of the remaining points, excepting a few whose elevations were determined by telescopic handlevel.

The area described in this report comprises about 150 square miles in southeastern St. Clair County and adjacent parts of Randolph and Washington counties (A, fig. 1).

Stratigraphy

The area is almost wholly covered by unconsolidated deposits of Recent and Pleistocene age. Immediately beneath the unconsolidated materials, and occasionally cropping out at the surface, are strata belonging to the Coal Measures or Pennsylvanian system. (Table 1.) The outcrops, however, are too scattered to give information on the structure, which has been determined from records of wells and of coal mines (fig. 2).

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[1] Bell, A. H., The Dupo oil field: Illinois State Geol. Survey Press Bull. Illinois Petroleum No. 17, March 2, 1929.

[2] Shaw, E. W., Carlyle Oil Field and surrounding territory: Illinois State Geol. Survey, Bull. 20, p. 43, 1915.

Shaw, E. W., U. S. Geol. Survey Geol. Atlas, New Athens-Okawville folio (No. 213), 1921.

Moulton, G. F., Proper testing for oil structures in Illinois and some areas deserving such testing: Illinois State Geol. Survey, Report of Investigations No. 6, p. 21, 1925.

Moulton, G. F., Oil possibilities in the Sparta area: Illinois State Geol. Survey, Press Bull. Illinois Petroleum No. 1, April 17, 1926.

TABLE 1.—*Geologic strata in the Marissa area*

	Estimated thickness *Feet*	Estimated depth to base *Feet*
Cenozoic group		
Recent and Pleistocene systems (Q)[a]		
Soil, alluvium, loess, till	0–50	25
Paleozoic group		
Pennsylvanian system		
McLeansboro formation (Pm)		
Shale, limestone, in places some sandstone and coal	0–200	125
Carbondale and Pottsville formations (Pc and Pp)		
Shale, sandstone, limestone, and coal; Herrin (No. 6) coal at top, average thickness 6 feet	200	325
Mississippian system		
Chester series (Mc)		
Shale, sandstone, and limestone; several horizons of "red rock"	600	925
Meramec series (Mm)		
Ste. Genevieve, St. Louis, and Spergen formations Limestone	600	1525
Osage series (Mo)		
Warsaw, Keokuk, Burlington and Fern Glen formations		
Shale and argillaceous limestone	400	1925
Kinderhook series (Mk)		
Sweetland Creek[b] formation		
Shale, chocolate-brown, containing *Sporangites huronense*	15	1940
Devonian-Silurian systems (D-S)		
Limestone and dolomite, in part red	550	2490
Ordovician system		
Maquoketa series (Om)		
Shale, gray	130	2620
Mohawkian series		
Kimmswick, Plattin, and Joachim formations (Ok, Op, Oj)		
Limestone, crystalline, shaly in lower part	480	3100
St. Peter formation (Osp)		
Sandstone	.....	....

The information on strata above the Warsaw formation was obtained from wells within short distances of the favorable structure, but data on the probable thickness and character of the deeper formations is based upon a study of the records of the Adam Funk well, the Chester well, and the Lange well (fig. 1). Detailed logs of these wells may be obtained from the State Geological Survey.

[a] Letters in parentheses refer to the graphic log, figure 2.
[b] The strata here classified as Sweetland Creek may belong to the upper part of the Devonian system.

Geologic Structure

STRUCTURE MAP

The geologic structure (fig. 2) is represented by contours showing the elevation of the Herrin (No. 6) coal above sea-level, and its accuracy is necessarily dependent on the spacing of the datum points. Herrin (No. 6) coal is probably absent in most or all of the area southwest of Lenzburg and Marissa, which is not contoured. The regional dip is easterly toward the interior of the Illinois basin.

DARMSTADT ANTICLINE

The most prominent structural feature is the Darmstadt anticline, the axis of which extends from a point two miles southwest of Marissa north-northeast to the vicinity of St. Libory, a distance of about 12 miles. It is bounded on both sides by synclinal belts having axes approximately parallel to and about two and one-half miles distant from the anticlinal axis. For a distance of about four miles between Marissa and Darmstadt the structure is less pronounced than it is farther north and south.

MARISSA DOME

Near the south end of the Darmstadt anticline is a local dome having a closure of at least 10 feet, here called the Marissa dome. The Marissa dome centers about test wells Nos. 58 and 59, near the southline of the SW. ¼ sec. 32, T. 3 S., R. 6 W. This is the only closed structure so far known in the area, although it is possible that others will be revealed by future drilling.

LENZBURG ANTICLINE

South and west of Lenzburg is an anticline whose axis trends west-northwest or approximately at right angles to that of the Darmstadt anticline. The relatively steep eastward dip in the SW. ¼ sec. 7, T. 3 S., R. 6 W. contrasts strongly with the gentle north and south dips in secs. 12, 1, 2, and 13, T. 3. S., R. 7 W.

MINOR STRUCTURES

Minor structural features are as follows:

(1) An east-west trending anticline located just north of Tilden.

(2) An irregularly shaped minor anticline, approximately parallel to the Darmstadt anticline, east and southeast of Marissa.

(3) Synclines, probably closed, situated in sec. 33, T. 3 S., R. 6 W. and in sec. 1, T. 4 S., R. 6 W.

Numerous other minor structural irregularities are shown on the map and doubtless there are many more which are as yet unknown.

ORIGIN OF THE STRUCTURES

In order to appraise the oil possibilities of the area it is desirable to consider the origin of the structures. Structural irregularities in a coal bed may

be the result of (1) irregularities in original deposition, (2) warping due to differential settling above buried hills, or (3) folding due to lateral compression. Any or all of these factors may have operated in the Darmstadt area, but it is more probable that structures as large as the Darmstadt anticline are the results of later deformation rather than features of original deposition.

The deeper strata were subjected to deformation at different times before the Herrin (No. 6) coal was deposited, so that their structures are not necessarily parallel. Dips in the coal due to original deposition do not indicate similar structures in the underlying rocks. On the other hand the underlying rocks have structures which are not reflected in the Coal Measures. For example, in the Sparta area (fig. 1) small abrupt domes known to occur in the Chester series are absent in the Coal Measures.[3] Nevertheless, because deformative movements tend to recur along the same axes or lines of weakness, structures in Coal Measures or Pennsylvanian rocks at some places reflect more pronounced structures in the underlying rocks. For example, the Sandoval dome[4] in Marion County and the Ayers anticline[5] in Bond County each have steeper dips in the Chester (Mississippian) beds than in the Pennsylvanian beds. The conditions in the Darmstadt anticline are not known from available data.

Possible Oil-Bearing Strata

A favorable feature of the Marissa area is the considerable number of possible oil-bearing strata, as shown by the number of formations present which are either productive or have given showings of oil and gas in the surrounding territory. The following summary of possible oil and gas producing strata indicates their relative merits as shown by development to date.

PENNSYLVANIAN SYSTEM

Pennsylvanian sands produce oil in the Centralia[6] and the southeastern Illinois fields. However, a considerable number of wells in the Marissa-Darmstadt area have been drilled into or through the Pennsylvanian strata without finding showings of oil so that there seems to be little probability of finding Pennsylvanian "pay" sands on the Darmstadt anticline.

MISSISSIPPIAN SYSTEM

CHESTER SERIES

Oil is produced from sands in the Chester series in the Sandoval, Centralia, and southeastern Illinois fields. In the Sparta and Ava-Campbell

[3] Moulton, Gail F., Oil and gas possibilities near Sparta: Illinois State Geol. Survey, Press Bull. Illinois Petroleum No. 1, April 17, 1926.
[4] Bell, A. H., Structure of Centralia and Sandoval oil fields, Illinois: Illinois State Geol. Survey, Press Bull. Illinois Petroleum No. 10, July 23, 1927.
[5] Bell, A. H., Recent development on the Ayers anticline: Illinois State Geol. Survey, Press Bull. Illinois Petroleum No. 16, June 30, 1928.
[6] See Illinois State Geol. Survey, Press Bull. Illinois Petroleum Nos. 4, 5, and 10.

Hill[7] areas Chester sands produced gas and some oil in commercial quantities. At present the Sparta wells are shut down but gas is still being produced in the Ava-Campbell Hill field.

Oil and gas showings are reported from a number of wells in the Marissa-Darmstadt area (table 2), and one (map No. 34) is expected to yield commercial quantities of gas. This well is on a minor structure east of the Darmstadt anticline. Because of the marked irregularity of structures and sands in the Chester series, one well can be considered as testing only a limited area. Accordingly, even though three (or four) wells have penetrated the Chester series near the axis of the Darmstadt anticline, the area still has possibilities of Chester production.

LOWER MISSISSIPPIAN STRATA

The nearest fields producing from the Lower Mississippian formations are in southeastern Illinois. Oil was obtained from limestone of this age near Jacksonville,[8] Morgan County, but not in paying quantities. Shows of oil from Lower Mississippian limestones are reported from several wells in the Belleville-Breese area,[9] St. Clair and Clinton counties, and from one well (No. 98) in the Marissa-Darmstadt area. Of the five wells in the area known to have reached the Lower Mississippian limestone, two are located near the axis of the Darmstadt anticline (one, map No. 32, the other in sec. 35, T. 2 S., R. 6 W., south of Darmstadt). Neither well is reported to have given shows of oil. Recently the Lower Mississippian horizon was tested on an apparently favorable structure[10] south of Sparta but was found to contain water.

DEVONIAN-SILURIAN SYSTEMS

Shows of oil were found in the Devonian-Silurian ("Niagaran") limestone near Old Ripley in Bond County about 45 miles north of Marissa, also in the Dupo area 20 miles northwest. In the Dupo field these strata were drilled with the well nearly full of water and yet made some showing. Gas in Pike County and oil in the Colmar-Plymouth field, McDonough and Hancock counties, are produced from strata of this age. In the Colmar-Plymouth field the oil comes in part from the Hoing sand at the base of the "Niagaran" limestone as well as from the limestone itself.

As yet the Devonian-Silurian strata have not been drilled in the Marissa-Darmstadt area. In drilling a deep well the Devonian-Silurian limestone and the Hoing sand, if present, should be tested for possible shows of oil.

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[7] Root, T. B., Oil and gas resources of the Ava-Campbell Hill area: Illinois State Geol. Survey, Report of Investigations No. 16, 1928.

[8] Bell, A. H., Recent development in the vicinity of Jacksonville: Illinois State Geol. Survey, Press Bull. Illinois Petroleum No. 11, Sept. 3, 1927.

[9] Udden, J. A., and Shaw, E. W., U. S. Geol. Survey, Geol. Atlas Belleville-Breese folio (No. 195), p. 12, 1915.

[10] Moulton, Gail F., Oil and gas possibilities near Sparta: Illinois State Geol. Survey, Press Bull. Illinois Petroleum No. 1, April 17, 1926.

ORDOVICIAN SYSTEM

KIMMSWICK FORMATION

The Kimmswick limestone is the productive formation in both the Waterloo and Dupo oil fields in Monroe and St. Clair counties.

The Kimmswick formation was penetrated for 60 feet in the Adam Funk well. A study of the samples shows that it is similar to that in the Dupo field except that it is more fine-grained and probably less porous. The porosity of the reservoir rock in the Dupo field is apparently related to the strong folding on the west flank of the anticline and may be due in part to fracturing.

If the dips of the Darmstadt anticline prove to be steeper for the deep-lying strata than for the Pennsylvanian it is possible that similar porosity may have been developed in the Kimmswick formation in this locality. This formation is considered to offer the best possibilities for oil production in the Darmstadt anticline.

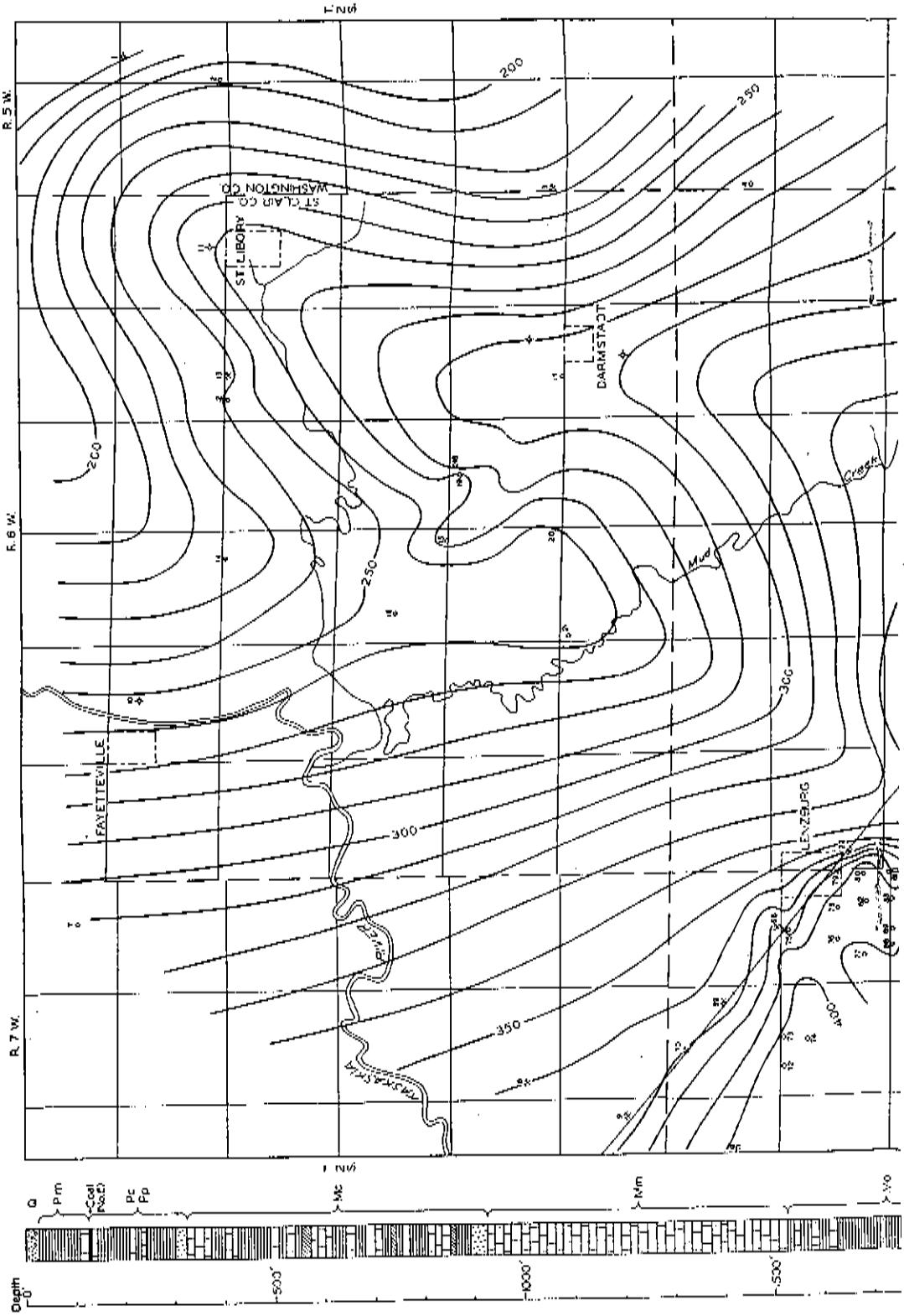
DEEPER STRATA

The possibility of finding production in the formations underlying the Kimmswick are not considered good enough to warrant the additional expense necessary to drill them. On account of the shaly character of the Plattin and Joachim formations as known elsewhere in western Illinois it is not probable that they are sufficiently porous to contain commercial quantities of oil in the Darmstadt area. The St. Peter sandstone carries water nearly everywhere it has been drilled in Illinois. Beneath the St. Peter is a considerable thickness of dolomite and sandstone which so far has always been found to be water-bearing where porous.

Summary and Recommendations

Within a radius of 40 miles from the Dupo oil field and within the area of Pennsylvanian rocks the Darmstadt anticline is the most prominent known structural feature. The known dips of the Darmstadt anticline are much lower than those of the Waterloo anticline on which the Waterloo and Dupo oil fields are situated, but it is possible that the dips of the deeper strata in the Darmstadt area are steeper than those of the Pennsylvanian beds. Although a favorable structure does not guarantee the presence of oil in commercial quantities, experience in Illinois and elsewhere has shown that the possibilities of production are considerably greater if anticlinal structure is present than if it is not.

In that part of the Marissa-Darmstadt area for which the coal structure is known in detail, the most favorable location for a test well is in the SW. ¼ SW. ¼ sec. 32, T. 3 W., R. 6 W., where a local dome is situated on the axis of the anticline. A thorough test should penetrate about 100 feet of the Kimmswick formation and would probably be 2500 or 2600 feet deep.


T 4 N
T 3 N
R 5 W.
R 6 W.
R 7 W.
200
250
300
350
400
ST. LIBORY
DARMSTADT
FAYETTEVILLE
ILEXZBURG
WASHINGTON CO.
ST. CLAIR CO.
Creek
Mud
Q
Pm
Cal (Kalk)
Pc
Pp
Mc
Mm
Vo
Depth
0
500'
1000'
1500'

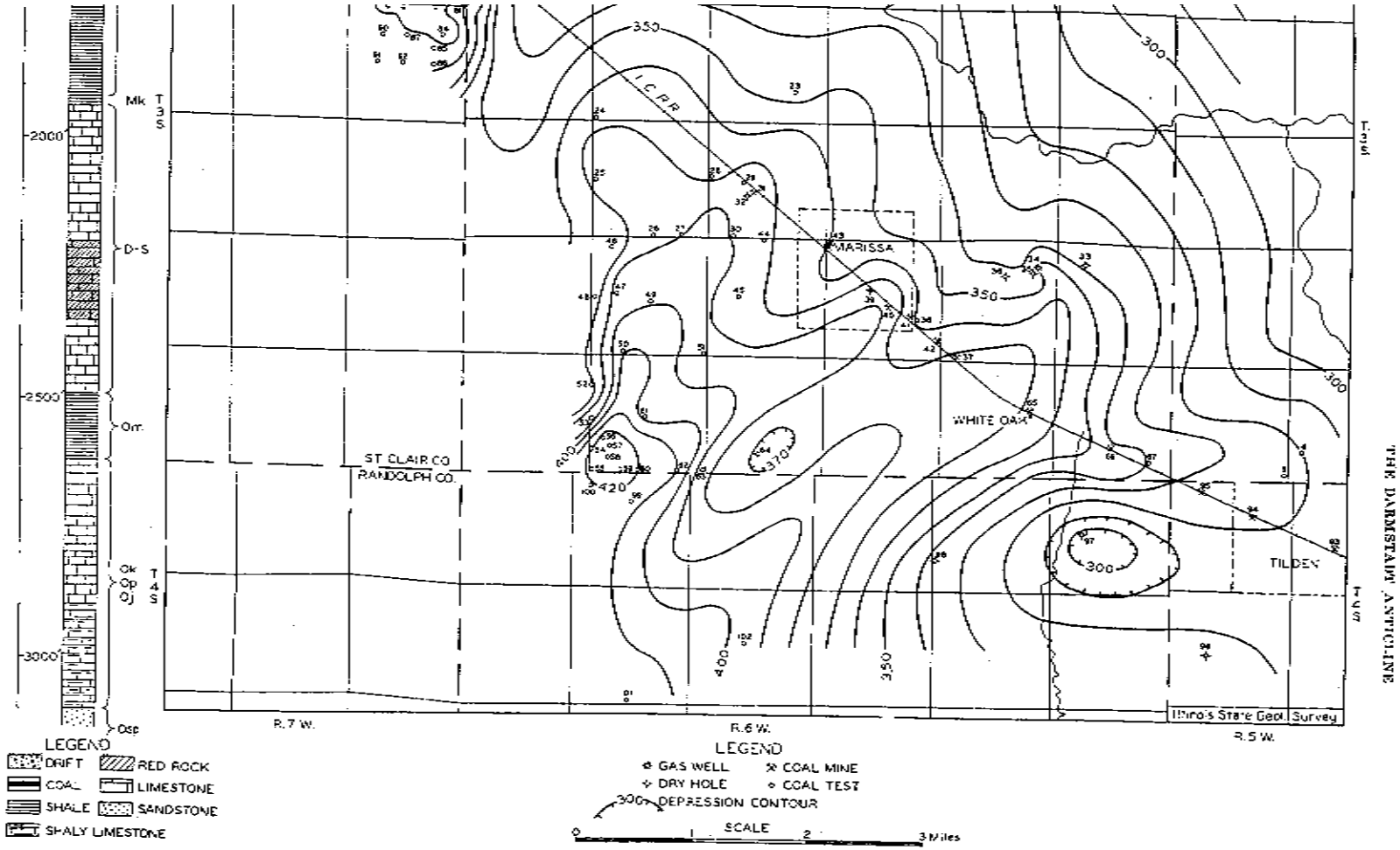


FIG. 2. Structure map of the Marissa-Darmstadt area showing the elevation of the Herrin (No. 6) coal above sea-level. The columnar section is described on page 3.

Additional shallow drilling to determine the structure of Herrin (No. 6) coal is desirable in the territory between Marissa and St. Libory. If local domes are determined by such new data, one or more of them should be tested into the Kimmswick formation.

TABLE 2.—*Data on oil and gas test wells*

Map No. (Fig. 2)	Location	Company	Farm	Total Depth	Lowest strata tested	Remarks
	Washington Co., T. 2 S., R. 5 W. (Section)					
1	8	Ohio Oil	Henry Buss	1261	Lower Miss.	Salt water at 807'-840', 978'-984'
	St. Slair Co., T. 2 S., R. 6 W.					
10	8	?	?	674	Chester	Sand (oil), 612'-658'
11	12	?	?	520	Chester	Salt water at 500'
	26	?	Wellmeier-ster	?		No log available
	35	?		1650	Lower Miss.	No log available
	T. 3 S., R. 6 W.					
32	21	Freehold Oil	Kunze	1201	Lower Miss.	Water at 793'-797'
33	25	Barnes & Nelson	Mueller	796	Chester	Salt water at 790'
34	26	E. S. Mason	Heil	678	Chester	Gas at 660'-678'; rock pressure reported to be 300 lb. to the square in.
35	26	Freehold Oil	Fulte	843	Chester	Water at 777'-800', 822'-842'
36	26	Freehold Oil	Eck	701	Chester	Show oil and gas at 675'; water at 701'
39	27	Consolidated Coal		793	Chester	Salt water and show oil at 608'-631'
	Randolph Co., T. 4 S., R. 5 W.					
96	7	Niagara Oil	Stevenson	1275	Lower Miss.	Salt water at 953'-1013'
	T. 4 S., R. 6 W.					
97	1	Tilden Oil	Andrews	1488	Lower Miss.	Salt water at 919'-924'; 1265'-1276'; 1435'-1445'
98	2	Tilden Oil	Dunn	1203	Lower Miss.	Oil shows at 906'-914'; 1126'-1175'

TABLE 3.—*Well and mine data*

Map No. (Fig. 2)	Location	Company	Farm or mine	Surface elevation	Top of Herrin (No. 6) coal	
					Depth	Elev.
				Feet	*Feet*	*Feet*
	Washington Co.					
	T. 2 S., R. 5 W.					
	(section)					
1	8	Ohio Oil	Henry Buss	435	256	179
2	8	M. W. Borders		430	221	209
3	30	Darmstadt Coal		442	216	226
	T. 3 S., R. 5 W.					
4	6	M. W. Borders		426	153	273
5	31			472	147	325
6	32			468	148	320
	St. Clair Co.					
	T. 2 S., R. 7 W.					
7	1	M. W. Borders		399	88	311
8	26	Pep Mine		422	62	360
9	34	Darmstatler Mine		423	55	368
	T. 2 S., R. 6 W.					
10	8			389	137	252
11	12			429	170?	259?
12	14			426	185	241
13	14	St. Libory Coal		429	196	233
14	16			412	186	226
15	21			405	131	274
16	21	M. W. Borders		428	173	255
17	26	M. W. Borders		415	123	292
18	27	M. W. Borders		415	131	284
19	27	David Thomas		421	152	269
20	28	M. W. Borders		418	158	260
21	33	M. W. Borders		421	164	257
	T. 3 S., R. 6 W.					
22	7	Bessemer Washed Coal		452	93	359
23	16			430	82	348
24	17	H. E. Willson		414	47	367
25	20	H. E. Willson		415	43	372
26	20	H. E. Willson		421	45	376
27	20	H. E. Willson		422	42	380
28	21	H. E. Willson		416	48	368
29	21	H. E. Willson		419	45	374
30	21	H. E. Willson		420	42	378
31	21	Borders Coal	Mine No. 2	426	55	371
32	21	Freehold Oil	Kunze	422?	58?	364?
33	25	Barnes & Nelson	Mueller	441	106	335

TABLE 3.—*Well and mine data—Continued.*

Map No. (Fig. 2)	Location	Company	Farm or mine	Surface elevation	Top of Herrin (No. 6) coal	
					Depth	Elev.
				Feet	*Feet*	*Feet*
34	26	E. S. Mason	Heil	432	80	352
35	26	Freehold Oil	Fulte	432	90	342
36	26	Freehold Oil	Eck	455	113	342
37	26	Johnson Coal	OK Mine	491	120	371
38	27	Rotramel		472	115	357
39	27	Consolidated Coal		460	88	372
40	27	Borders Coal	Mine No. 1	478	99	379
41	27	Jones Bros.	Eureka Mine No. 1	480	114	366
42	27		Marissa Mine	488	120	368
43	27	Bessemer Washed Coal	Advance	450	90	360
44	28	H. E. Willson		432	58	374
45	28	H. E. Willson		435	62	373
46	29	H. E. Willson		416	52	364
47	29	H. E. Willson		420	36	384
48	29	H. E. Willson		421	55	366
49	29	H. E. Willson		425	37	388
50	29	H. E. Willson		437	37	400
51	32	H. E. Willson		457	72	385
52	32	H. E. Willson		429	60	369
53	32	H. E. Willson		440	54	386
54	32	H. E. Willson		445	25	420
55	32	H. E. Willson		450	28	422
56	32	H. E. Willson		450	26	424
57	32	H. E. Willson		446	20	426
58	32	H. E. Willson		458	30	428
59	32	H. E. Willson		457	29	428
60	32	H. E. Willson		455	35	420
61	32	H. E. Willson		455	57	398
62	32	H. E. Willson		460	50	410
63	32	H. E. Willson		460	77+	383—
64	33	H. E. Willson		505	136	369
65	35	White Oak Mine		511	142	369
66	36	T. M. Meek Coal	Mine No. 1	523	183	340
67	36	Rotramel		521	182	339
	T. 3 S., R. 7 W.					
68	1	Golden Rule Mine		429	47	382
69	2	Kolb Coal	Fairbanks Mine	455	90	365
70	2	Kolb Coal	Vinegar Hill Mine	453	82	371
71	3	H. E. Willson		434	33	401
72	11	H. E. Willson		444	39	405
73	11	H. E. Willson		429	28	401

TABLE 3.—*Well and mine data—Concluded.*

Map No. (Fig. 2)	Location	Company	Farm or mine	Surface elevation	Top of Herrin (No. 6) coal	
					Depth	Elev.
				Feet	*Feet*	*Feet*
74	11	H. E. Willson		433	30	403
75	12	H. E. Willson		419	44	375
76	12	H. E. Willson		438	44	394
77	12	H. E. Willson		420	38	382
78	12	H. E. Willson		438	44	394
79	12	H. E. Willson		438	56	382
80	12	H. E. Willson		441	42	399
81	12	H. E. Willson		439	58	381
82	12	H. E. Willson		425	29	396
83	13	H. E. Willson		440	42	398
84	13	H. E. Willson		430	32	398
85	13	H. E. Willson		431	47	384
86	13	H. E. Willson		429	47	382
87	13	H. E. Willson		418	31	387
88	13	H. E. Willson		425	32	393
89	13	H. E. Willson		430	38	392
90	13	H. E. Willson		415	32	383
91	13	H. E. Willson		430	41	389
92	13	H. E. Willson		429	47	382
	Randolph Co. T. 4 S., R. 5 W.					
93	5	Madison Coal Corp.	Crystal Mine	511	194	317
94	6	Bessemer Washed Coal	Tilden Mine	507	186	321
95	6	Jones Bros.	Eureka No. 2	517	193	324
96	7	Niagara Oil	Stevenson No. 1	485	160	325
	T. 4 S., R. 6 W.					
97	1	Tilden Oil	Robert Andrews	480	182	298
98	2	Tilden Oil	Ervin Dunn	520	186	334
99	5	H. E. Willson		467	54	413
100	5	H. E. Willson		450	32	418
101	8			476	59?	417?
102	9			474	79	395

ANTICLINAL AREAS NEAR RENAULT, MONROE COUNTY

By Gail F. Moulton

Stratigraphy

The succession of geologic strata and their approximate thicknesses in southern Monroe County (B, fig. 1) are shown in the detailed well log below, and in its graphic representation accompanying the structure map (fig. 3). The well is located about 3½ miles northwest of Renault.

Log of oil-test well on Roever farm sec. 10, T. 4 S., R. 10 W., near Maeystown, Monroe County

	Thickness *Feet*	Depth *Feet*
Cenozoic group		
Recent system		
Mud	6	6
Paleozoic group		
Mississippian system		
Meramec series		
St. Louis formation (Msl)[a]		
Limestone, white, hard	54	60
Shale	2	62
Limestone, white, hard	38	100
Shale	5	105
Spergen formation (Ms)		
Limestone, white	75	180
Limestone, brown	30	210
Limestone, white	65	275
Osage series		
Warsaw formation (Mw)		
Shale, sandy, blue, soft	10	285
Limestone, broken	45	330
Shale	53	383
Keokuk-Burlington formations (Mk-Mb)		
Limestone, white and blue, flint	67	450
Fern Glen formation (Mfg)		
"Rock", green-gray	15	465
Red rock	25	490
Devonian-Silurian systems (D-S)		
Limestone, white	10	500
Ordovician system		
Maquoketa series (Om)		
Shale	80	580
Mohawkian series		
Kimmswick ("Trenton") formation (Ok)		
Limestone, gray, "rotten"	15	595
Limestone	75	670

[a] Letters in parentheses refer to graphic log, figure 3.

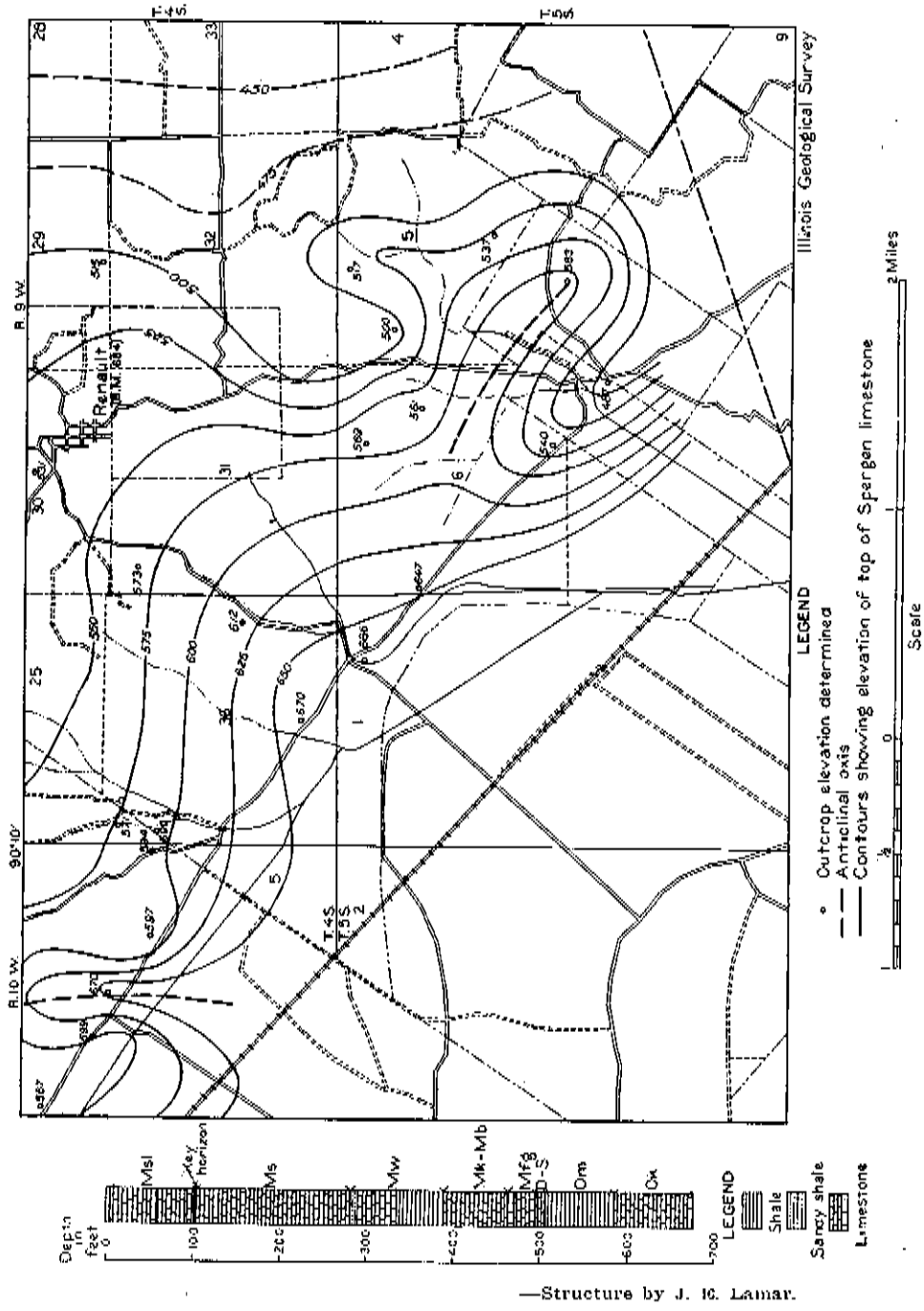


FIG. 3. Structure map of area near Renault, Monroe County.

Structure

The structure map (fig. 3) is a portion of a larger map prepared by J. E. Lamar, most of which was previously published in the report on the Posten School structure,[11] and shows the elevation of the top of the Spergen limestone above sea-level. There is a fairly regular dip toward the northeast, interrupted by two anticlinal noses, each being about two miles from Renault; one nearly due west and the other nearly due south of the town. The anticlinal axes are shown by heavy lines. The south structure appears to be more pronounced than the west, although neither is entirely closed, and the structures are therefore believed to be only slightly favorable for oil accumulation.

Recommendations

If an oil test be drilled in southern Monroe County, in spite of the absence of definitely favorable structure, it is recommended that it be located near the south end of the axis of the anticlinal nose south of Renault, as shown on the map (fig. 3). If this well gives no showings of oil or gas in the Kimmswick limestone, no further drilling should be done in the vicinity.

One of the chief incentives to drilling in this locality is the shallow depth at which the Kimmswick or "Trenton" should be found. If the interval between the top of the Spergen limestone and the top of the Kimmswick limestone is about the same near Renault as on the Posten School structure, the top of the Kimmswick should be found at a depth of from 325 to 400 feet, depending on the location of the well. One favorably located well drilled to a depth of 500 feet would be sufficient to test this structure.

[11] Mylius, L. A., Oil possibilities of the Posten School structure: Illinois State Geol. Survey, Press Bull. Ser., November 19, 1921.

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