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OF THE

UNITED STATES GEOLOGICAL SURVEY

No. 57

PRELIMINARY LIST OF DEEP BORINGS IN THE UNITED STATES,
PART I (ALABAMA-MONTANA).—DARTON

WASHINGTON
GOVERNMENT PRINTING OFFICE

1902



UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

PRELIMINARY LIST

OF

DEEP BORINGS IN THE UNITED STATES

PART I

(ALABAMA-MONTANA)

BY

N. H. DARTON



WASHINGTON

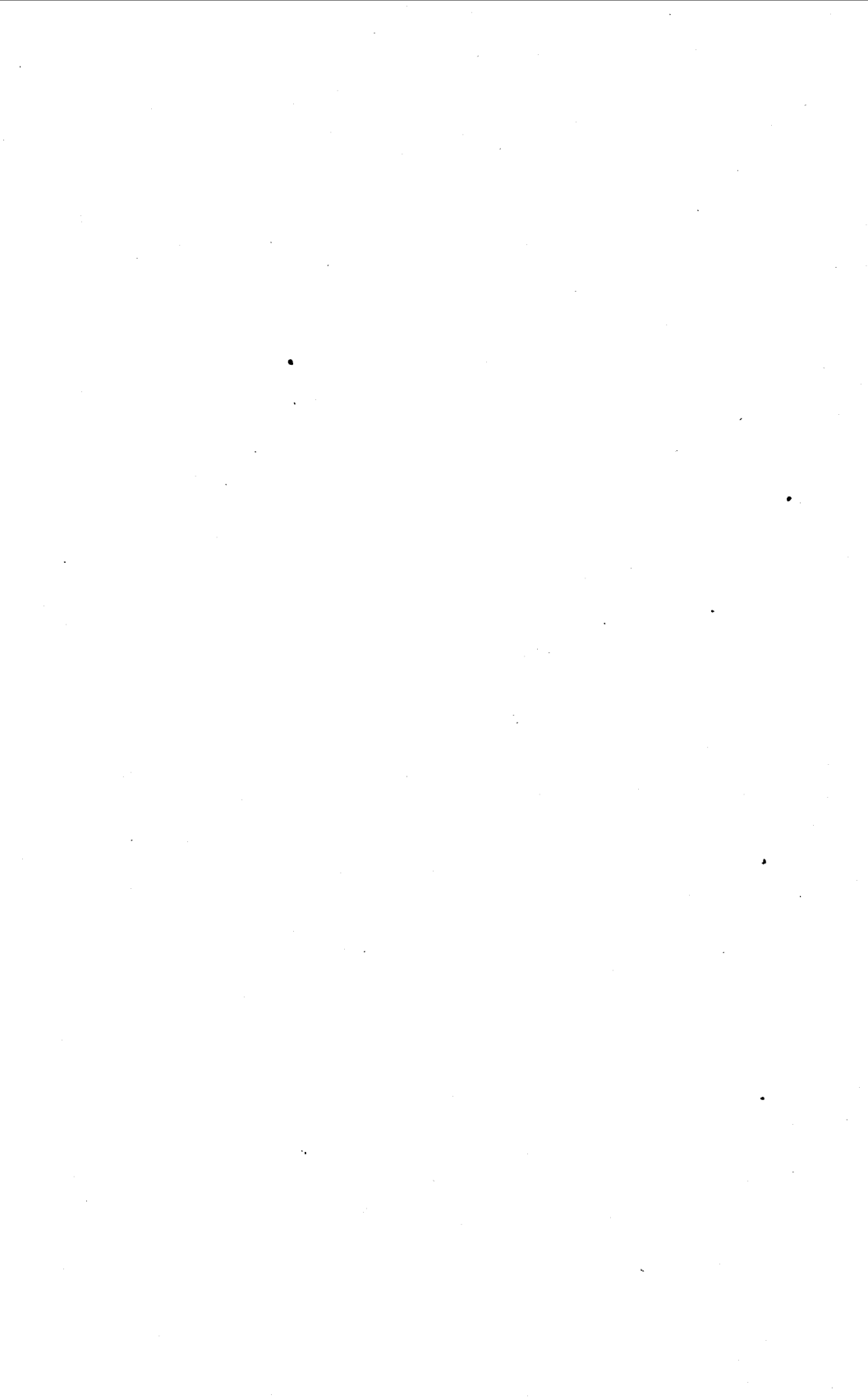
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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
DIVISION OF HYDROGRAPHY,
Washington, D. C., July 31, 1901.

SIR: I have the honor to transmit herewith a preliminary list of deep borings in the United States (400 feet or more in depth), by Mr. N. H. Darton, with the request that it be published in the series of Water-Supply and Irrigation Papers.

Very respectfully,

F. H. NEWELL,
Hydrographer in Charge.

Hon. CHARLES D. WALCOTT,
Director United States Geological Survey.

PRELIMINARY LIST OF DEEP BORINGS IN THE UNITED STATES.

PART I.—ALABAMA-MONTANA.

By N. H. DARTON.

INTRODUCTION.

The wells and borings reported in the paper are all more than 400 feet in depth. The information concerning them has been obtained partly from replies to circular letters sent to all parts of the United States and partly from geological reports and other published sources. Owing to the difficulty of obtaining replies to the circulars, to lack of knowledge on the part of correspondents, and to the incompleteness of published records, doubtless there are borings which have not been reported. In regions of oil and gas wells, where borings are numerous, the individual wells can not be listed here, but representative wells are given. References to logs or records of the wells, or extended descriptions of them, are given in footnotes, and after the list of wells in each State there is added a list of the principal publications relating to deep borings in that State.

The bearing of the information given in the columns of the lists probably is apparent, unless, perhaps, in the one headed "Height to which the water rises." In this column an entry such as "- 45" indicates that the water rises to within 45 feet of the surface; "+ 45" indicates that it is a flowing well and has sufficient head to raise the water 45 feet above the surface in an open pipe 45 feet or more in height. The yield in gallons per minute usually is estimated. Depths and diameters often have been reported from memory, and different sources of publication sometimes give different figures. Most wells which are not stated to be "for oil," "for gas," "brine," "abandoned," etc., in the remarks column, or "not any" in the yield column, generally afford more or less water. Many of the gas and oil wells, active or abandoned, yield salt water.

ALABAMA.

Location.	County.	Depth.	Diam-eter.	Yield per minute.	Height of water.	Remarks.
Anniston	Calhoun	<i>Feet.</i> 400-550	<i>Inches.</i> 8	Gallons. 695	<i>Feet.</i> — 30	Several wells.
Armstrong	Macon	442				Good water.
Birmingham	Jefferson	550		70	— 30	
Bladen Springs	Choctaw	1,300			+ 70	Water salt; first flow at 200 feet, second flow at 600 feet.
Boguechitto	Dallas	±400		0½		In sec. 8, T. 18, R. 8 E.
Do	do	460	6	75	+ 25	Temp., 68°.
Boligee. ¹	Greene	415			Flows.	Temp., 68°.
Do. ¹	do	420			Flows.	Temp., 66°.
Do. ¹	do	468			Flows.	Temp., 66½°.
Do. ¹	do	522			Flows.	Temp., 70°.
Boligee (at Finche's ferry). ¹	do	560			Flows.	Temp., 71°.
Brantley	Crenshaw	600	4			Good flow; 2 wells.
Bughall	Bullock	920				Unsuccessful.
Burton Hill ¹	Greene	544				Temp., 70°.
Do. ¹	do	420				
Do. ¹	do	555				Temp., 75°.
Butler	Choctaw	660			— 30	
Cahaba ¹	Dallas	400				Temp., 73½°.
Cahaba (on river). ¹	do	590	6	80	22	Temp., 70°.
Cahaba (5 miles below). ¹	do	560		2 250		Two wells.
Cahaba ¹	do	728		1,200		Temp., 77½°.
Carpenter	Jackson	400				Unsuccessful.
Cullman	Cullman	700				City well.
Demopolis	Marengo	765	3	30	+ 20	Temp., 64°.
Do	do	735	4	15	+ 12	
Do	do	850	6½	60	Flows.	
Do	do	800	3	Many.	+ 52	
Demopolis (3 miles south).	do	1,350		Many.	— 30	
Demopolis (4 miles northeast).	do	500		200	Flow.	Several wells.
Dothan	Henry	625	8		—150	
Epes	Sumter	700		3	+ 1½	
Eutaw ¹	Greene	743			— 10	
Eutaw (10 miles southwest). ¹	do	440-550				Temp., 71°-72½°; four wells.
Faunsdale	Marengo	700		8	+ 2½	
Fayette	Fayette	500			— 30	
Fitzpatrick	Bullock	900	6		— 30	
Do	do	1,300	6	12	— 30	
Florence	Lauderdale	+400				For gas; unsuccessful.
Forkland	Greene	575		20	+ 3	
Fort Morgan	do	700				
Greensboro	Hale	400-800		Many.	— 30	Several wells; good water.
Do	do					
Do	do	1,600				
Greensboro (10 miles southwest).	do	450 or 850?	12	Many.		
Greenville	Butler	+400	10-8	100	— 30	Two wells.
Guntersville	Marshall	1,006	8-6			Temp., 60°.
Hairston	Greene	530		4	+ 2½	2½ miles east.
Hanover (?)	Cosa	480	4		— 40	
Harris	Barbour	700				
Do	do	780	3			Abandoned; milky water at 140 feet to —15 feet.
Hartsell ³	Morgan	1,730	2			1 mile north of town: salt water at 352 and 1,730 feet; gas at 602 and 1,094 feet; sulphur water at 180 feet.
Hatchechubbee	Russell	420		8	No flow.	Small supply of water at 250 feet.
Hunters Field	Dallas	550	5	70	— 18	
Hurtsboro	Russell	530	4	±10	— 9	
Do	do	550	3	±11	— 9	
Do	do	565	3	±12	— 23	
Jennings (3 miles southeast). ⁴	Lawrence	5,120	6			Gas, oil, and salt water.

¹ Record, Am. Assoc. Adv. Science, Proc., vol. 10, p. 95.² Each.³ Alabama Geol. Surv., Report on Valley Regions, Part 1, pp. 62-63.⁴ Ibid., pp. 61-62.

ALABAMA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Laneville.....	Hale.....	710	.....	.....	.....	Temp., 75°.
Do.....	do.....	719	.....	.....	.....	Temp., 76°.
Do.....	do.....	750	.....	.....	.....	In progress.
Larkinsville.....	Jackson.....	400	.....	.....	.....	Unsuccessful.
Linden.....	Marengo.....	1,193	.....	1	Flows	Water at 1,040 to 1,115 feet.
Mobile.....	Mobile.....	700	6	400	.....	Temp., 76°.
Do.....	do.....	735	.....	Many.	+ 90	Temp., 78°.
Do.....	do.....	800	6	500	.....	Temp., 76°.
Do.....	do.....	800	6	1,000	+ 70	Temp., 73°.
Do.....	do.....	850	.....	.....	.....	.....
Montgomery.....	Montgomery.....	650-450	6	974-200	- 60	Four wells; originally flowed to +20 feet.
Newbern.....	Hale.....	475	.....	30	+ 4	.....
Newmarket ¹	Madison.....	965	2	.....	Flows.	.....
Oneonto.....	Blount.....	600	.....	.....	.....	.....
Roba.....	Macon.....	450	.....	.....	.....	Good water supply.
Russellville.....	Franklin.....	+1,350	.....	.....	.....	2 miles east; unsuccessful.
Saint Elmo.....	Mobile.....	550	.....	.....	.....	.....
Selma ²	Dallas.....	409	.....	230	.....	Temp., 67½°.
Do.....	do.....	470	6	.....	.....	Temp., 72°.
Do.....	do.....	600	6	80	+ 16	Do.
Do.....	do.....	487	6	110	+ 28	Temp., 63°.
Do.....	do.....	650	.....	100	+ 40	Four wells.
Sledges.....	.....	490	4	Many.	- 60	.....
Sprague Junction.....	Montgomery.....	400	8-6	.....	- 75	.....
Stewart.....	Hale.....	600	.....	.....	+ 8	.....
Tank Station.....	Dallas.....	560	6	90	+ 35	Temp., 70°.
Town Creek ³	Lawrence.....	515	.....	.....	.....	Abandoned.
Troy.....	Pike.....	2,700	.....	.....	.....	Unsuccessful.
Tuskegee.....	Macon.....	500	6	.....	.....	Do.
Do.....	do.....	760	8	.....	.....	Do.
Union Springs.....	Bullock.....	1,000	.....	Many.	.....	.....
Do.....	do.....	848½	6-2½	60	.....	.....
Do.....	do.....	848½	8	150	-240	.....
Do.....	do.....	569	.....	Many.	.....	Good water.
Do.....	do.....	750	.....	Many.	.....	Do.
Uniontown.....	Perry.....	895	8	.....	-125	.....
Do.....	do.....	1,195	8	300	-120	Water from 870 feet.

ARIZONA.

Ash Fork.....	Yavapai.....	1,025	10	No water.	.....	In volcanic rock.
Aubrey.....	do.....	936	12-8	No water.	.....	.....
Drake.....	Mohave.....	488	10	.....	.....	In progress.
Florence.....	Pinal.....	413	6	Few.	.....	Well never used.
Gila Bend.....	Maricopa.....	1,300	.....	.....	-700	.....
Haviland.....	Mohave.....	600	10	Many.	.....	.....
Kingman.....	Mohave.....	900	.....	No water.	.....	60 miles north.
Mohawk.....	Yuma.....	1,100	5½-4½	.....	.....	3 wells.
Do.....	do.....	500	.....	28	.....	.....
Phoenix.....	Maricopa.....	750	5	.....	- 20	Abandoned.
Do.....	do.....	475	.....	.....	.....	.....
Do.....	do.....	1,420	.....	.....	.....	.....
Do.....	do.....	1,475	.....	.....	.....	.....
Phoenix (12 miles west.)	do.....	500	.....	.....	.....	Not completed.
Pima.....	Graham.....	420	.....	.....	.....	Unsuccessful.
Safford.....	do.....	500	.....	No flow.	.....	.....
Sentinel.....	Maricopa.....	1,029	5	50	-185	.....
Thatcher.....	Graham.....	430	.....	Few.	No flow.	.....
Wickenburg, north-west of.	Maricopa.....	400	.....	.....	.....	No good results.
Winslow.....	Navajo.....	1,700	.....	.....	.....	No fresh water.
Yucca.....	Mohave.....	534	.....	.....	-325	Satisfactory water supply.

¹ Record, Alabama Geol. Surv., Report on Valley Regions, Part 1, p. 127.² Record, Am. Assoc. Adv. Science, Proc., vol. 10, pp. 97-98.³ Record, Pa. 2d Geol. Surv., Report II, p. 283.

ARKANSAS.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Arkansas City	Desha	552	6	Many.		Temp., 72°.
Bowen	Pike	400		Many.	No flow.	Several wells of this kind in county.
Fayetteville ¹	Washington	1,480				
Forrest City	St. Francis	465	4	Many.		
Do	do	465	6	Many.		
Gentry	Benton	492	8-6 $\frac{1}{2}$	420	- 19	
Do	do	±700			No flow.	
Do	do	1,000	7		- 30	Water at 700 and 900 feet.
Do	do	±1,350				
Helena	Phillips	500	12	Many.		Two wells.
Hope	Hempstead	500			- 60	
Hot Springs	Garland	860	6	13		
Hudson	Little River	900				
Do	do	800	4	Many.	No flow.	
Huntington	Sebastian	501	5 $\frac{1}{2}$		- 60	Water from 169 feet.
Monticello	Drew	500	8		-125	
Do	do	604	8-4 $\frac{1}{2}$	100	-110	
Mena	Polk	+700	10	Many.	No flow.	
Magazine	Logan	1,800				
Pine Bluff	Jefferson	915	8	521	- 30	Two wells.
Do	do	840	10	185	- 20	
Prescott (12 miles south)	Nevada	400-450			Flow.	Several wells.
Saline Landing ²	Howard	466				
Texarkana	Miller	937	6	209	To surface.	
Washington	Hempstead	750	3		- 35	Weak vein of water at 104 feet.
Wilmer	Drew	400				
White Cliffs	Sevier	460			+ 25	
Do	do	450			+ 8	Temp., 65°.
Do	do	540			- 60	Temp., 64°.

CALIFORNIA.

Adams Canyon ³	Ventura	400-2,780				Many oil wells, yielding 900 barrels per month.
Alameda	Alameda	489			Surface.	
Do. ⁴	do	409			- 8	
Alhambra	Los Angeles	400	7			Oil well.
Alila ⁵	Tulare	1,328	9		+ ,25	Small flow of gas.
Aliso Canyon	Ventura	600-700				Several oil wells.
Arcade	Sacramento	2,160				
Atwater	Merced	400	7	5		
Auburn	Placer	730				
Alviso	Santa Clara	496	7		+ ,5	
Do	do	740	7		+1.2	
Do	do	550	7			Flows.
Bakersfield	Kern	480	8	30		Flows.
Do	do	500	8	300		Flows.
Do	do	1,100		480		Flows.
Do	do	600	8	30		Flows.
Do	do	400	8	1,500		Flows.
Beckwith	Plumas	400	3	80		Flows.
Do	do	500-800	3	100		Flow.
Do	do	1,000-1,200	2-3	Many.		Flow.
Beckwith (8 miles above)	do	900	3	Many.		
Bieber	Lassen	740	4			Numerous wells.
Bishop	Inyo	420				
Brownstone	Ventura	400-800				In progress.
Buckhorn Station (4 miles north)	do	400				Several wells.
Buena Vista	Kern	410				Oil well.
Carpinteria (2 miles from). ⁶	Santa Bar- bara	700				Oil at 392 feet.
						Oil and gas well.

¹ Record, Arkansas Geol. Surv., Report, vol. 2, 1891, pp. 67-69.² Id., vol. 1, 1891, p. 105.³ Cal. State Mining Bureau, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, pp. 35-36.⁴ Record, Cal. State Mining Bureau, 11th Rept., 1891-92, pp. 135-136.⁵ Cal. State Mining Bureau, 11th Rept., 1891-92, p. 488.⁶ Id., 12th Rept., 1893-94, p. 357.

CALIFORNIA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Cedarville.....	Modoc.....	433	.....	.....	No flow.	
Centerville.....	Alameda.....	442	.....	.....	Flows.	
Chico.....	Butte.....	696	.....	Several	No flow.	
Chico (about 2½ miles northwest).	San Bernardino.....	609	.....	.....	.....	Abandoned.
Chittenden.....	Santa Cruz.....	800	.....	.....	.....	For oil.
Clearwater (?).....	Los Angeles.....	465	.....	Many.	.....
Coalinga ¹	Fresno.....	400-650	.....	.....	.....	Numerous oil wells in two groups, one 3 miles west, the other 9 miles north.
Crows Landing.....	Stanislaus.....	408	8	2	Flows(?)	
Cutler Salmon Ranch	San Joaquin.....	1,250	7-4	.....	.....	Gas well.
Danby.....	San Bernardino.....	630	10	50	-200	
Delano.....	Kern.....	713	15	3,470	Flows.	
Delano (5 miles southwest).	do.....	822	.....	.....	- 3	
Dos Palos.....	Merced.....	442-550	.....	.....	.....	Several wells.
Downey.....	Los Angeles.....	412	2	60	.....
Eagleville.....	Modoc.....	503	4½	.....	.....
El Verano ²	Sonoma.....	544	.....	.....	No flow.	
Embarcadero ³	do.....	405	.....	.....	+ 15	
Ethel.....	do.....	442	10	Many.	To surface.	
Fairview.....	Orange.....	450	7	.....	.....
Fenner.....	San Bernardino.....	800	10	Many.	-200	
Fitchburg ⁴	Alameda.....	400-500	7-12	1,000	No flow.	Several wells.
Flowing Well.....	San Diego.....	+400	.....	.....	.....
Four Forks ⁵	Ventura.....	700-1,100	.....	.....	.....	Several oil wells.
Fresno.....	Fresno.....	575	.....	.....	.....
Garvanza (west of).....	Los Angeles.....	985	.....	.....	.....	For oil; unsuccessful.
Glendora.....	do.....	2,038	5½	.....	No flow.	
Grafton.....	Yolo.....	450	6	Many.	.....
Grangeville.....	Tulare.....	980	7	.....	- 10	
Hanford ⁶	Kings.....	500-800	9-7	100-400	Flow.	Numerous wells.
Do.....	do.....	1,300	.....	.....	.....
Irrington.....	Alameda.....	450	.....	.....	Flows.	
J. G. James' ranch.....	Fresno.....	600-800	7-8	Flows.	+ 3	Several wells. Temp., 60°.
Kentuck.....	Ventura.....	700-730	.....	.....	.....	Several oil wells.
Kingsburg.....	Fresno.....	600	.....	.....	No flow.	
Lathrop Junction.....	San Joaquin.....	1,420	8	.....	Flows.	Gas well.
Limekiln Canyon.....	Tulare (?).....	500	.....	.....	.....	Oil well.
Little Sespe District.....	Ventura.....	805	.....	.....	.....	Do.
Long Beach.....	Los Angeles.....	500	8	1,100	Flows.	
Do.....	do.....	460	9-7	Many.	Flows.	
Los Angeles ⁷	do.....	450-1,300	.....	.....	.....	Numerous oil wells, some abandoned.
Los Angeles (The Ivanhoe). ⁸	do.....	+1,000	.....	.....	.....	Small supply of oil, abandoned.
Los Angeles (United States Hotel). ⁹	do.....	+ 900	.....	.....	.....	Gas at 900 feet.
Los Angeles (Stewart and McFarland). ¹⁰	do.....	1,485	.....	.....	.....	For oil; unsuccessful.
Los Angeles (Angelina Heights). ¹¹	do.....	1,186	.....	.....	.....	For oil or gas; abandoned.
Los Angeles (Boyle Heights).	do.....	600	.....	.....	.....	For oil; unsuccessful.
Los Angeles (Dr. Long's ranch).	do.....	500	7	.....	.....	Small supply of oil; abandoned.
Los Angeles (Look-out Mountain).	do.....	550	.....	.....	.....	Do.
Los Angeles (few miles southeast).	do.....	.....	.....	.....	.....	Gas well.
Los Angeles (4 miles northwest). ¹²	do.....	820	.....	.....	.....	Small supply of oil.

¹ Analysis, Cal. State Mining Bureau, 12th Rept., 1863-94, pp. 352-353.² Record, Cal. State Mining Bureau, 11th Rept., 1891-92, p. 457.³ Record, *ibid.*, p. 457.⁴ Cal. State Mining Bureau, 11th Rept., 1891-92, p. 134.⁵ *Id.*, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, p. 27.⁶ Cal. State Mining Bureau, 11th Rept., 1891-92, p. 489.⁷ Cal. State Mining Bureau, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, pp. 14-17.⁸ *Ibid.*, p. 14.⁹ *Ibid.*, p. 17.¹⁰ Cal. State Mining Bureau, 7th Rept., 1887, p. 78.¹¹ Cal. State Mining Bureau, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, p. 14.¹² Cal. State Mining Bureau, 7th Rept., 1887, p. 77.

CALIFORNIA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Los Angeles (5½ miles west). ¹	Los Angeles	Feet. ± 500	Inches.	Gallons.	Feet.	Small flow of gas; abandoned.
Los Angeles (6 miles west). ¹	do	658-1,485				Two wells, for oil; unsuccessful.
Los Angeles (10 miles north of west). ²	do	520				Two wells, sulphur water and some gas; abandoned.
Los Banos ³	Merced	434			Flows.	
Loyalton	Sierra	525-750	4	50	Flow.	Several wells.
Do	do	1,000		20	Flows.	Temp. 130°.
Do	do	400	3	100	Flows.	
Do	do	620	4		Flows.	
Do	do	430-512	3	30	Flow.	Several wells.
Ludlow	San Bernardino	1,800		Few.		Not in use.
Madera ⁴	Madera	1,200			-3	
Do	do	680			+ 10	
Madera (6 miles west)	do	633	7	100½	Flows.	
Mayfield	Santa Clara	604	7		Flows?	
Merced	Merced	600-700	9	167-175		
Merced (13 miles southwest).	do	1,013	10		+ 1½	Strongest flow at 665 and 680 feet.
Milpitas	Santa Clara	500-700	7		+ 2	Two wells.
Miramonte	Kern	636	8	1,670	Flows.	
Do	do	457	8			
Modesto (1 mile east)	Stanislaus	1,070		Many.	No flow.	Small flow of gas.
Montague ⁵	Siskiyou	1,300	10-8			Gas well.
Moody Gulch ⁶	Santa Barbara	1,400				For oil or gas.
Mount Cayetana (southwest slope, near Santa Paula Creek). ⁷	Ventura	430-1,170				Several oil wells.
Mount Diablo	Santa Barbara	900				
Newman	Stanislaus	427	12		Flows.	
Do	do	445	8	1,250		
Newman Ranch	do	411	8		4½	Brackish water.
Nordhoff (1 mile south).	Ventura	500-800				Several oil wells.
Norman (2 miles north). ⁸	Glenn	940	2	4	+15	Small amount of gas at 337 feet.
Norman (about ½ mile southeast).	do	1,100			Surface.	Small amount of gas at 500 feet.
North Cucamonga	San Bernardino	450		Many.		
Norwalk	Los Angeles	480	4			
Oakland	Alameda	506		112	Flows.	
Ontario	do	457	9½		No flow.	
Oroville	Butte	800	3	4	Flows?	
Pasadena	Los Angeles	1,200				No water.
Peru (1½ miles south)	Ventura	400-570				Several oil wells.
Pico	Los Angeles	600-735				Numerous oil wells.
Pixley	Tulare	438	8	Many.		
Do	do	480	7	Many.	+ .1	
Do	do	600	8		+ .8	
Do	do	713	9		+ .3	
Do	do	730	8		+ .2	
Do	do	955	9		+ .2	
Pixley (1½ miles northwest). ⁹	do	600	8		.1	
Pixley (2 miles east).	do	1,150	9	1,200	Flows.	
Pixley (vicinity)	do	937	9		+ .2	
Do	do	858	8		+ .7	
Pixley (3 miles west).	do	1,060	9		Flows.	
Pixley	do	815	9		+ .2	
Pixley (3 miles southwest).	do					
Pixley (6 miles southwest). ¹⁰	do	1,150	9		+ 1	
Pixley (6 miles west).	do	950	8		+ .7	

¹ Cal. State Mining Bureau, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, p. 15.

² Cal. State Mining Bureau, 7th Rept., 1887, p. 78.

³ Record, Cal. State Mining Bureau, 10th Rept., 1890, p. 326.

⁴ Cal. State Mining Bureau, 11th Rept., 1891-92, p. 211.

⁵ Cal. State Mining Bureau, 12th Rept., 1893-94, p. 351.

⁶ Record, Cal. State Mining Bureau, 8th Rept., 1888, p. 548.

⁷ Record, Cal. State Mining Bureau, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, pp. 37-38.

⁸ Record, Cal. State Mining Bureau, 11th Rept., 1891-92, p. 224.

⁹ Cal. State Mining Bureau, 11th Rept., 1891-92, p. 487.

¹⁰ Ibid., pp. 487-488.

CALIFORNIA—Continued.

Location.	County.	Depth.	Dia- meter.	Yield per minute.	Height of water.	Remarks.
Pixley (10 miles southwest). ¹	Tulare	<i>Feet.</i> 895	<i>Inches.</i> 10	<i>Gallons.</i> -----	<i>Feet.</i> +4	-----
Pomona	do	450-550	6 and 9	-----	-----	-----
Potter Valley	Mendocino	400	-----	-----	-11	-----
Puente ²	Los Angeles	100-1,750	-----	-----	-----	Numerous oil wells.
Roberts Island	San Joaquin	1,435	7-5	-----	Flows.	Gas well; saline water.
Riverside	Riverside	580	10	Many.	Flows.	-----
Rocky Point	Sierra	1,132	3	20	Flows.	-----
Do	do	1,040	4	10	Flows.	-----
Sacramento ³	Sacramento	876	-----	-----	-----	Gas well.
Do. ⁴	do	965	-----	-----	Flows.	Do.
Do. ⁴	do	970	-----	-----	Flows.	Water salty and al- kaline.
Sacramento (9 miles northeast). ⁵	do	2,250	-----	-----	Flows.	Some gas.
St. Helena	Napa	2,000	-----	-----	-----	-----
Salinas	Monterey	1,435	8	-----	-6	-----
Do	do	1,100	11-9	-----	-10	-----
Salt Marsh Canyon ⁶	Ventura	400-1,600	-----	-----	-----	Several oil wells.
Sap Bernardino	San Bernar- dino	605	6	Many.	Flows.	-----
Do	do	425	3	76	Flows.	-----
Do	do	415	3	7	Flows.	-----
San Francisco	San Francisco	865	8-5	87	-----	-----
San Gabriel	Los Angeles	500±	7	-----	-----	Several wells.
San Jacinto	San Diego	456-650	7	-----	-----	Do.
San Jose	Santa Clara	442-700	7	Many.	Flow.	-----
Do	do	400	8	900	Flows.	-----
San Lewis Ranch	Merced	410-428	7	128-160	-----	Two wells.
San Louis Obispo	San Louis Obispo	928	-----	Many.	Flows.	For oil; unsuccessful. Sulphur water; temp., 103°; gas at 600 feet.
Santa Barbara (7 miles east). ⁷	Santa Bar- bara	400-1,000	-----	-----	-----	Several oil wells; some abandoned.
Santa Clara	Santa Clara	600	-----	Many.	+10	Temp., 60°.
Santa Paula region	Ventura	530-800	-----	-----	-----	Several oil wells.
Santa Rosa (4 miles south). ⁸	Sonoma	815	-----	Few.	-----	Flows at intervals.
Sattley	Sierra	625	2	1	Flows.	-----
Savilla Colony ⁹	do	600	-----	Many.	Flows.	Gas and sulphur water; gas not used.
Semitropic	Kern	495	8-7	Many.	Flows.	-----
Sheridan ¹⁰	Placer	734	-----	-----	-19	-----
Sierra Valley	Sierra	640-888	3	15-45	Flow.	Several wells.
Do	do	556-900	4	125-300	Flow.	Do.
Do	do	746	2	16	Flows.	-----
Silverthread oil dis- trict (near Santa Paula Creek). ¹¹	Ventura	400-1,600	-----	-----	-----	Numerous oil wells.
Sisi Canyon	-----	400-800	-----	-----	-----	Do.
Smyrna Colony	Kern	524-600	-----	-----	-----	Two wells.
Stockton	San Joaquin	420	8	-----	+ 3	Warm water.
Stockton (S. F. and S. J. V. E. R.)	do	497	7	Many.	-19	-----
Stockton ¹²	do	1,002	-----	-----	+ 7	Temp., 77°.
Do	do	1,400-2,000	-----	-----	-----	Gas wells.
Stockton (Jackson well). ¹³	do	1,700	12-9½	Many.	-----	Gas well.
Stockton ¹⁴	do	1,400	-----	-----	-----	Do.

¹ Cal. State Mining Bureau, 11th Rept., 1891-92, p. 488.² Cal. State Mining Bureau, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, pp. 18-21.³ Cal. State Mining Bureau, 12th Rept., 1893-94, p. 350.⁴ Ibid., p. 350.⁵ Record, Cal. State Mining Bureau, 10th Rept., 1890, p. 505.⁶ Cal. State Mining Bureau, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, pp. 36-37.⁷ Cal. State Mining Bureau, 12th Rept., 1893-94, p. 357.⁸ Record, Cal. State Mining Bureau, 11th Rept., 1891-92, p. 456.⁹ Cal. State Mining Bureau, Bull. No. 3, Gas and Petroleum Yielding Formations of the Central Valley of California, p. 20.¹⁰ Record, Cal. State Mining Bureau, 11th Rept., 1891-92, p. 319.¹¹ Cal. State Mining Bureau, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, pp. 33, 35, 37.¹² Record, Cal. State Mining Bureau, 8th Report, 1888, pp. 559-560.¹³ Record, Cal. State Mining Bureau, Bull. No. 3, Gas and Petroleum Formations of the Central Valley of California, p. 17.¹⁴ Ibid., p. 17.

CALIFORNIA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Stockton Asylum (Jackson well). ¹	San Joaquin	600+—1,750	-----	Many.	-----	Two gas wells.
Stockton (St. Agnes College). ¹	do	1,720	-----	Many.	-----	Do.
Stockton (court-house). ²	do	1,917	12-8	Many.	-----	Gas well.
Stockton (Citizens' Gas Co.).	do	2,061	-----	Many.	-----	Do.
Stockton	do	980-1,080	-----	Many.	Flow.	Several wells; temp., 75°.
Stockton (9 miles southeast).	do	1,404	7-5	Many.	-----	Some gas.
Summit	Plumas	400-800	3	5-125	Flow.	Numerous wells.
Do	do	1,008	3-4	-----	Flow.	-----
Sunset District. ³	Kern	500-1,350	-----	-----	-----	Numerous oil and brine wells.
Susanville	Lassen	960	-----	-----	-10	-----
Tar Creek. ⁴	Ventura	700-1,000	-----	-----	-----	Numerous oil wells.
Tar Creek Canyon.	do	400-905	-----	-----	-----	Do.
Tipton	Tulare	400	7	-----	+ .04	Several wells about the same depth.
Do	do	480	8-6	-----	+ .04	-----
Do	do	508-1,012	8-9	Many.	Flow.	Several wells.
Torrey Canyon	Ventura	450-1,000	-----	Many.	Flow.	Oil wells.
Traver	Tulare	960	7	Few	-----	-----
Tulare	do	400	6	-----	+ .8	-----
Do	do	460	7	500	-----	-----
Tulare (about 20 miles west).	do	500	7	-----	+ .15	Several wells about this depth.
Tulare (E. Jacob's Ranch).	do	539	9	-----	+ .1	Some gas.
Do ⁵	do	498	9	-----	+ .1	Do.
Do ⁶	do	887	9	-----	+ .35	Gas well.
Do	do	835	9	-----	+ .3	-----
Tulare (city wells)	do	552	9	Many.	-15	Several wells.
Tulare	do	720	8	300	Flows.	Several wells about this depth.
Tulare (about 20 miles southwest; Lambertson Ranch). ⁷	do	1,058	9	Many.	+ .75	Gas at 600 and 700 feet.
Tulare (7 miles west). ⁸	do	730	8	-----	+ .35	-----
Vinton	Plumas	700	-----	150	Flows.	-----
Visalia	Tulare	775	7	190	Flows.	-----
Watsonville	Santa Clara	540	-----	-----	- 2	-----
Waukena	Tulare	450-816	8-9	Many.	Flow.	Several wells.
Wheeler Canyon. ⁹	Ventura	400-900	-----	-----	-----	Do.
Wild Bill Gulch. ¹⁰	do	850-975	-----	-----	-----	Oil wells.
Winchester	Riverside	400	-----	-----	-----	-----
Yreka	Siskiyou	700	4½	135	+32	-----

¹ Record, Cal. State Mining Bureau, Bull. No. 3, Gas and Petroleum Formations of the Central Valley of California, p. 18.

² Record, *ibid.*, pp. 15-16.

³ Cal. State Mining Bureau, 12th Rept., 1893-94, pp. 353-354; Record, Cal. State Mining Bureau, Bull. No. 3, Gas and Petroleum Yielding Formations of the Central Valley of Cal., p. 30.

⁴ Cal. State Mining Bureau, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, p. 27.

⁵ Cal. State Mining Bureau, 11th Rept., 1891-92, p. 489.

⁶ *Ibid.*, pp. 488-489.

⁷ *Ibid.*, p. 488.

⁸ *Ibid.*, p. 487.

⁹ Cal. State Mining Bureau, Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, p. 37.

¹⁰ *Ibid.*, p. 36.

PUBLICATIONS RELATING TO DEEP BORINGS IN CALIFORNIA.

California State Mining Bureau, Seventh Annual Report of the State Mineralogist for the year ending October 1, 1887, 315 pages, Sacramento, 1888.

California State Mining Bureau, Annual Report of the State Mineralogist for the year ending October 1, 1888, 948 pages, plates, Sacramento, 1888.

California State Mining Bureau, Tenth Annual Report of the State Mineralogist for the year ending December 1, 1890, 983 pages, plates, Sacramento, 1890.

California State Mining Bureau, Eleventh Report of the State Mineralogist (first biennial), two years ending September 15, 1892, 612 pages, Sacramento, 1893.

California State Mining Bureau, Twelfth Report of the State Mineralogist (second biennial), two years ending September 15, 1894, 541 pages, Sacramento, 1894.

California State Mining Bureau, Bulletin No. 3, the Gas and Petroleum Yielding Formations of the Central Valley of California, by W. L. Watts, 99 pages, plates and maps, Sacramento, 1894.

California State Mining Bureau, Bulletin No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, by W. L. Watts, 94 pages, plates, map, Sacramento, 1897.

COLORADO.

Location.		Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Town.	County.					
Acequia	Douglas	<i>Feet.</i> 442		<i>Gallons.</i> 15	<i>Feet.</i> Flows.	
Do	do	596		4	Flows.	
Akron	Washington	1,260				Failure; abandoned.
Alamosa	Conejos	505	3	3	Flows.	
Do	do	604	3	225	Flows.	
Do ¹	do	856	6-8	1,000	Flows.	Temp. 65°.
Do	do	465	3½	Many.	Flows.	
Do	do	474		Many.	Flows.	
Do	do	1,000	7½-6	Many.	Flows.	Temp. 75°.
Do	do	900	8	Many.	Flows.	2 wells; temp. 70°.
Arvada	Jefferson	460			Flows.	
Artesian	Arapahoe	700		Very few.	Flows.	
Do	do	565		20	Flows.	
Do	do	720		10	+ 35	
Boulder	Boulder	400	2	5	Flows.	
Do	do	+1,000			+ 20	Watertoo "alkaline."
Boulder (4 miles east)	do	600				Unsuccessful.
Bonita	Arapahoe	725	3	80	Flows.	
Brighton	do	406	3	30	+ 15	
Do	do	700		Few.	Flows.	
Do	do	500				
Burlington	Kit Carson	600		Small.	Flows.	
Byers	Arapahoe	450	2	1½		
Calhan ²	El Paso	566	6			Saline water.
Canon City	Fremont	1,600		700	+100	Temp. 90°.
Canon City (near)	do	1,278	4½	20	- 15	Water at 350 feet.
Cheyenne Wells ³	Cheyenne	1,770				For water. Abandoned.
Do	do	1,702				For gas. Failure.
Colfax	Custer	627		7	Flows.	
Colorado City	El Paso	2,020				Gas. Pressure 155 pounds to square inch. Now filled with surface water.
Do	do	1,300				Gas at 216 feet. Shut off by water. (Blue shale below 35 feet.)
Colorado Springs	do	1,120				
Cotton Creek	Saguache	405	3	75	Flows.	Temp., 58°.
Cortez ⁴	Montezuma	795		Several	No flow.	
Crestone	Saguache	426	3	10	Flows.	
Do	do	446	3	75	Flows.	
Del Norte	Rio Grande	607			Flows.	
Delta	Delta	575	2½	Few.	Flows.	
Do	do	580	3		Flows.	
Denver ⁵	Arapahoe	350	2½	½	+ 6	Temp., 56°.
Do	do	407	3-2	30	+ 25	Temp., 62°.
Do	do	444		50		
Do	do	500	3	40	+ 60	Temp., 50°.

¹ Record, 51st Congress, 1st session, Senate Ex. Doc., No. 222, p. 223, Washington, 1890.

² Record, 51st Congress, 1st Session, Senate Ex. Doc., No. 222, p. 210, Washington, 1890.

³ Record, U. S. Geol. Surv., 16th Ann. Rep., 1894-95, Part II, p. 563, Washington, 1895.

⁴ Record, Colorado State Engineer, 8th Annual Report for 1895-96, pp. 69-70.

⁵ In Denver and vicinity there are several hundred wells, mainly from 350 to 1,000 feet deep. They yield flows of considerable size from several horizons, but owing to large number of wells the volume of water is now greatly decreased. The wells are described in the following publications: 51st Congress, 1st session, Senate Ex. Doc. No. 222, pp. 175-205, 227-228, Washington, 1890; Monograph, U. S. Geol. Surv., Vol. XXVII, Geology of the Denver Basin, by S. F. Emmons, W. Cross, and G. H. Eldridge, 4th, Washington, 1896.

COLORADO—Continued.

Location.		Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Town.	County.					
Denver	Arapahoe	<i>Feet.</i> 575	<i>Inches.</i> 9-6½	<i>Gallons.</i> Small.	<i>Feet.</i> No flow.	
Do	do	604	3-4			
Do	do	625	4	60	+ 60	
Do	do	720	3½	10	+ 35	
Do	do	725	3	70	+ 40	
Do	do	810	4	70	- 5	Flow pumped down.
Do	do	856	3½-2½	10	+ 20	
Do	do	908	2½		- 24	
Do	do	1,069	5			
Do	do	1,103			No flow.	
Do	do	1,250				Drilled for oil. Salt water to -40. Well abandoned.
Durango	La Plata	400			Flows.	
Eaton	Weld	970			No flow.	Much water at 230-260 feet. Some water at 400 and 625 feet.
Evans	do	1,200		Few.	Flows.	Water from 1,125 ft.
Fleming	Logan	423			-160	Very small supply of water.
Florence ¹	Fremont	780		1	Flows.	Numerous oil wells in vicinity.
Do	do	+1,000		700	Flows.	Water at 1,000 feet.
Do	do	+ 800		1,000	Flows.	Temp., 86°.
Fort Logan	Arapahoe	685			No flow.	
Do	do	558	4		No flow.	
Fort Lupton	Weld	904			- 4	
Fort Lyon	Bent	815				Abandoned. Small amount of water at 430 feet.
Franceville Junction	El Paso	Many.				
Georgetown	Clear Creek	658	2	120	100	
Grand Junction	Mesa	1,000	6½-5½	Few.	No flow.	Some gas at 444, 700, and 864 feet.
Greeley ²	Weld	446	2½		No flow.	
Do	do	970	4		- 20	
Do	do	1,165		40	Flowed at first.	Several wells.
Do	do. ³	2,140	8-4	Few.	- 40	Water from 1,165-1,200 feet.
Hoehne	Las Animas	936				Well abandoned.
Hygiene ⁴	Boulder	965				Flowed at 675 feet.
Irondale	Arapahoe	500	6-4	60	Flows.	
Iron Springs	Otero	1,006			-556	Flows at 240 and 375 feet; unsatisfactory water at 1,006 feet. In progress.
Island Station	Arapahoe	440	8	60	Flows.	
Do ⁵	do	430	4	15	+ 40	
Do	do	730			-125	
Kit Carson	Cheyenne	1,460				No fresh water; salt water at 450 feet.
Lajunta ⁶	Otero	412	4½	8	Flows.	Temp., 68°.
Do	do	420	8-6	45	Flows.	2 wells; temp., 70°.
Do	do	439	6			Temp., 68°.
Do	do	640	5½	35	Flows.	Temp., 68°.
Do	do	670	8½	15	Flows.	
Do	do	700	6			Do.
Do	do	740	7½	12½	Flows.	Temp., 75°.
Do	do	766	7½	25		Temp., 68°.
Do	do	1,152	5½	Many.	Flows.	
Lamar ⁷	Prowers	560	5½	5	Flows.	Can pump 80 gals.
Lamar (northwest of).	do	420			No flow.	
Langford (4 miles northeast).	Boulder	400	2	3	Flows.	
Larkspur	Douglas	560				
Las Animas	Bent	+500		82		
Las Animas (7 miles northeast).	do					See Fort Lyon.

¹ Record, 51st Congress, 1st session, Senate Ex. Doc. No. 222, p. 214, Washington, 1890.² Fifty-first Congress, 1st session, Senate Ex. Doc. No. 222, pp. 209-210, Washington, 1890.³ Analysis, *ibid.*, p. 226.⁴ Record, *ibid.*, p. 208.⁵ Fifty-first Congress, 1st session, Senate Ex. Doc. No. 222, p. 197, Washington, 1890.⁶ Record, Colorado State Engineer, Ninth Biennial Report, for 1897-98, pp. 28-29.⁷ Record, Colorado State Engineer, Ninth Biennial Report for 1897-98, p. 29; analysis, 51st Congress, 1st session, Ex. Doc. No. 222, p. 228, Washington, 1890.

COLORADO—Continued.

Location.		Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Town.	County.					
Leadville	Lake	Feet. 400	Inches.	Gallons. 30	Feet.	
Littleton	Arapahoe	467	3½	20		2 other similar wells, 440 and 480 feet.
Do	do	500	3½-2½	16		
Do	do	510		25	+ 35	
Do	do	525		9	Flow.	Temp., 62°. Several similar wells from 520 to 560 feet deep.
Do	do	580		8	Flow.	
Do	do	601		15	+ 16	Several similar wells from 600 to 675 feet deep.
Do	do	710		45		Several similar wells from 700 to 735 feet deep.
Do	do	810		+1		
Do	do	1,300	8-4	3½	+ 50	
Lockett	Saguache	418	3		+ 11	
Longmont	Boulder	431	4	+2		
Do	do	506			No flow.	
Do	do	600	6	40	+ 30	
Do	do	640	3½	Few.		
Loveland ¹	Laramie	2,465		1	Flowed.	Water at 1,365 feet.
Lyman	Arapahoe	620		10		
Manzanola	Otero	1,113	5½	42	Flows.	Temp., 80°.
Moffat	Saguache	404	3	Few.	Flows.	
Do	do	650			Flows.	
Do	do	710	2		+ 1½	
Montrose	Montrose	825		30	Flow.	Temp., 72°.
Mosca	Costilla	610	4½		+ 3	
Do	do	420	4		Flow.	
Ordway	Otero	1,575	4½	Many.	-250	Temp., 63°.
Otis ²	Washington	2,400		None.		Abandoned.
Petersburg	Arapahoe	600		20	+ 35	
Do. ³	do	720	3½-2½	10	+ 35	
Pueblo ⁴	Pueblo	772	4½	2½	Flows.	
Do	do	782		3-5	Flows.	
Do	do	789	5½	300	Flows.	
Do	do	1,150		3	Flows.	
Do	do	1,219	4½	20	+125	Temp., 76°.
Do	do	1,260		20-25	Flows.	
Do	do	1,400	3		+140	Temp., 77°.
Do	do	1,402		+ 87	+140	
Rocky Ford	Otero	767	5½	130	Flows.	Temp., 78°.
Do	do	790	10-4½	68	+ 75	Temp., 74°.
Do	do	793	7½	68	Flows.	Temp., 78°.
Do	do	820	7½	38	Flows.	Temp., 75°.
Do. ⁵	do	845	4	115	Flows.	Temp., 72°.
Do	do	1,033	6	17	Flows.	Temp., 75°.
Rouse Junction	Huerfano	2,058		Few.	-200	Salt water at 890 feet, small amounts of water at 700 and 1,600 feet.
Saguache	Saguache	400	4½			
Salt Creek	Pueblo	2,030			No flow.	Small amount of water at various depths. Abandoned.
Scranton ⁶	Arapahoe	800½	3			Coal prospect. No water.
Sedalia	Douglas	650	2½			
Do	do	710			No flow.	
Do	do	1,440				Water from 200 to 300 feet only.
Sedalia (5 miles south.) ⁶	do					
Sheridan	Arapahoe	580		20		
Do	do	620		10		
Sheridan Lake	Kiowa	1,280	6		-280	Water at 1,200 feet. Abandoned.
Stout ⁷	Larimer	1,225		1	+ 30	Poor water 922-1,000 feet.

¹ Record, 51st Congress, 1st session; Senate Ex. Doc. No. 222, pp. 210-211, Washington, 1890.² Ibid., p. 217, Washington, 1890.³ Ibid., p. 204.⁴ Records, etc., ibid., pp. 213-214; analyses, ibid., p. 229.⁵ Record, Colorado, State Engineer 9th Biennial Report, 1897-1898, p. 29.⁶ Record, 51st Congress, 1st session, Senate Ex. Doc. No. 222, p. 207, Washington, 1890.⁷ Ibid., p. 211.

COLORADO—Continued.

Location.		Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Town.	County.					
Thatcher.....	Las Animas.....	<i>Feet.</i> 936	<i>Inches.</i> 5½	<i>Gallons.</i> 35	<i>Feet.</i> Flows.	
Timpas.....	Otero.....	795	6½			
Troy.....	Las Animas.....	400 or 500				
Trinidad.....	do.....					
Do.....	do.....	2,595	5½	Many.	—195	
Walsenburg.....	Huerfano.....	1,250				For gas, entirely in shale. Salt water at —40 feet.
Westcliffe.....	Custer.....	500		None.		Abandoned.
Whiteriver.....	Rio Blanco.....	402				Salt water at 200 feet.
Do.....	do.....	506½				Much gas at 500 feet.
Wray.....	Yuma.....	+500				For oil or coal; unsuccessful.

PUBLICATIONS RELATING TO DEEP BORINGS IN COLORADO.

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Artesian Wells of Colorado and their relation to irrigation, State Agricultural College, Bulletin No. 16, July, 1891, 28 pages.

Economic Geology, by George H. Eldridge, Geology of the Denver Basin in Colorado, United States Geological Survey, Monograph No. 27, pp. 317–465, Washington, 1896.

Underground Waters of the Arkansas Valley in Eastern Colorado, by G. K. Gilbert, United States Geological Survey, 17th Annual Report, 1895–1896, part 2, pp. 1–51, plates, Washington, 1896.

United States Geological Survey, Geologic Atlas of the United States, No. 36, Pueblo folio, by G. K. Gilbert, Washington, 1897.

United States Geological Survey, Geologic Atlas of the United States, No. 58, El Moro folio, by R. C. Hills, Washington, 1899.

United States Geological Survey, Geologic Atlas of the United States, No. 68, Walsenburg folio, by R. C. Hills, Washington, 1899.

CONNECTICUT.

Location.		Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Town.	County.					
Bridgeport.....	Fairfield.....	<i>Feet.</i> 800	<i>Inches.</i> 6	<i>Gallons.</i> Several	<i>Feet.</i> No flow.	
Mansfield.....	Tolland.....	800	6	14	No flow.	
Meriden.....	New Haven.....	530	12	70	No flow.	Water very hard.
New Haven.....	do.....	3,800				Unsuccessful.
Noroton.....	Fairfield.....	700		None.		
Do.....	do.....	1,500		4	No flow.	
Pomfret Center.....	Windham.....	610	6	Few.	No flow.	4 gallons at 900 feet.
Putnam Heights.....	do.....	800		Few.	No flow.	
Do.....	do.....	400	6	4	No flow.	
Do.....	do.....	700		7	No flow.	
Do.....	do.....	420		2	No flow.	
Rockville.....	Tolland.....	3,440		Not any		Abandoned.
Stamford.....	Fairfield.....	450	8			Water unsatisfactory.

DELAWARE.

Location.		Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Town.	County.					
Bowers Beach ¹	-----	Feet. 500	Inches. 3½	Gallons. 200	Feet. No flow.	Not much water below 240 feet.
Delmar ²	Sussex	-----	-----	-----	-----	
Lewes ³	do	400	6	15	At surface.	Water also at 475 feet. Water from 535 and 660-686 feet.
Do. ⁴	-----	1,080	-----	15	Flows.	
Middletown ⁵	Newcastle	535	10-8	330	—50	
Do. ⁶	do	698	-----	-----	-----	
Wilmington	do	400	8	15-18	-----	
Do	do	1,077	-----	10	—25	

DISTRICT OF COLUMBIA.

Washington, Heinrich's old Brewery.	-----	900	-----	7	-----	Abandoned.
Washington, Riggs House.	-----	558	-----	None.	-----	Unsuccessful.

FLORIDA.

Apalachicola	Franklin	475	3½	-----	-----	Temp., 68°.
Bartow (8 miles southwest).	Polk	600	-----	-----	-----	Small vein of water at 300 feet.
Do	do	400	-----	-----	-----	-----
Eau Gallie	Brevard	490	6	-----	+ 48	Temp., 78°.
Fernandina ⁷	Nassau	640	8	800	+ 50	Water from 618 feet.
Do	do	750	6	-----	+ 64	Temp., 77°.
Fernandina (city park).	do	700	8	810	+ 40	Temp., 74°.
Fernandina	do	762	-----	-----	-----	-----
Green Cove Springs.	Clay	600	6	600	+ 30	Temp., 80°.
Heart's Road? (R. R. junction).	Nassau	750	6	Many.	+ 64	Temp., 77°.
Hobe Sound	Dade	1,100	4	Few.	Flows.	Sulphur water.
Jacksonville ⁸	Duval	793	6	-----	+ 17	-----
Do	do	711	-----	-----	Flows.	Do.
Do	do	630	6	432	-----	Temp., 74° to 77°.
Do	do	660	6½	950	+ 64	Do.
Do	do	1,020	10½	-----	-----	Temp., 81°.
Do	do	937	12	432	-----	Temp., 77°.
Do	do	490	3	180	+ 62	Temp., 75°.
Do	do	637	6	600	+ 62	Temp., 76°.
Do	do	650	6	900	+ 62	Do.
Do	do	1,020	-----	2,333	+ 62	Temp., 78°.
Do	do	-----	8-4	-----	-----	-----
Jasper	Hamilton	+550	-----	-----	-----	In progress.
Key West	Monroe	2,350	-----	-----	-----	-----
Kissimmee	Osceola	406	4	-----	-----	-----
Lake Worth ¹⁰	Dade	1,212	4	313	+ 40	-----
Live Oak	Suwanee	1,004	8	Many.	— 80	Temp., 60°.
Madison	Madison	530	6	100	—117	-----
Malabar	Brevard	510	3	Many.	Flows.	Temp., 78°; bored for oil; none found.
Melbourne	Brevard	400	6	-----	+ 48	Temp., 78°.
Narcoossee	Osceola	416	3	-----	— 27	-----
Ocala	Marion	1,210	8	-----	— 74	-----
Orchid	Brevard	480	4	Few.	Flows.	Sulphur water.
Pasadena	Pasco	450	-----	-----	— 86	-----
Pensacola	Escambia	1,400	-----	-----	-----	Navy yard well. No good water.

¹ New Jersey Geol. Surv., Report for 1899, p. 110.² Record, *ibid.*, pp. 111-112.³ Record, U. S. Geol. Surv., Bull. 138, p. 123.⁴ Record, New Jersey Geol. Surv., Report for 1898, pp. 83-87.⁵ Record, U. S. Geol. Surv., Bull. No. 138, p. 123.⁶ Record, New Jersey Geol. Surv., Report for 1898, p. 115.⁷ Georgia Geol. Surv., Bull. No. 7, pp. 75-76.⁸ Representative wells.⁹ Both wells.¹⁰ Record, *etc.*, Am. Jour. Sci., 3d series, vol. 41, pp. 105-106.

FLORIDA—Continued.

Location.		Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Town.	County.					
Punta Gorda.....	De Soto.....	<i>Feet.</i> 467	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	Water too salty for use.
Do.....	do.....	400	-----	-----	Flows.	Salt water only.
Do.....	do.....	425	-----	25	Flows.	
Quincy.....	Gadsden.....	610	6-4½	-----	190	2 wells.
Riverside.....	Putnam.....	-----	-----	Many.	Flow.	2 wells.
Roseland.....	Brevard.....	462-450	6	Many.	Flow.	flows also at 400-450 and 500-550 feet.
St. Augustine ¹	St. John.....	1,400	-----	5,500	-----	Temp., 86°. Strong
St. Nicholas.....	Duval.....	750	6	-----	+ 60	Temp., 77°.
South Jacksonville.....	do.....	800	-----	-----	+ 55	Do.
Do.....	do.....	750	6	-----	+ 69	
Tallahassee.....	Leon.....	715	-----	-----	- 98	

GEORGIA.

Abbeville ²	Wilcox.....	540	4	-----	- 25	Water at 90, 139, and 236 feet.
Albany.....	Dougherty.....	665	2	20	Flows.	Numerous wells.
Do. ³	do.....	700-780	6-4	20-115	+ 24	
Do. ⁴	do.....	732	10	225	+ 30	Temp., 73½°.
Albany (16 miles west). ⁵	do.....	550	-----	-----	-----	Pure water.
Americus.....	Sumter.....	1,725	8-4	-----	- 30	Water at 1,000 feet.
Do.....	do.....	400	-----	-----	- 10	Supply is derived from the 350-foot level.
Do. ⁵	do.....	500	-----	-----	- 10	
Do.....	do.....	900	-----	-----	Flows.	Water at 500, 600, and 700 feet. Hard and slightly chalybeate.
Do.....	do.....	550	4	33	+ 1	
Arlington ⁶	Calhoun.....	625	6	-----	- 20	Five water-bearing strata penetrated.
Augusta ⁷	Richmond.....	814	8	18	-196	
Do. ⁸	do.....	879	6	-----	-----	Water at 280 and 370 feet.
Bainbridge ⁹	Decatur.....	900	6-2	-----	- 50	
Do. ¹⁰	do.....	1,325	-----	-----	-----	Flows at 350 and 450 feet.
Do.....	do.....	965	6-2	-----	- 59	
Barrington ¹¹	McIntosh.....	450	3	200	+ 20	Water at 320 and 408 feet.
Baxley ¹²	Appling.....	507	6	-----	-129	Temp., 74°.
Bladen ¹³	Glynn.....	480	3	100	+ 30	Water from 475 feet.
Bowen's Mills.....	Wilcox.....	673	2½	60	+ 22	Water from 475 feet.
Bradley's plantation ¹⁴	Stewart.....	740	3	-----	Flows.	
Brunswick ¹⁵	Glynn.....	450-490	3	200	+ 28	Numerous wells.
Do.....	do.....	415	3	-----	+ 19	
Do.....	do.....	540	8	600	+ 12	Temp., 62°.
Do.....	do.....	430	4	-----	+ 25	Temp., 70°.
Do.....	do.....	460	6	350	+ 12	
Do.....	do.....	465	4	600	Flows.	Water at 331 and 364 feet.
Buena Vista ¹⁶	Marion.....	583	10	-----	-240	
Camilla.....	Mitchell.....	600	-----	-----	No flow.	Nonflowing.
Chauncey ¹⁷	Dodge.....	525	6	-----	- 70	Water at about 300 ft.
Collins.....	Tatnall.....	800	8	-----	-142	
Columbus, 3 miles south of.	Muscogee.....	425	3	2	- 4	Water at 400 feet.
Cookstown.....	Wilcox.....	+400	-----	-----	No flow.	3 wells reported.
Cordele ¹⁸	Dooley.....	550	8	-----	- 20	
Do.....	do.....	700	6	-----	- 30	-----
Creytons Island ¹⁹	McIntosh.....	414	3	-----	+ 50	

¹ Am. Jour. Sci., 3d series, vol. 34, p. 70.² Ga. Geol. Surv., Bull. No. 7, p. 151.³ Analysis and record, *ibid.*, pp. 179-181.⁴ Record, *ibid.*, pp. 178-179.⁵ Record and analysis, Ga. Geol. Surv., Bull. No. 7, pp. 174-176.⁶ Record, *ibid.*, p. 185.⁷ Ga. Geol. Surv., Bull. No. 7, pp. 123-129.⁸ *ibid.*, p. 130.⁹ Analysis, *ibid.*, pp. 160-161.¹⁰ *ibid.*, p. 162.¹¹ Ga. Geol. Surv., Bull. No. 7, p. 109.¹² *ibid.*, p. 149.¹³ *ibid.*, pp. 92-93.¹⁴ Record, Ga. Geol. Surv., Bull. No. 7, p. 197.¹⁵ *ibid.*, p. 86.¹⁶ *ibid.*, p. 198.¹⁷ Ga. Geol. Surv., Bull. No. 7, p. 145.¹⁸ Record, Ga. Geol. Surv., Bull. No. 7, pp. 159-160.¹⁹ Ga. Geol. Surv., Bull. No. 7, p. 109.

GEORGIA—Continued.

Location.		Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Town.	County.					
Cumberland Island ¹	Camden	<i>Feet.</i> 600	<i>Inches.</i> 4	<i>Gallons.</i> 4	<i>Feet.</i> + 12	
Do. ²	do	485	4		+ 12	
Do. ³	do	680	6	555	+ 51	Water sulphurous.
Cuthbert	Randolph	1,000	6-4		- 30 $\frac{1}{2}$	Water also at 340-400 and 550 feet.
Damascus ⁴	Early	547	2		- 7	Water also at 200 ft.
Darien	McIntosh	492	4			
Do. ⁵	do	530	8	200	+ 15	
Dawson ⁶	Terrell	650	5-2		- 45	
Doboy	McIntosh	450	6	250		
Drayton	Dooly	400	8	8	Flows.	Temp., 50°.
Dry Creek ⁷	Burke	763	2		- 30	Water also at 230 and 375 feet.
Dublin	Laurens	850	8			First flow at 350 feet.
Duckers Station ⁸	Dougherty	547	2		+ 10	
Eastman ⁹	Dodge	680	4	Many.	- 120	
Eastman	do	+ 600		Not any		Abandoned.
Do	do	720			- 200	
Egypt ¹⁰	Effingham	750	4		- 45	Water at 300 and 750 feet.
Evelyn	McIntosh	500	2		+ 45	Sulphurous water.
Do	Glynn	420	3		+ 14	Do.
Everett City	do	460	2		+ 38	
Everetts Station	Crawford	+ 400				
Fitzgerald ¹¹	Irwin	680	6-3		- 27	
Do	do	800	10		- 150	
Do	do	1,000	6		- 128	
Do	do	853	12-8	139	- 320	
Florence, 3 miles west on Chattoohoochee River.	Stewart	490	6	$\frac{1}{2}$	+ 20	
Do	do	490	2	$\frac{1}{10}$	+ 20	
Do	do	445		$1\frac{1}{2}$	+ 30	
Do	do	455		$\frac{1}{2}$	+ 20	
Fort Gaines	Clay	650	4-3	150	- 20	Water at 500 feet.
Do	do	800		400	- 12	
Fort Valley ¹²	Houston	1,075	6-4		- 100	
Do	do	500		Not any		Abandoned.
Do	do	1,200		Not any		
Hawkinsville ¹³	Pulaski	490	6		Flow.	Temp., 71°.
Irwinville	Wilkinson	600	3		(?) + 50	
Jekyl Island ¹⁴	Glynn	480	6	250	+ 45	
Jesup ¹⁵	Wayne	500	2		- 33	Water also at 287 feet.
Kingsland	Camden	475	2	60	Flows.	
Do ¹⁶	do	500	2	33 $\frac{1}{2}$	+ 20	
Leary ¹⁷	Calhoun	672	5-2	23	+ 30	
Leary, 3 miles north	do	400			No flow.	Abandoned.
Leesburg	Lee	500-600	8		No flow.	Temp., 68°. Mineral water.
Louisville ¹⁸	Jefferson	450	4			Several wells. Those on low ground flow.
Lumber City ¹⁹	Telfair	400	2	60	+ 14	6 wells. Water also at 300 feet.
Lyons ²⁰	Montgomery	400	3	10	- 84	Main water horizon at 375 feet.
McArthur ²¹	do	900	3		- 60	Water at 419 and 890 feet.
Macon ²²	Bibb	955	12	Not any		Abandoned.
Manassas	Tatnall	498	6		- 148	
Meldrim	Effingham	538	6	Many.	Flows.	
Milledgeville	Baldwin	600 or 700		Many.	No flow.	
Millen ²³	Screven	430-450	4-6		+ 19	Several wells.
Montezuma ²⁴	Macon	500		300	+ 62	2 wells.
Do	do	425		5	Flows.	Temp., 62°.
Do	do	425		2	Flows.	Do.

¹ Analysis, Ga. Geol. Surv., Bull. No. 7, pp. 78-79.² Ibid., pp. 78-79.³ Record, *ibid.*, pp. 76-77.⁴ Ga. Geol. Surv., Bull. No. 7, pp. 183-184.⁵ Record, *ibid.*, pp. 105-108.⁶ Ibid., pp. 187-188.⁷ Ga. Geol. Surv., Bull. No. 7, p. 128.⁸ Record, *ibid.*, p. 182.⁹ Analysis, *ibid.*, pp. 144-145.¹⁰ Ga. Geol. Surv., Bull. No. 7, pp. 121-122.¹¹ Ibid., p. 152.¹² Record, Ga. Geol. Surv., Bull. No. 7, p. 192.¹³ Ibid., p. 140.¹⁴ Analysis, *ibid.*, p. 94.¹⁵ Record, Ga. Geol. Surv., Bull. No. 7, pp. 103-104.¹⁶ Ga. Geol. Surv., Bull. No. 7, p. 73.¹⁷ Record, *ibid.*, pp. 186-187.¹⁸ Ibid., p. 132.¹⁹ Ibid., p. 150; Analysis and record, U. S. Geol. Surv., Bull. No. 138, p. 224.²⁰ Record, Ga. Geol. Surv., Bull. No. 7, p. 146.²¹ Ibid., p. 147.²² Ga. Geol. Surv., Bull. No. 7, p. 193.²³ Ibid., pp. 123-124.²⁴ Record, *ibid.*, pp. 189-190.

GEORGIA—Continued.

Location.		Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Town.	County.					
Montezuma	Macon	Feet. 450	Inches. 2½	Gallons. 30	Feet. + 26	Flows at 60, 150, and 350 feet.
Do.	do	450	4	30	+ 26	
Oglethorpe	do	490	2	66		Temp., 62°.
Pelicalville	do	430	4½	400		Temp., ± 70°.
Quitman ¹	Brooks	500?	6		- 30	Water at 109 feet.
Reynolds ²	Taylor	700	8-4	60	- 80	
Riceboro ³	Liberty	460	3	150	+ 20	
Do ⁴	do	430	4	100	+ 24	Soft water.
Richland	Stewart	420	6	25	- 120	
St. Marys ⁵	Camden	525	4	Many.	+ 50	Water at 300 and 500 feet.
St. Simons Island	Glynn	480	6-3	100-150		3 wells.
Do. ⁶	do	438	6	250	+ 40	Water 350 and 435 feet.
Savannah	Chatham	± 650			- 18	
Do.	do	1,500	12	Many.	No flow	
Do.	do	500	10			2 wells reported.
Do.	do	402-470	6	Many.		5 wells of old water-works.
Do. ⁷	do	475-700	12½	13 wells } 4,861 }		City water works comprising 13 wells.
Savannah (6 miles south).	do	1,147	4		+ 31	
Savannah (12 miles west on Great Ogeechee River).	do	± 659			Flows.	Temp., 72°.
Sebastopol	Burke	676	6		- 2	Water at 200, 345, and 500 feet.
Smithville ⁸	Lee	900	2½, 4	Many.	+ 20	2 wells.
Statesboro	Bulloch	415	7-4½	40	- 100	
Do.	do	(?) 600	4			
Swainsboro ⁹	Emanuel	400	6	21	- 80	
Do.	do	400	2	10	- 90	
Tarboro ¹⁰ (1½ miles northeast).	Camden	414	2	Many.	+ 50	
Tennille ¹¹	Washington	990	12-4	Many.	- 190	Water at 426 and 830 feet.
Thomasville ¹²	Thomas	1,900	5½	Many.	- 210	
Do.	do	480	8	Many.	- 210	
Union Island	do	475	4	150		
Valdosta ¹³	Lowndes	522	8		- 113	Temp., 70°. Water at 360, 450, and 515 feet.
Valona	McIntosh	455	3	120	+ 60	Temp., 70°.
Wadley ¹⁴	Jefferson	445	6	Many.	+ 20	13 wells reported.
Warwick ¹⁵	Worth	497	8-2	1	- 5	Flow also at 330 feet.
Waycross ¹⁶	Ware	700	12	750	- 60	Sulphur water.
Do.	do	500	6	150		2 wells, pure water.
Do.	do	600	4		- 55	
Waynesboro ¹⁷	Burke	992	6		+ 14	
Do.	do	1,280	8		- 52	Water at 250, 300, and 900 feet.
Do.	do	760			No flow	
Do.	do	425			No flow	
Do.	do	618	4		- 18	
Do.	do	876	6			Abandoned.
Ways Station ¹⁸	Bryan	460	3	200	+ 20	Water at 340 and 440 feet.
Do.	do	484	6-2	Many.		
Whiteoak ¹⁹	Camden	450	4	300	- 60	Water at 130 and 450 feet.
Wolf Island	do	500	2		+ 45	Sulphurous water.
Wright	do	785	6-3½		- 80	
Wrightsville ²⁰	Johnson	672	8		- 60	Water at 430 and 672 feet.
Do.	do	763	3		- 63	

¹ Record, Ga. Geol. Surv., Bull. No. 7, pp. 156-157.² Ga. Geol. Surv., Bull. No. 7, p. 194.³ Ibid., pp. 110-111.⁴ Ibid., p. 110.⁵ Ga. Geol. Surv., Bull. No. 7, pp. 74-75.⁶ Ibid., pp. 87-92.⁷ Record, ibid., pp. 114-120.⁸ Ibid., pp. 176-177.⁹ Ga. Geol. Surv., Bull. No. 7, p. 43.¹⁰ Ibid., p. 83.¹¹ Record, ibid., pp. 133-136.¹² Ibid., pp. 158-159.¹³ Analysis, ibid., pp. 154-156.¹⁴ Record, Ga. Geol. Surv., Bull. No. 7, p. 131.¹⁵ Ga. Geol. Surv., Bull. No. 7, p. 164.¹⁶ Record and analysis, ibid., pp. 96-102.¹⁷ Record, ibid., pp. 125-126.¹⁸ Ga. Geol. Surv., Bull. No. 7, pp. 111-112.¹⁹ Ibid., p. 82.²⁰ Ibid., pp. 137-138.

PUBLICATIONS RELATING TO DEEP BORINGS IN GEORGIA.

Preliminary report on the artesian well system of Georgia, by S. W. McCallie, Geological Survey of Georgia, Bulletin No. 7, 214 pages, plates, Atlanta, 1898.

Artesian prospects in the Atlantic Coastal Plain region, by N. H. Darton, United States Geological Survey, Bulletin No. 138, 232 pages, plates, Washington, 1896.

IDAHO.

Location.	County.	Depth.	Dia- meter.	Yield per minute.	Height of water.	Remarks.
Boise.....	Ada.....	Feet. 450	Inches. -----	Gallons. 270	Feet. + 10	Temp., 80°. Deepest of several wells. Hot wells average 555 gallons per minute, and have a height of +30 feet. Temp., 170°.
Bliss.....	Lincoln.....	483	8	-----	-----	
Cliff.....	-----	450	8	-----	-----	
Idaho City.....	Boise.....	+400	-----	-----	-----	Prospect well. Not in use.
Minidoka.....	Lincoln.....	425	-----	-----	-----	
Oakley.....	Cassia.....	±400	-----	-----	-----	
Owinza.....	Lincoln.....	400	-----	-----	-----	

ILLINOIS.

Aledo ¹	Mercer.....	3,115	-----	Many.	— 75	Water at 1,200 feet. Salty water from 2,300 to 2,620 and 3,071 feet.
Algonquin ²	McHenry.....	2,527	-----	-----	-----	Bad water. Abandoned.
Alton.....	Madison.....	890	6-4	35-40	Flows.	2 wells; mineral water.
Amboy ²	Lee.....	2,000	-----	-----	+ 3	Temp., 55° to 60°. Water at 300, 1,100, and 1,700 feet.
Aurora ²	Kane.....	663	-----	-----	-----	
Do. ³	do.....	1,388	8-6	350	-----	
Do. ³	do.....	2,270	-----	-----	+ 60	
Do. ³	do.....	2,255	-----	-----	+ 60	
Austin ⁴	Cook.....	1,205	-----	Many.	-----	
Barry ⁵	Pike.....	2,510	6	100	— 35	
Beardstown ⁶	Cass.....	1,070	-----	17	-----	Water, oil, and gas.
Belleville.....	St. Clair.....	503	-----	-----	— 80	
Belvidere ⁴	Boone.....	1,950	8-4	400	— 6	
Do.....	do.....	1,932	8-6	200	— 6	
Benton.....	Franklin.....	780	5	3	— 12	
Bethalto.....	Madison.....	1,000	12	15	— 25	Saline water.
Bradford.....	Stark.....	2,454	8-6	Many.	— 175	
Braidwood.....	Will.....	900	4	-----	At surface.	Water from 655 feet.
Cairo.....	Alexander.....	700-750	-----	556	+ 10	4 wells.
Do.....	-----	1,025	-----	-----	-----	No water below 750 feet.
Cambridge.....	Henry.....	1,329	9-6	74	— 146	
Camppoint.....	Adams.....	1,006	-----	-----	-----	
Canton ⁷	Fulton.....	2,500	4	125	+ 31	Water from 2,050 feet.
Do. ⁷	do.....	1,646½	14-6	260	+ 15	Water from 1,100 to 1,305 feet and 1,403 to 1,646½ feet.
Do. ⁸	do.....	2,333	-----	-----	-----	Unsuccessful.
Carbon Cliff ⁹	Rock Island.....	915	5½	400	+ 50	Brackish water at 850 feet.
Do. ⁷	do.....	950	-----	-----	-----	
Carmi.....	White.....	600	-----	Many.	Flows.	
Carrollton ⁷	Greene.....	1,330	-----	-----	— 50	Water from 1,225—1,330 feet.

¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 810.

² Ibid., p. 810.

³ Analysis, ibid. p. 820.

⁴ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 810.

⁵ Analysis, ibid., p. 827.

⁶ Record, Ill. Geol. Surv., pp. 61, 66.

⁷ Record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 849.

⁸ Record, Ill. Geol. Surv. Rept., vol. 8, pp. 62-63.

⁹ Record, ibid., pp. 64-65.

ILLINOIS—Continued.

Location.	County.	Depth.	Dia- me- ter.	Yield per minute.	Height of water.	Remarks.
Carthage ¹	Hancock	<i>Feet.</i> 1,800	<i>Inches.</i> 5-3	<i>Gallons.</i> -----	<i>Feet.</i> - 16	Brackish water at about 750 and 1,000 feet.
Do. ¹	do	1,000	10-8	-----	- 20	Water at 865 and 975 feet.
Do. ²	do	1,787	-----	-----	+ 5	Mineral water.
Do. ³	do	975	-----	Many.	-----	Do.
Centralia ⁴	Marion	864	6	-----	-----	Unsuccessful.
Champaign	Champaign	400	-----	-----	-----	-----
Charleston	Coles	2,600	-----	-----	-----	Salt water at 160 and 815 feet.
Do.	do	748 ¹	-----	-----	-----	-----
Chatsworth ⁵	Livingston	1,200	-----	-----	- 25	-----
Chicago ⁶	Cook	694	5	-----	- 13	Hard water, original head +77 feet.
Do. ⁷	do	711	4 ¹	400	- 13	Original head +77 feet.
Do.	do	1,400	-----	-----	-----	Unsuccessful.
Do. ⁸	do	1,200	-----	-----	At top.	Hard water.
Chicago (Union Stock Yards). ⁸	do	1,105	-----	-----	-----	-----
Chicago (Lehman Well).	do	2,604	-----	-----	-----	Brackish water.
Chicago (Swift & Co.)	do	2,700	-----	-----	-----	-----
Chicago (Stockton)	do	2,180	-----	840	- 30	2 other wells.
		2,186	-----	-----	-----	-----
Collinsville	Madison	573	-----	-----	-120	-----
Columbia	Monroe	1,010	5 ¹	-----	- 10	Water not pleasant.
Coulterville	Randolph	1,117	-----	-----	-----	Water brackish.
Do.	do	1,201	-----	-----	-----	No gas or oil found.
Danville Junction	Vermilion	2,008	-----	-----	-----	Brackish water at 1,709 to 1,735 feet.
Decatur ⁹	Macon	507	-----	-----	-----	-----
Dekalb	Dekalb	800	8-6	Many.	- 25	-----
Do.	do	880	10-8	Many.	- 55	-----
Do.	do	890	14-6	300	- 65	Water 125 to 161 and 595 to 890 feet.
Do.	do	981	6-4	Many.	- 60	-----
Do.	do	700	-----	Many.	- 40	-----
Denver (near)	Hancock	1,030	-----	Many.	- 40	-----
Divernon	Sangamon	604	-----	Not any	-----	Coal prospect.
Dixon ¹⁰	Lee	1,640	-----	Many.	-----	3 wells.
		1,730	-----	-----	-----	-----
		1,810	-----	-----	-----	-----
East Dubuque	Joe Daviess	940	5	-----	- 95	-----
East Moline	Rock Island	1,340	6	240	+ 36	750 and 1030 to 1080 feet.
East Peoria	Tazewell	734	-----	-----	-----	Brackish water at 817 and 734 feet.
East St. Louis	St. Clair	1,100	-----	-----	-----	Good drinking water, but unfit for boilers.
Eldorado	Saline	520	3 ¹	Few.	-----	-----
Elgin ¹¹	Kane	1,400	-----	-----	-----	Water at 487 to 514 feet; sulphur water at 650 to 700 feet.
Do. ¹²	do	1,876	-----	-----	+ 2	Also sulphur water at 650 to 700 feet.
Do. ¹²	do	2,026	6	-----	+ 27	Sulphur water at 650 to 700 feet; soft water at 2,024 feet.
Do. ¹³	do	2,230	-----	-----	- 4	Also sulphur water at 650 to 700 feet.
Equality	Gallatin	1,800	6-3 ¹	-----	-----	Very salt water at 900 feet.

¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 810.² Record, Ill. Geol. Surv. Rept., vol. 8, pp. 64-65.³ Record, *ibid.*, p. 62.⁴ Record, Economic Geology of Ill., vol. 2, pp. 138-139.⁵ Record, Economic Geology Ill., vol. 3, pp. 595-596.⁶ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 811.⁷ *Ibid.*, p. 811.⁸ Record, Economic Geology Ill., vol. 2, p. 186.⁹ Record, Economic Geology Ill., vol. 3, pp. 538-539.¹⁰ Analysis, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 827.¹¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 812.¹² *Ibid.*, p. 812.¹³ *Ibid.*, p. 812; Analysis, *ibid.*, p. 827.

ILLINOIS—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Evanston ¹	Cook	1,602	.....	.....	+ 5	Water at 562 to 832 feet.
Fairbury ²	Livingston ..	571	.....	.....	.....	Water at 427 feet.
Do	do	2,002	8	.....	- 60	.....
Franklin	Morgan	1,200	.....	.....	.....	Flow for gas unsuccessful.
Fulton ³	Whiteside ..	1,246	5	300	+ 61	First flow, 475 feet; sulphur water.
Galena ⁴	Jo Daviess ..	1,209	8	166	+ 85	.....
Galesburg ⁵	Knox	1,236	.....	.....	.....	City waterworks well No. 2.
Do. ⁶	do	1,226	14-6	120	-102	Water at 1,060 to 1,226 feet.
Galva	Henry	1,470	9-6	50	-178	.....
Geneseo ⁷	do	2,250	6	190	- 31	.....
Gilman	Iroquois	1,746	.....	150	- 7	.....
Greenup	Cumberland ..	640	2	.....	.....	Mineral water.
Hamilton	Hancock	680	.....	36	+ 63	Sulphur water.
Harvard	McHenry	900	12-7	90	- 41	Hard water.
Harvey	Cook	1,300	.....	250	- 10	2 wells.
Do	do	2,075	.....	.....	.....	.....
Hawthorne	do	989	.....	.....	.....	.....
Do	do	2,005	.....	.....	.....	.....
Hennepin	Putnam	800	4	80	+ 50	Slightly saline water.
Henry	Marshall	1,355	3½	32	.....	White sulphur water.
Highland Park ⁸	Lake	2,200	8-5	150	+ 9	Water at 900, 1,300, and 1,700 to 2,200 feet; slightly saline and hard.
Hinsdale	Dupage	864	.....	.....	.....	.....
Ipava ⁹	Fulton	1,570	4	60	.....	Also salty and sulphurous water at about 1,010 feet.
Jacksonville ¹⁰	Morgan	1,600	.....	.....	.....	For gas.
Do. ¹¹	do	2,343	6-4½	30	- 15	Water brackish at 2,340 feet.
Do. ¹²	do	2,408	5½	85	+ 10	Water brackish at about 2,100 feet.
Do. ¹²	do	3,028	6½-5½	500	- 30	Water from 1,800 and 3,000 feet; slightly saline.
Jerseyville ¹³	Jersey	2,003	12-3	200	100	Water at 1,400 to 1,600 feet.
Joliet ¹⁴	Will.	477	.....	Many.	Flows.	.....
Do	do	1,200	.....	500	.....	.....
Do. ¹⁵	do	1,700	.....	.....	+ 10	.....
Do. ¹⁶	do	2,076	.....	.....	+ 10	.....
Kankakee ¹⁷	Kankakee	1,000	4	.....	- 15	Water from 900 feet.
Kewanee ¹⁸	Henry	1,480	9-6	130	150	Water from 1,000 feet.
Do. ¹⁸	do	1,050	7-4	80	.....	2 wells.
Knoxville ¹⁹	Knox	1,350	8	80	.....	Water from 1,180 to 1,350 feet.
Ladd ²⁰	Bureau	460	.....	135	Flows.	Shaft for coal. Flowed 3 gallons at 28 feet, 200 gallons at 173 feet, then decreased to 135 gallons.

¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 813; Analysis, Ibid., p. 827.² Ill. Geol. Surv., vol. 6, p. 242.³ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 813.⁴ Ibid., p. 813; Analysis, p. 827.⁵ Analysis, Am. Inst. Mining Engineers, Trans., vol. 27, p. 135.⁶ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 813.⁷ Ibid., p. 813; Analysis, p. 827.⁸ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 813.⁹ Ibid., p. 813.¹⁰ Ill. Geol. Surv., vol. 8, p. 67.¹¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 814; Analysis, Ibid., p. 820.¹² Ibid., p. 814; Analysis, Ibid., p. 820.¹³ Ibid., p. 814; Analysis, pp. 808, 827.¹⁴ Record Economic Geol. Ill., vol. 2, pp. 432, 437.¹⁵ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 814; Analysis, Ibid., p. 821.¹⁶ Record, Ibid., pp. 799, 814.¹⁷ Ibid., p. 814; Analysis, Ibid., p. 821.¹⁸ Ibid., p. 814; Ibid., p. 821.¹⁹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 814.²⁰ Columbia College, School of Mines Quarterly, vol. 16, pp. 238-243.

ILLINOIS—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Lagrange	Cook	2,014	.....	.....	No flow.	
Lake Forest ¹	Lake	960	.....	60	+ 50	
Lancaster ²	Wabash	+ 800	6	.....	.....	For oil; unsuccessful.
Lasalle ³	Lasalle	502	6	200	.....
Lemont	Cook	1,386	.....	.....	+ 60	
Litchfield ³	Montgomery	682	.....	.....	.....	Oil with salt water and gas.
McLeansboro	Hamilton	800	8-5½	3½	.....
Macomb	McDonough	1,350	.....	.....	- 55	
Do. ⁴	do	1,630	.....	.....	.....	Water from 1,135 to 1,360 feet.
Marion	Williamson	1,715	.....	.....	Flow.	For gas and oil. Sulphurous and salt water found.
Marissa	St. Clair	685	.....	35	No flow.	
Marseilles ⁵	Lasalle	2,189	.....	1	Flow.	Flow is from 298 feet.
Marshall	Clark	500	.....	.....	.....	2 unsuccessful oil borings.
Mattoon	Coles	1,647	8	Many.	.....	Salt water at 308 feet, and very salty at 1,500 feet.
Mendon	Adams	1,020	.....	.....	.....
Mendota ⁶	Lasalle	400	.....	.....	- 47	
Do. ⁷	do	857	.....	.....	+ 14	Flows at 187 and 637 feet.
Milan ⁸	Rock Island	1,217	.....	.....	.....
Do. ⁹	do	1,157	8-5	318	+ 61	Water from 800 and 1,000 feet.
Millstadt	St. Clair	620	7½	4	- 75	Hard water.
Minonk	Woodford	1,755	.....	100	-149	Moderately hard water at 750 feet and at about 1,700 feet.
Minorka	Gundy	2,100	.....	.....	+ 46	
Moline ¹⁰	Rock Island	1,166	.....	250	+ 25	
Do. ¹¹	do	1,628	5	350	+ 82	Sulphur water at about 700 feet.
Monmouth ¹²	Warren	1,232	.....	.....	.....	No flow water; no gas; no oil.
Do	do	1,400	6-4	210	- 60	
Do. ¹³	do	1,230	.....	200	- 60	Water from 1,074 to 1,230 feet.
Do. ¹⁴	do	1,227	.....	.....	- 60	Water at 935 and from 1,074 to 1,227 feet.
Monticello	Piatt	1,100	.....	.....	.....	Flow of mineral water also.
Morgan Park	Cook	1,046	.....	.....	45	Water at 1,040 feet.
Morris ¹⁵	Grundy	406	10	Many.	Flows.	
Do	do	600	.....	.....	.....
Mount Carmel ¹⁶	Wabash	700	.....	.....	.....	Bored for oil.
Mount Carroll	Carroll	2,502	5	.....	.....	Much water at 1,200 feet; less from 1,300 to 2,500 feet.
Murphysboro	Jackson	509	8	.....	.....	Good water at 400 feet; saline water at 450 feet.
Oakpark	Cook	1,568	6½	500	-20	Water from 1,529 feet.
Do	do	2,200	.....	.....	-20	Water from 1,600 and 2,200 feet.
Olney ¹⁷	Richland	2,000	.....	.....	No flow.	Saline water.

¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 814.² Record, Economic Geol. Ill., vol. 3, pp. 58-60.³ Record Ill. Geol. Surv., vol. 7, p. 37.⁴ Analysis, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, pp. 808, 827.⁵ Record, Ill. Geol. Surv., vol. 8, p. 50.⁶ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 815.⁷ Record, Minnesota Geol. Surv., 13th Ann. Rept., pp. 55, 56.⁸ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 846.⁹ Ibid., p. 815; Analysis, ibid., pp. 808, 827.¹⁰ Record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, pp. 847, 848.¹¹ Record, ibid., p. 848; Analysis, ibid., pp. 808, 827.¹² Record, Ill. Geol. Surv. Reports, vol. 8, pp. 62-66.¹³ Record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 848; Analysis, ibid., pp. 808, 827.¹⁴ Record, ibid., p. 848; Analysis, ibid., pp. 808, 827.¹⁵ Record, Economic Geol. Ill., vol. 2, p. 457.¹⁶ Record in part, Economic Geol. Ill., vol. 3, pp. 386-387.¹⁷ Ill. Geol. Surv. Reports, vol. 7, p. 8.

ILLINOIS—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Ottawa ¹	Lasalle.....	400.....	.....	.....	.....	Has 200 wells 400 feet deep. Water from 290 to 400 feet.
Do. ²	do.....	1,840.....	.....	.....	+177.....	Water from 1,640 to 1,840 feet.
Palatin ³	Cook.....	1,656.....	.....	.....	+2.....	Water at 160 and 800 feet.
Pana.....	Christian.....	2,507.....	.....	Few.....	.....	Brackish water.
Paris.....	Edgar.....	2,200.....	8.....	Not any.....	.....
Park Ridge.....	Cook.....	1,500.....	6-3.....	.....	-10.....	
Paxton.....	Ford.....	2,100 or 2,600.....	.....	Many.....	.....
Pedicord.....	Lasalle.....	2,189.....	.....	8.....	At surface.....	Water from Potsdam 1,845 to 2,143 feet.
Pekin.....	Tazewell.....	850.....	.....	.....	.....	Salt at 500 feet.
Do.....	do.....	1,000.....	6.....	167.....	+65.....	Salt water at 425 feet. Lower water strongly sulphurous. Temp., 70°.
Peoria (opposite) ⁴	Peoria.....	734.....	.....	.....	+60.....	Sulphur water.
Perru ⁵	Lasalle.....	1,360.....	.....	200.....	+120.....	Water at 750 feet also.
Polo.....	Ogle.....	2,098.....	.....	Many.....	.....
Potsdam.....	.....	1,500.....	.....	Many.....	.....
Princeton ⁶	Bureau.....	2,500.....	.....	.....	-72.....	
Do.....	do.....	2,092.....	9½-4½.....	320.....	.....	Water hard, slightly saline from 1,521 to 1,670 feet and 1,850 to 1,975 feet.
Do ⁷	do.....	400.....	.....	.....	.....
Quincy.....	Adams.....	550-1,000.....	.....	.....	.....	5 wells.
Ramsey.....	Fayette.....	+400.....	.....	.....	.....
Redbud.....	Randolph.....	580.....	3.....	4.....	+7.....	
Do.....	do.....	1,350.....	4.....	.....	-20.....	
Review.....	do.....	1,400.....	6.....	.....	.....	Temp., 62°.
Do.....	do.....	1,233.....	.....	208.....	54.....	Salt water from 600 to 1,008 feet.
Riverside ⁸	Hancock.....	680.....	.....	35.....	+63.....	Mineral water.
Do.....	do.....	1,300 { 2,200 { 2,584 {	3.....	1,000.....	+20.....	
Riverton ⁹	Sangamon.....	2,584.....	.....	.....	.....	No gas, oil, or water found.
Rock Island ¹⁰	Rock Island.....	1,150.....	4.....	400.....	+70.....	Sulphur water at 750 and 980 feet.
Do. ¹¹	do.....	2,282.....	8-4½.....	.....	+50.....	Also sulphur water at 800 feet.
Rockford ¹²	Winnebago.....	1,300-1,996.....	8-6.....	116-260.....	+8.....	Five wells. Water from 380 to 400 feet and 1,200 to 1,300 feet.
Do. ¹³	do.....	400.....	6.....	.....	-8.....	
Rushville.....	Schuyler.....	2,500.....	.....	.....	.....	Water has unpleasant taste.
St. Johns ¹⁴	Perry.....	1,050.....	.....	6.....	.....	6 salt wells; brine at 970 feet.
Do.....	do.....	3,750.....	.....	.....	.....
Savannah.....	Carroll.....	1,432.....	.....	500.....	+83.....	
Seneca.....	Lasalle.....	600-650.....	.....	.....	.....	2 wells.
Do. ¹⁵	do.....	680.....	4.....	.....	+15.....	Water, which is hard and sulphurous, is from 350 and 380 feet.
Shelbyville.....	Shelby.....	1,200.....	6.....	.....	Flows.....	Water is saline, and from 625 feet.

¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 816.² Record, *ibid.*, pp. 798-799.³ *Ibid.*, p. 816.⁴ Economic Geol. of Ill., Vol. 2, p. 449.⁵ Analysis, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 828.⁶ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 816; Analysis, *ibid.*, pp. 808, 828.⁷ Record, Economic Geol. of Ill., vol. 3, p. 178.⁸ Record, Ill. Geol. Surv., vol. 8, pp. 64-65.⁹ Ill. Geol. Surv. Reports, vol. 8, p. 62.¹⁰ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 816; Analysis, pp. 808, 828; Record, pp. 845-846.¹¹ *Ibid.*, pp. 817, 845.¹² *Ibid.*, p. 816; Analysis, p. 828.¹³ Analysis, *ibid.*, p. 828.¹⁴ Ill. Geol. Surv., vol. 7, p. 38.¹⁵ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 817.

ILLINOIS—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Sheldon	Iroquis	<i>Feet.</i> 1,800	<i>Inches.</i> 10-5	<i>Gallons.</i> 100	<i>Feet.</i> -40	
Shawneetown ¹	Gallatin	1,513				For oil, only salt water found.
Do. ²	do	1,500				At 500 feet, small vein gas; at 1,500, large quantity salt water.
Sparta ¹	Randolph	480			-75	
Springfield ³	Sangamon	Nearly 1,200.			No flow.	
Sterling ⁴	Whiteside	1,450		350	At surface.	
Streator ⁵	Lasalle	2,496			+45	Water at 450, 2,170 to 2,496 feet.
Tuscola	Douglas	792				
Do	do	3,000	9-6			Temp., 60°.
Vermilion ⁶	Lasalle	1,000		Many.	Flows.	Flows begin at 380 feet; water slightly saline.
Virginia	Cass	750				Water at 730 and 750 feet; unfit for drinking.
Washington Heights	Tazewell	1,308				
Warsaw	Hancock	780-800	4	100	+ 65	3 wells; water sulphurous.
Do	do	750	6	90	+155	Do.
Do	do	860	6	200	+ 62	Original head +98.
Waterloo	Monroe	1,036	9½-7½	20		20-gallon flow at 80 feet also. Temp., 50°.
Waukegan	Lake	{ 1,135 1,600 2,005				{ Irony water; 3 wells.
Wenona	Marshall	1,854		100	- 25	
West Frankfort	Franklin	465				Coal prospect.
Wilmingon ⁷	Will	635	4½		46	Sulphurous and magnesia water from 400 to 635 feet.
Winchester	Scott	412			+ 25	Water from 350 feet.
Winnetka ⁸	Cook	1,570		150	+ 8	Original head, +18 feet.
Do	do	1,900				
Woodstock	McHenry	1,014		500		
Do	do	410	5		-130	

¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 817.² Ky. Geol. Surv. Rept. Petroleum, Natural Gas, etc., by E. Orton, p. 205.³ Ill. Geol. Surv. Reports, vol. 5, p. 312.⁴ Analysis, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 828.⁵ Ill. Geol. Surv., vol. 7, pp. 50, 59; Record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 798; Analysis Ibid., p. 821.⁶ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 818; Economic Geol. Illinois, vol. 2, p. 235.⁷ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 818.⁸ Analysis, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 828.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN ILLINOIS.

Illinois Geological Survey, Reports on Geology and Palæontology, volumes 5, 1873; 6, 1875; 7, 1883, and 8, 1890.

Economical Geology of Illinois, by State geologist, volumes 2 and 3, Springfield, 1882.

The Water Resources of Illinois, by Frank Leverett, United States Geological Survey, Seventeenth Annual Report, 1895-96, part 2, pp. 695-849, plates, Washington, 1896.

INDIANA.

The numerous deep borings in Indiana are for oil or gas, but a few of them yield water supplies. The wells are in groups or "districts," often many square miles in extent. Where localities given in the following list are in districts, only representative wells are described, for it would not be practicable here to list all the individual wells. In some localities new wells are constantly being sunk.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Adams	Decatur	± 800	.....	.....	.....	Gas well.
Alexandria	Madison	881	.....	.....	.....	Gas wells.
Amboy ¹	Miami	940	.....	.....	.....	Salt water at 385 feet.
Albany ²	Delaware	978	.....	.....	.....	Gas well.
Albion ³	Noble	1,914	.....	.....	.....	For gas; unsuccessful.
Anderson ⁴	Madison	800	.....	.....	.....	Water, mineral; city supply in part.
Do. ⁵	do	800-900	8	.....	-25	Gas wells in vicinity.
Arcadia ⁶	Hamilton	974	.....	.....	.....	Gas well.
Atlanta	do .....	.....	.....	.....	.....	Do.
Attica	Fountain	900	.....	.....	Flows.	Sulphurous water.
Auburn	Dekalb	+1,933	.....	.....	.....	Gas wells.
Aurora ⁷	Dearborn	1,000	.....	.....	.....	Brackish water at 195 feet, brine at 831 feet, and gas at 267 feet.
Bloomington ⁸	Monroe	2,730	.....	.....	.....	Nogood water; abandoned.
Bluffton	Wells	100-500	.....	.....	.....	Hard water.
Do. ⁹	do	1,200	.....	.....	.....	For gas; unsuccessful; salt water.
Boone Landing	Floyd .....	.....	.....	.....	.....	Gas wells.
Boonville	Warrick	1,400	.....	.....	No flow.	Gas well.
Boonville (4 miles west)	do	1,500	10 or 12	.....	No flow.	.....
Boonville	do	1,200	12	.....	Flows.	Salt water.
Bridgeport ¹⁰	Marion	1,200	.....	.....	.....	Gas well.
Brightwood	Marion	455	.....	.....	- 15	Several wells.
Do	do	476	8	139	- 60	Railroad well.
Do	do	1,181	.....	.....	.....	Some gas, oil, and salt water.
Broad Ripple	do	+ 950	.....	.....	.....	Gas wells.
Brookville (4 miles south) ¹¹	Franklin	1,254	.....	.....	.....	Do.
Brownstown ¹²	Jackson	1,891	.....	.....	-291	Flow of magnesia water at 565 feet; salt water at 1,891 feet.
Bryant	Jay	1,050	.....	.....	.....	Oil well; abandoned.
Bunker Hill ¹³	Miami	+1,004	.....	.....	- 20	For gas; unsuccessful; salt water.
Butler	Dekalb	600	.....	.....	.....	Hard water.
Do ¹⁴	do	2,139	.....	.....	.....	For gas, unsuccessful; salt water.
Cadiz	Henry .....	.....	.....	.....	.....	Gas wells.
Cambridge	Wayne	+ 886	.....	.....	.....	For gas; unsuccessful.
Camden	Jay .....	.....	.....	.....	.....	Gas wells.
Cannelton	Perry	750	8-5½	.....	-150	Water and oil.
Carbon (2 miles south)	Clay	936	.....	.....	.....	Not successful.
Do	do	1,255	10	.....	- 40	Good water at 350 feet.
Carmel	Hamilton .....	.....	.....	.....	.....	Gas well; small product.

¹ Record, Ind. Geol. and Nat. Hist. Surv., 16th Rept., 1888, pp. 186, 187.

² Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 715.

³ Ibid., p. 737.

⁴ U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 4, p. 487.

⁵ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 711-713.

⁶ Ibid., p. 699.

⁷ Ibid., p. 705.

⁸ Record, Ind. Geol. and Nat. Hist. Surv., 15th Rept., 1885-86, p. 332.

⁹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 740.

¹⁰ Ibid., p. 701.

¹¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 707.

¹² Ibid., p. 726.

¹³ Ind. Geol. and Nat. Hist. Sem., 16th Ann. Rept., 1888, p. 186.

¹⁴ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 738.

INDIANA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Carthage ¹	Rush	—	—	—	—	Gas near 1,257 feet.
Centerville	Wayne	+ 886	—	—	—	For gas; unsuccessful.
Chandler	Warrick	1,505	—	—	—	2 flows of salt water and some gas.
Charlottesville	Hancock	—	—	—	—	Gas well.
Chesterfield ²	Madison	948	—	—	—	Do.
Cicero	Hamilton	—	—	—	—	Gas well.
Circleville	Tipton	+ 1,078	—	—	—	For gas; unsuccessful.
Columbia City ³	Whitley	1,375	—	—	— 20	For gas; unsuccessful. Salt water.
Columbus ⁴	Bartholomew	1,700	—	—	—	Gas well.
Como	Jay	—	—	—	—	Do.
Connersville ⁵	Fayette	851	8	—	—	Do.
Converse	Miami	200-435	—	—	—	Hard water; brackish water at 435 feet.
Do. ⁶	do	900-950	—	—	—	Gas wells in vicinity.
Corydon	Harrison ⁷	1,200	—	—	—	Gas boring.
	do	423-728	8-5½	—	—	Fresh water 30-130 feet; also salt water in lower strata.
Covington (3 miles below).	Fountain	1,000	—	—	—	—
Cowan	Delaware	+ 935	—	—	—	Gas well.
Crawfordsville ⁸	Montgomery	1,544	—	—	—	For gas; unsuccessful. Sulphur water at 750 feet.
Crown Point ⁹	Lake	1,365	—	—	— 120	For gas; unsuccessful. Salt water.
Do. ¹⁰	do	3,300	—	—	—	Not successful.
Cumberland	Marion	+ 1,039	—	—	—	Salt water.
Daleville	Delaware	+ 870	—	—	—	Gas well.
Dalton	Wayne	+ 960	—	—	—	For gas; unsuccessful.
Danville	Hendricks	830	—	—	—	Abandoned.
Do	do	1,500	8-5	30	—	First water at 700 feet.
Decatur ¹¹	Adams	1,300	—	—	—	For gas; unsuccessful. Salt water.
Deer Creek (one-half mile south).	Carroll	± 840	6-4	—	—	Oil at 825 feet; salt or mineral water at 833 feet.
Delphi ¹²	do	914	—	—	—	For gas; unsuccessful.
Do	do	1,200	—	—	—	—
Delphi (2 miles southwest). ¹³	do	923	6-4	—	—	Salt or mineral water at 923 feet.
Delphi (northeast)	do	928	6-4	—	—	Salt or mineral water at 928 feet; also oil.
Delphi (southeast, at water tower).	do	947	6-4	—	Flows.	Salt or mineral water at 922 feet; also oil and gas.
Delphi (southeast)	do	1,315	6-4	—	Flows.	Salt or mineral water at 898 feet; also oil and gas.
Delphi (northwest)	do	1,385	6-4	—	—	Salt or mineral water at 923 feet.
Desoto	Delaware	—	—	—	—	Gas well.
Dublin	Wayne	1,250	—	—	— 250	Gas well.
Dunkirk	Jay	± 925	—	—	—	Gas wells.
Dunreith	Henry	—	—	—	—	Gas well.
Earl Park	Benton	1,000	5	—	—	Abandoned.
Eagletown	Hamilton	—	—	—	—	Gas well; small product.
Eaton ¹⁴	Delaware	—	—	—	—	Gas well.

¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 704.² *Ibid.*, pp. 709-713.³ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 736.⁴ *Ibid.*, p. 722; U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 4, pp. 437-438.⁵ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 721.⁶ *Ibid.*, pp. 690-691.⁷ U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 4, p. 488; Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 725.⁸ Record, U. S. Geol. Surv., 11th Ann. Rept., part 1, 1889-90, p. 729.⁹ *Ibid.*, p. 734.¹⁰ Borings preserved in county auditor's office.¹¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 740.¹² *Ibid.*, p. 731.¹³ Record, Mich. Geol. Surv., 1881-1893, p. 54, pl. 14.¹⁴ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 713.

INDIANA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Edinburg ¹	Johnson	<i>Feet.</i> 1,583	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i> — 83	For gas; salt water only.
Elizabethtown	Bartholomew	+ 914	.....	.....	.....	Gas well.
Elkhart ²	Elkhart	+ 615	5½	.....	Flowed.	For gas; unsuccessful. Salt water at 550 feet.
Elwood	Madison	± 936	.....	.....	.....	Gas well.
English (8 miles south)	Crawford	700	3	11	+ 35	.....
Do	do	887	8	8	+ 50	.....
English, Clark well ³	do	648	.....	.....	.....	Gas at 408 feet; salt water at 648 feet; some oil.
Evansville	Vanderburg	1,100	.....	.....	.....	Several wells; brackish water.
Do ⁴	do	1,829	.....	.....	.....	Salt water at 1,400 feet.
Do	do	1,500	.....	.....	.....	.....
Fairmount ⁵	Grant	500-1,000	8-4	.....	.....	Gas wells.
Farmland ⁶	Randolph	1,017	.....	.....	.....	Do.
Fisher's Station	Hamilton .....	.....	.....	.....	.....	Do.
Flora	Carroll	±1,100	6-4	.....	.....	Salt water at 1,040 feet; also oil.
Florida	Madison .....	.....	.....	.....	.....	Gas well.
Fontanet	Vigo	± 400	8	.....	— 12	.....
Fontanet (one-half mile southwest)	do	440	.....	Many.	.....	.....
Fontanet (3 miles southwest)	do	1,451	8-4	Many.	.....	Water at 400 feet.
Fortville	Hancock .....	(?)	.....	.....	.....	Gas wells.
Fort Wayne	Allen	250-450	.....	5,000 in all.	-6(?)	54 wells at water-works.
Fort Wayne (Bass foundry)	do	1,458	.....	.....	.....	For gas; unsuccessful.
Fort Wayne (Abott's addition). ⁷	do	1,900	.....	.....	-900	For gas; unsuccessful; mineral water.
Fort Wayne (court-house)	do	3,000	.....	.....	- 8	For gas; unsuccessful.
Fountain City	Wayne	+1,025	.....	.....	.....	Do.
Francesville	Pulaski	+890	.....	.....	.....	Oil and gas; unsuccessful.
Frankfort ⁸	Clinton	1,446	.....	.....	-600	Salt water at 1,200 feet.
Frankfort (4 miles east)	do	1,105	.....	.....	.....	For gas; unsuccessful.
Franklin ⁹	Johnson	1,113	.....	.....	.....	Gas well.
Frankton	Madison	840	.....	.....	.....	Salt water only; abandoned.
Fulton	Fulton	1,150	.....	.....	.....	.....
Galveston ¹⁰	Cass	860	.....	.....	.....	Salt water only.
Do	do	934	.....	.....	.....	Small gas well.
Garrett	Dekalb .....	.....	.....	.....	.....	For gas; unsuccessful.
Glenwood	Rush	+950	.....	.....	.....	For gas; unsuccessful.
Goshen ¹¹	Elkhart	2,059	.....	.....	Flows.	For gas; unsuccessful; salt water.
Gosport	Owen	926	.....	Many	+30	White sulphur water.
Greencastle	Putnam	1,200	6	.....	.....	For gas; unsuccessful.
Do	do	2,000-2,700	8-4	.....	Flow.	Several borings; water at several horizons.
Greenfield ¹²	Hancock	990	.....	.....	.....	Gas wells.

¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 728.² Ibid., p. 735; Michigan Geol. Survey, 1881-1893, p. 57, Pl. XVII.³ Record, Ind. Geol. and Nat. Hist., 17th Ann. Rept., 1891, p. 311.⁴ Ky. Geol. Surv. Petroleum, Natural Gas, etc., by Orton, pp. 197-98.⁵ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 685.⁶ Ibid., pp. 688-689.⁷ Analysis and record, Ind. Geol. and Nat. Hist. Surv., 16th Ann. Rept., 1888, pp. 129-130.⁸ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 730.⁹ Ibid., p. 727.¹⁰ Record, Ind. Geol. and Nat. Hist., 19th Ann. Rept., 1894, p. 39.¹¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 735; Mich. Geol. Surv., 1881-1893, p. 60, pl. 19.¹² Record, U. S. Geol. Surv., 11th Ann. Rept., part 1, pp. 701-702.

INDIANA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Greensburg ¹	Decatur	862-886				Numerous gas wells.
Greensboro (near)	Henry					Gas well.
Greentown	Howard	963				Do.
Greenwood	Johnson	900			-45	Water from 320 feet.
Do. ²	do	1,975			-240	For gas; unsuccessful; water at 1,840 and 1,865 feet.
Hagerstown	Wayne	766-1,025				Several gas wells.
Hammond	Lake	1,700-1,900				Several wells.
Hartford	Jay	+925				Gas wells.
Hartford City ³	Blackford	900-1,000				Over 1,000 wells for oil and gas in the county.
Hartsville	Bartholomew	+861				Gas well.
Hebron	Porter					For gas; unsuccessful.
Herbst Station	Grant	1,045				Gas well.
Honey Creek	Henry	+980				Gas wells.
Huntington ⁴	Huntington	1,037			-87	For gas; unsuccessful.
Huntsville	Madison					Gas well.
Indianapolis	Marion	950-1,039				For gas; unsuccessful.
Do. ⁵	do	1,520				Do.
Irvington	do	990				Gas well.
Jasper	Dubois	1,100	8			Salt water at 460 feet, gas at 600 feet, oil and mineral water at 955 feet.
Jeffersonville ⁶	Clark	960-1,216				For gas; unsuccessful.
Joliet	Hamilton					Gas well; small flow.
Jonesboro ⁷	Grant	935				Gas well.
Kempton ⁸	Tipton	1,035				
Kendallville	Noble	+1,920				For gas; unsuccessful.
Kentland	Newton	1,200			-- 60	Do.
Do	do	1,325				Do.
Kewanna ⁹	Fulton	1,089			-84	Do.
Kirklin	Clinton	1,089				Do.
Knox	Starke	+1,500				Borings for gas or oil; unsuccessful.
Kokomo ¹⁰	Howard	920-1,000		Many.	Flows.	Gas wells; much salt water.
Do	do			Many.		
Do	do				Flows.	
Knightstown	Henry					Gas well.
Lacrosse (3 miles distant)	Laporte	838			At surface.	Good water.
Lafayette ¹¹	Tippecanoe	410				
Do	do	1,000				Gas well.
La Fontaine ¹²	Wabash	920				Gas well.
Lapelle	Madison					Do.
Laporte	Laporte					For gas; unsuccessful.
Larwell ¹³	Whitley	1,593			-200	For gas; unsuccessful; salt water.
Lawrence	Marion	1,015			-315	
Lawrenceburg	Dearborn					Gas wells.
Lebanon ¹⁴	Boone	1,350-1,840				Several wells; saline water at 400 and 1,350 feet.
Leesburg	Kosciusko	1,800	5			
Liberty ¹⁵	Union	971	8-10			For gas; unsuccessful.

¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 703-704.² Ibid., p. 728.³ Ibid., pp. 678-681.⁴ Ibid., p. 739.⁵ Record, Ind. Geol. and Nat. Hist., 1885-86, 15th Rept., p. 331.⁶ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 724.⁷ Ibid., p. 688.⁸ Ibid., p. 696.⁹ Ibid., p. 733.¹⁰ Ind. Geol. and Nat. Hist. Surv., 1885-86, 15th Ann. Rept., pp. 323-326; U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 891-893.¹¹ Ind. Geol. and Nat. Hist. Surv., 1885-86, 15th Ann. Rept., pp. 69-71.¹² Record, etc., U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 689-690.¹³ Ibid., p. 736.¹⁴ Ibid., p. 730.¹⁵ Ibid., pp. 720-721.

INDIANA—Continued.

Location.	County.	Depth.	Diameter.	Yield. per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Liberty (8 miles from).	Union	1,000	8-16			For gas; unsuccessful.
Lodi ¹	Fountain	1,155	10	35	+ 43	For oil; yields mineral water.
Logansport ²	Cass	+1,075		2	Flows.	Several boring for gas; unsuccessful; sulphur water.
Loogootee	Martin	1,200				
Losantville	Randolph	1,105				For gas; unsuccessful.
McCordsville	Hancock					Gas well.
Madison ³	Jefferson	1,004			-700	For gas; unsuccessful.
Marion ⁴	Grant	+865-1,010	4		Flow.	Numerous gas wells; some yield oil.
Markle	Huntington	1,700	8		Flows.	White sulphur water.
Markleville	Madison	972				Gas well.
Martinsville	Morgan	1,472				For gas.
Do. ⁵	do	668-704	5-6	30-35	Flow.	Six wells of mineral water.
Mechanicsburg	Henry					Gas wells.
Medaryville (6 miles west). ⁶	Pulaski	1,030				Salt water and oil.
Michigan City	Laporte	819,833		300	+22	Temp., 57°. Sulphur water.
Michigan City (1 mile west). ⁷	do	541				
Middleton	Henry	+935				Gas wells.
Mifflin ⁸	Crawford	1,180				Some oil at 135 feet and some gas at 1,180 feet.
Millhouses	Decatur	1,000-1,100	6			Several gas wells.
Milroy						For gas; unsuccessful.
Millgrove	Jay	+925				Gas wells.
Mitchell	Lawrence	+1,200			-30	For gas; saline water at 1,200 feet.
Monon ⁹	White	+920			Nearly to surface.	Salt water at 880 feet.
Do	do	+880			Nearly to surface.	Gas boring; salt water at 880 feet.
Monticello	do	+1,050			-550	Salt water at 1,050 feet.
Monrovia	Morgan	+1,500				
Montezuma	Parke	1,675	4	Many.	+115	Water at 450 and 1,100-1,200 feet.
Do	do	1,700		475	Rises to surface.	Salt water at 300 and 450 feet; sulphur water at 1,200 feet, which rose to +100 feet.
Monticello ⁹	White	+1,150			-650	For gas; unsuccessful; salt water at 1,150 feet.
Montpelier ¹⁰	Blackford	975			Flows.	Gas well; hard water.
Do	do	808				
Mooreville	Morgan	+1,500				
Morgantown	do	1,665	8		Nearly to surface.	Gas borings; fresh water at 70 and 490 feet; saline water at 1,100 feet.
Morristown ¹¹	Shelby	921			-421	Gas well; much salt water.
Mount Summit ¹²	Henry	1,082			-720	Gas wells; salt water at 1,020 feet.

¹ Record, Ind. Agricultural and Geographical Repts., 1869, pp. 29-31.² Record, Ind. Geol. and Nat. Hist., 19th Ann. Rept., 1894, p. 38; U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 732.³ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 723.⁴ Ibid., pp. 685-687.⁵ Record and analysis, U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 4, pp. 490, 498.⁶ Record, Ind. Geol. and Nat. Hist. Surv., 17th Ann. Rept., 1891, p. 315.⁷ Record, ibid. and U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 4, p. 491.⁸ Record, Ind. Geol. and Nat. Hist. Surv., 17th Ann. Rept., 1891, pp. 311-312.⁹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, Part 1, p. 731.¹⁰ Ibid., p. 680.¹¹ Ibid., p. 703.¹² Ibid., p. 706.

INDIANA—Continued.

Location.	County.	Depth.	Diameter.	Yield, per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Myers	Hamilton	.....	.....	.....	.....	Gas well; small product.
Muncie ¹	Delaware	870-955	.....	.....	.....	Numerous wells in vicinity.
Do ²	do	1,606	.....	.....	-506	Brine at 1,390 feet.
Nashville	Brown	500-530	.....	.....	Flows.	Two wells.
New Albany	Floyd	.....	.....	.....	.....	For gas; unsuccessful.
New Britton	Hamilton	.....	.....	.....	.....	Gas wells.
Newburg	Warwick	+400	.....	.....	.....	.....
Newcastle ³	Henry	.....	.....	.....	.....	Several gas wells with flows of salt water.
New Corner	Delaware	.....	.....	.....	.....	Gas well.
New Palestine	Hancock	1,060	.....	.....	-400	Salt water at 1,003 feet; some gas at 625 and 900 feet.
Noblesville ⁴	Hamilton	843-860	.....	.....	.....	Gas wells.
North Madison	Jefferson	1,500	6	Many.	-200	.....
North Manchester ⁵	Wabash	+1,180	.....	.....	-190	Gas boring; unsuccessful; salt water.
North Vernon ⁶	Jennings	±1,460	.....	.....	±260	Do.
Oakville	Delaware	.....	.....	.....	.....	Gas well.
Ogden	Henry	.....	.....	.....	.....	Do.
Osgood	Ripley	950	5	.....	.....	Gas boring; small supply.
Oxford (5 miles SW)	Benton	537	.....	.....	.....	Gas well.
Palestine ⁷	Hancock	.....	.....	.....	.....	Sulphur water at 250 feet; salt water at 900 feet; lithia water at 1,000 feet.
Paoli	Orange	1,000	.....	.....	.....	Do.
Parker (1 mile north)	Randolph	.....	.....	.....	.....	.....
Pendleton ⁸	Madison	.....	.....	.....	.....	Gas well.
Perkinsville	Madison	.....	.....	.....	.....	Boring for oil and gas.
Peru ⁹	Miami	900-1,050	.....	.....	To surface.	Salt water at 1,042 feet.
Peru (2½ miles north). ¹⁰	do	1,042	.....	.....	-50	Blue lick water.
Petersburg	Pike	1,161	.....	.....	.....	Gas well.
Do	do	1,200	.....	.....	.....	Salt water at 600 and 1,310 feet.
Petersburg (one-half mile east)	do	1,310	.....	.....	Flows.	Salt water at 600 feet.
Petersburg (2½ miles northeast)	do	1,200	.....	.....	-80	.....
Petersburg (one-half mile north)	do	1,200	10-5½	30	Flows.	Fresh water at 160 feet; salt water at 600 feet; oil at 1,200 feet.
Petersburg (1 mile north)	do	1,700	10-4	.....	Flows.	Fresh water at 700 feet; some oil at 1,200 feet.
Pierceville	Ripley	965	.....	.....	.....	For gas; unsuccessful.
Plainfield	Hendricks	1,385	.....	.....	.....	Gas well.
Plymouth ¹¹	Marshall	+1,368	.....	.....	-468	For gas; unsuccessful.
Point Gabel	Grant	.....	.....	.....	.....	Gas well.
Portland ¹²	Jay	900-1,500	.....	.....	-300	Gas wells; salt water at 1,500 feet.
Princeton	Gibson	600-790	.....	.....	.....	Several wells.
Do	do	1,274	.....	.....	.....	.....
Red Key	Jay	+900	.....	.....	.....	Gas well.
Reelsville (near)	Putnam	2,600	.....	Many.	Flows.	Sulphur water; no oil; temp., 60°.

¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, Part 1, pp. 713-719.² Ibid., p. 731.³ U. S. Geol. Surv., 18th Ann. Rept., 1889-90, Part 1, pp. 705-707.⁴ Ibid., p. 697.⁵ Ibid., p. 739.⁶ Ibid., p. 723.⁷ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, p. 702.⁸ Ibid., p. 710.⁹ Record, Ind. Geol. and Nat. Hist. Surv., 16th Ann. Rept., 1888, p. 184; U. S. Geol. Surv., 11th Ann. Rept., 1889-90, Part 1, pp. 732-733.¹⁰ Record, Ind. Geol. and Nat. Hist. Surv., 16th Ann. Rept., 1888, pp. 185, 255.¹¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, Part 1, p. 735.¹² Ibid., p. 681.

INDIANA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Reelsville (near) ¹	Putnam.....	1,240	.....	.....	+20	Salt and sulphur water.
Rensselaer.....	Jasper.....	800	.....	.....	.....	Sulphur water.
Do.....	do.....	1,275	.....	.....	.....	Gas boring; not in use.
Ridgeville.....	Randolph.....	981-1,105	.....	.....	.....	Gas borings; unsuccessful.
Richmond.....	Wayne.....	945	.....	.....	.....	Gas boring; unsuccessful.
Rochester ²	Fulton.....	1,185	.....	.....	.....	For gas; unsuccessful.
Do.....	do.....	500	.....	Many.	+5	Sulphur water.
Rochester (1½ miles south). Rochester.....	do.....	1,157	.....	.....	-15	Salt water at 1,157 feet.
Rochester.....	do.....	1,500	.....	.....	.....	Water flowed at 240 feet; well abandoned.
Rockport.....	Spencer.....	+400	.....	.....	.....	Four gas borings; no product.
Rockville.....	Parke.....	2,169	.....	.....	.....	For gas; unsuccessful.
Rogers.....	Pike.....	1,785	10-4½	.....	.....	.....
Royal Center ³	Cass.....	+925	.....	.....	.....	Oil wells.
Royerton.....	Delaware.....	.....	.....	.....	.....	Gas well.
Rushville and vicinity. ⁴	Rush.....	.....	.....	.....	.....	Gas wells.
St. Omer.....	Decatur.....	.....	.....	.....	.....	Gas well.
St. Paul.....	Shelby.....	+820	.....	.....	.....	Do.
Salem ⁵	Washington.....	1,800	.....	.....	.....	For gas; unsuccessful.
Do.....	do.....	750	.....	.....	.....	Gas well.
Sandusky.....	Decatur.....	830	6	.....	-15	.....
Selma ⁶	Delaware.....	1,025	.....	.....	.....	Do.
Seymour ⁷	Jackson.....	1,090	.....	.....	Flows.	Several gas wells.
Do.....	do.....	1,204	.....	.....	.....	Sulphur water.
Sharpsville ⁸	Tipton.....	500	.....	.....	.....	.....
Shelbyville ⁹	Shelby.....	.....	.....	.....	.....	For gas; unsuccessful.
Shideler.....	Delaware.....	.....	.....	.....	.....	Gas well.
Sheridan.....	Hamilton.....	1,076	.....	.....	.....	Do.
Shoals.....	Martin.....	960	.....	.....	Flows.	Some salt water.
Somerset ¹⁰	Wabash.....	853	.....	.....	.....	Water at 435 feet.
South Bend ¹¹	St. Joseph.....	1,670	.....	.....	.....	For gas; unsuccessful.
Spencer.....	Owen.....	1,150	4	200	+65	Several wells; saline water.
Spiceland ¹²	Henry.....	.....	.....	.....	.....	Gas wells.
Springport ¹³	do.....	.....	.....	.....	.....	For gas; unsuccessful.
St. Marys.....	Vigo.....	2,055	8	.....	-75	.....
Do.....	do.....	830	8	.....	-75	.....
Sullivan.....	Sullivan.....	1,000	.....	.....	-15	Gas boring; much strong brine.
Sullivan, 2 miles SE.....	do.....	±1,000	.....	.....	Flows.	.....
Sullivan ¹⁴	do.....	544	.....	.....	.....	.....
Sulphur Springs.....	Henry.....	.....	.....	.....	.....	For gas; unsuccessful.
Summitville.....	Madison.....	.....	.....	.....	.....	.....
Do.....	do.....	1,000	8-6	.....	At surface.	.....
Do. ¹⁵	do.....	971	.....	.....	Flows.	Gas well; water at 140 feet.
Swainville.....	Hamilton.....	.....	.....	370	.....	Gas well; small product.
Swayzee.....	Grant.....	.....	.....	.....	.....	Gas wells.
Sweetzer.....	do.....	.....	.....	.....	.....	Gas well.
Sycamore.....	Howard.....	.....	.....	.....	.....	Do.
Tampico.....	do.....	+950	.....	.....	.....	Gas wells.

¹Record Ind. Agr. and Geol. Rept., 1869, pp. 29-31.²Record U. S. Geol. Surv., 11th Ann. Rept., 1889-90, Part 1, p. 733.³U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 732.⁴Ibid., p. 704.⁵Ibid., pp. 725-726.⁶Ibid., pp. 715-716.⁷Ibid., pp. 726-727.⁸Ibid., p. 969.⁹Ibid., pp. 702-703.¹⁰Record, Ind. Geol. and Nat. Hist. Surv., 17th Ann. Rept., 1891, pp. 252-253.¹¹Record, Michigan Geol. Surv., 1881-1893, p. 84, pl. 64; U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 734-35.¹²Ibid., p. 707.¹³Ibid., p. 706.¹⁴Record, Ind. Geol. Surv., 1870, pp. 193-194.¹⁵Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 709.

INDIANA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Terre Haute ¹	Vigo	<i>Feet.</i> 2,800	<i>Inches.</i> 8	<i>Gallons.</i>	<i>Feet.</i> Flows.	Sulphur water with little gas.
Do. ²	do	1,793				Brine at 1,300 feet; sulphur water at 1,793 feet; some oil at 1,629 feet.
Do	do	±1,625				Several borings for oil; unsuccessful.
Thorntown	Boone	1,500	6	5	Flows.	For gas; unsuccessful.
Tipton ³	Tipton	1,030				Small amount of gas.
Tobasso Landing	Floyd					Gas wells.
Trafalgar	Johnson	1,500				Dry well.
Treaty	Wabash	950	8-5			
Do. ⁴	do	900	8-6		+8	
Union Grove.	Delaware	944				Gas well.
Union City ⁵	Randolph	1,003-1,780				Several borings for gas; unsuccessful.
Upland	Grant	1,040				Gas well.
Valley Mills	Henry					Do.
Valparaiso ⁶	Porter	1,344				Do.
Do. ⁷	do	1,336				For gas; unsuccessful.
Van Buren ⁸	Grant	973				Gas well.
Vernon	Jennings	923				For gas; unsuccessful.
Wabash ⁹	Wabash	2,270	6		-40	For gas; unsuccessful.
Waldron	Shelby	+820				Gas well.
Walnut Level	Wayne	+867				For gas; unsuccessful.
Walton	Cass	1,028				Salt water and some oil.
Warren	Huntington	969				Some oil; abandoned.
Warsaw ¹⁰	Kosciusko	700		15		For gas; unsuccessful.
Do. ¹¹	do	1,437			-387	Salt water.
Washington	Wayne	+976				For gas; unsuccessful.
Waterloo	Dekalb					Gas well.
Westfield.	Hamilton	1,080				Gas wells; much salt water.
Do	do	±1,068				Gas wells.
Williamsport	Warren	1,200			Flows.	Gas well; salt and fresh water also.
Winamac	Pulaski	1,200		45	do	For gas; unsuccessful; flow of water also.
Winchester ¹²	Randolph	1,000-1,071				Several gas wells.
Windfall	Tipton	1,002				Gas well.
Worthington	Greene	1,445			Flows.?	Sulphur water.
Xenia ¹³	Miami	937				Gas wells; flow of water also.
Do	do	936				Do.
Yorktown	Delaware	940				Gas well.
Zionsville ¹⁴	Boone	1,038			-438	For gas; unsuccessful; salt water at 1,013 feet.
Do	do	800			Flows.	For gas; unsuccessful.

¹ Record, Ind. Geol. Surv. Report for 1870 (Indianapolis, 1871), pp. 126-134.² Record, Ind. Geol. Surv. Report for 1870 (Indianapolis, 1871), p. 126; Ind. Agr. and Geol. Surv. Rept., 1869, pp. 28-29, 31; Am. Jour. Science, 2d series, vol. 48, p. 271.³ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-1890, part 1, pp. 695-697; Ind. Geol. and Nat. History Surv., 1885-1886, 15th report, p. 330.⁴ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-1890, part 1, p. 714.⁵ Ibid., p. 684.⁶ Ibid., p. 733.⁷ Record, Ind. Geol. and Nat. History Surv., 16th Ann. Rept., 1888, p. 264.⁸ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-1890, part 1, p. 689.⁹ Indiana Geol. and Nat. Hist. Surv., Report for 1875, pp. 43-48.¹⁰ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 739.¹¹ Ibid., p. 736.¹² Ibid., pp. 683-685.¹³ Ind. Geol. and Nat. Hist., 16th Rept., 1888, p. 187.¹⁴ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 730.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN INDIANA.

The Natural Gas Field of Indiana, by A. J. Phinney, United States Geological Survey, Eleventh Annual Report, 1889-1890, part 1, pp. 579-740. Plates. Washington, 1891.

Water Resources of Indiana and Ohio, by Frank Leverett, United States Geological Survey, Eighteenth Annual Report, 1896-1897, part 4, pp. 423-559. Plates. Washington, 1897.

INDIAN TERRITORY.

Location.	Nation.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Bartlesville (2 miles distant).	Cherokee	1,800	-----	Few.	Flows.	Small quantity crude petroleum.
Chelsea (5 miles W.).	do	300-600	8	-----	-----	Several oil wells.
Salina (1½ miles SE.).	do	470	-----	-----	Flows.	Salt water.
do	do	520	-----	-----	do.	Do.
Chickasha	Chickasaw	876	10	-----	-----	Salt water at 298 feet; no water below; well in progress.
Atoka (15 miles W.). ¹	Choctaw	1,414	-----	-----	-----	Small indications of oil at 807 feet; oil at 917 feet; much salt water; salt water and oil at 1,235 feet and 1,347 feet; oil and gas at 1,391 feet.

IOWA.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Ackley ²	Hardin	920	-----	-----	-----	
Algona ³	Kossuth	1,050	-----	-----	-69	
Amana ⁴	Iowa	1,640	-----	100	+30	Temp. 60°.
Anamosa ⁵	Jones	2,007	10-5	300	-56	
Anita	Cass	486	-----	Many.	-----	Coal prospect.
Atlantic ⁶	do	1,310	-----	do	-160	
Arcadia	Carroll	620	-----	-----	-----	Failure.
Boone	Boone	3,016	-----	Many.	-200	
Bedford	Taylor	425	-----	-----	-----	Coal prospect.
Britt ⁷	Hancock	684	7	-----	-16	
do	do	535	4½	-----	-510	
Burlington	Des Moines	2,430	6-5	70	-38	
Calmar	Winneshek	1,110	4	70	-320	
do. ⁸	do	1,223	8	-----	-100	
Cedar Rapids	Linn	1,450	5	150	+14	3 wells.
Centerville ⁹	Appanoose	2,495	12-4	200	-200	
do. ¹⁰	do	1,540	14-7	350	-280	
Cherokee	Cherokee	-----	-----	-----	-----	
Clarinda	Page	1,002	-----	-----	Flowed.	Coal prospect.
Clinton ¹¹	Clinton	1,035-1,497	10-5	1,736	+68	5 wells.
do.	do	1,065	5½	-----	+35	
do. ¹²	do	1,674	8-5	1,500	+45	
Council Bluffs ¹³	Pottawattamie.	1,114	-----	-----	-----	
do. ¹⁴	do	860	-----	-----	-----	
Council Bluffs (school for deaf). ¹⁴	do	1,091	4	56	+50	
Cresco	Howard	1,158	-----	-----	-----	

¹ Record, Pa. 2d Geol. Surv. Reports, vol. I^a, p. 341.

² Record, Iowa Geol. Surv., vol. 3, pp. 189-192; vol. 6, pp. 219-220.

³ Ibid., vol. 6, p. 196.

⁴ Ibid., pp. 286-287.

⁵ Ibid., pp. 262-265.

⁶ Ibid., pp. 336-339.

⁷ Analysis, Iowa Geol. Surv., vol. 6, p. 195.

⁸ Record and analysis, *ibid.*, pp. 191-192.

⁹ Record and analysis, *ibid.*, pp. 326-328.

¹⁰ Record and analysis, *ibid.*, pp. 326-328.

¹¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part

2, p. 811; analysis, *ibid.*, p. 827.

¹² Ibid., p. 811; analysis, *ibid.*, p. 827.

¹³ Analysis, Iowa Geol. Surv. Reports, vol. 6, p.

340.

¹⁴ Ibid., p. 340.

IOWA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Creston	Union	500-600	-----	-----	-----	Two borings for coal; unsuccessful. Found water.
Des Moines ¹	Polk	3,000	10-3	400	-45	
Davenport (bottling works). ²	Scott	780	-----	300	+59	
Davenport (Malt and Grain Co.). ³ .....	.....do	1,076	5	300	+13	Water from 1050-1076 feet.
Davenport (Gas Company). ³ .....	.....do	1,200	5-4	400	+47	Two wells. Water from near bottom.
Davenport (Glucose Co.). ⁴ .....	.....do	2,100-2,107	5		+77	Four wells.
Do. ⁵ .....	.....do	1,500	5	250	+51	
Davenport (city park). ⁶ .....	.....do	1,797	5	+125	-22	Water at 1,175 feet.
Davenport (Kimball House). ⁷ .....	.....do	1,080	5	120	+20	Water at 1,075 feet.
Davenport (packing company). ⁸ .....	.....do	1,180	8-5	250	+45	
Davenport (Schmidt building). ⁹ .....	.....do	1,200	4	73	+24	
Davenport (woolen mills). ⁶ .....	.....do	1,053	3½	300	+35	Water from 700 and 1,050 feet.
Davenport (ice company). ⁶ .....	.....do	1,067	6-4	240	+10	Water from 775 and 1,064 feet.
Dubuque ⁸	Dubuque	802	4			Water at surface.
Do. ⁹ .....	.....do	955	6	340	+81	Several wells of about this depth.
Do. ....	.....do	1,262	6	450		
Do. ⁹ .....	.....do	1,954	3	40	+1	
Do. ....	.....do	1,300-1,400	13	2,000	Flow.	Two wells.
Do. ¹⁰ .....	.....do	1,765	3	40		
Do. ⁹ .....	.....do	1,000	5	580	+41	Several wells 965-1,060 feet.
Emmetsburg ¹¹	Palo Alto	874	-----		-34	
Do. ....	.....do	810	6	42	-26	
Farmington	Van Buren	705	-----			
Fontanelle	Adair	800	-----	None.		Abandoned.
Fort Madison ¹²	Lee	689	6	600	+20	
Do. ¹³ .....	.....do	720	6		+85	Temp. 55°.
Do. ¹³ .....	.....do	764	4		+20	
Glenwood ¹⁴	Mills	2,000	10-4½	83	-173	
Do. ¹⁴ .....	.....do	1,910		80	-5	
Granville	Sioux	450	-----	Many.	150	
Greenfield	Adair	900	-----	None.		Coal prospect.
Do. ....	.....do	512	-----	None.		
Grinnell ¹⁵	Poweshiek	2,003	10-4	105	-230	
Grundy Center	Grundy	485	-----		-150	
Holstein ¹⁶	Ida	2,004	8-4		-275	
Homestead ¹⁷	Iowa	2,224	10-4		-117	
Hull ¹⁸	Sioux	1,230	10-6		-100	
Jefferson	Greene	2,021	8-5		-40	
Keokuk ¹⁹	Lee	710	6	250	+35	Temp. 64°.
Do. ²⁰ .....	.....do	800	6		+47	Two other wells 700 feet deep.
Do. ²⁰ .....	.....do	2,000	12-10	{ 3 wells 1,700 }	+30	Temp. 50°.
						Temp. 65°; 3 wells.

¹ Record, Iowa Geol. Surv. Reports, vol. 6, pp. 294-299.² U. S. Geol. Surv., 17th Ann. Rept., 1895-1896, part 2, p. 812.³ Ibid., p. 812.⁴ Record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 842.⁵ Ibid., p. 811.⁶ American Geologist, vol. 3, 1889, p. 117; Iowa Geol. Surv. Reports, vol. 6, pp. 272-280; Record U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, pp. 842-845.⁷ Record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 844.⁸ Record and analysis, Iowa Geol. Surv. Reports, vol. 6, pp. 208-214.⁹ Ibid., pp. 208-214.¹⁰ Ibid., pp. 208-211.¹¹ Record, ibid., p. 196.¹² Record and analysis, Iowa Geol. Surv. Reports, vol. 6, pp. 321-322.¹³ Ibid., pp. 321-322.¹⁴ Ibid., pp. 340-347.¹⁵ Record and analysis, ibid., pp. 287-292.¹⁶ Record, ibid., p. 222.¹⁷ Record and analysis, ibid., pp. 283-285.¹⁸ Record, ibid., p. 199.¹⁹ Record and analysis, ibid., pp. 323-326.²⁰ Ibid., pp. 323-326.

IOWA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Keokuk ¹	Lee	<i>Feet.</i> 2,230	<i>Inches.</i> 10	<i>Gallons.</i> 300	<i>Feet.</i> +30	Another well 1,805 feet; water also at 600 and 900 feet.
Do	do	1,987	6-4			
Do	do	935		Many.	Flow.	
Lakepark	Dickinson	700	4	55	-300	Temp. 50°.
Lansing ²	Allamakee	676	6	700	+40	Two wells.
Do	do	740				
Le Mars ²	Plymouth	1,560				
McGregor ³	Clayton	1,006	6-3	20	+62	Temp. 54°.
Do ³	do	520	6-3		+20	Temp. 52°.
Manchester ⁴	Delaware	1,870	10-5		-14	
Mason City	Cerro Gordo	600	6-4	60	No flow.	Three wells.
Do	do	1,200	8	80	No flow.	
Do ⁵	do	1,473	8-6		-75	
Monota	Clayton	417	6	70	-212	
Do	do	452	6	None.		Abandoned.
Monticello ⁶	Jones	1,198		175	-40	
Mount Clara ⁷	Lee	939			-10	Formerly flowed 200 gallons.
Mount Pleasant ⁸	Henry	1,125		165	-30	
Nevada	Story	940	11-6		-49	
Newton ⁹	Jasper	1,400	5	Many.	-90	
Osceola	Clarke	1,953			No flow.	
Oskaloosa ¹⁰	Mahaska	2,800-3,000				Abandoned.
Ottumwa ¹¹	Wapello	2,047	8	700	+108½	Temp. 70°.
Do ¹²	do	1,554	10-4		+49½	Temp. 84°.
Pella ¹²	Marion	1,803	12-5	250	-90	
Pocahontas (3 miles south).	Pocahontas	632				Unsuccessful.
Pocahontas (near)	do	1,300		Many.		
Postville ¹³	Allamakee	515	8½		-300	
Redoak	Montgomery	560				Coal prospect.
Sabula ¹⁴	Jackson	973		720	+78	
Sanborn	O'Brien	1,224	6	80	-459	
Saylorville	Polk	1,800				
Shenandoah	Page	700				
Sibley	Osceola	763	4½	106	-200	
Sigourney ¹⁵	Keokuk	1,880	6-4½		-30	
Sioux City ¹⁶	Woodbury	2,011		3	Flows.	Water at 570 and rose to -12; at 1,250 feet flowed.
South English	Keokuk	420	4	None.		Abandoned.
Spencer	Clay	800	6	Many.		
Spencer	do	400				
Spencer (10 miles south).	do	600	4½-3½			Abandoned.
Tipton ¹⁷	Cedar	2,700	8-4½	Many.	-65	
Vinton ¹⁸	Benton	1,287	6	62	+23½	Temp. 56°.
Do ¹⁹	do	1,425	6	50	+28	Do.
Wall Lake	Sac	427				
Washington ²⁰	Washington	1,611	10-4½	95	-54	
Do ²¹	do	1,217	12-6	62	-58	
Waukon ²²	Allamakee	577	8		-280	
Waverly	Bremer	1,720		Many.		
Webster City ²³	Hamilton	1,250	8-6	70	+16	
West Liberty ²⁴	Muscatine	1,768	6-4½	1½	Flows.	Temp. 65°.
Whatcheer	Keokuk	636				
Wilton Junction ²⁵	Muscatine	1,360	8-6	300	-78	
Belleville Township	Pocahontas	1,300				Abundant supply.

¹ Record, Iowa Geol. Sur. Reports, vol. 5, p. 200.² Ibid., pp. 232-235.³ Record and analysis, *ibid.*, pp. 185-188.⁴ Ibid., pp. 214-219.⁵ Ibid., pp. 193-195.⁶ Record and analysis, *ibid.*, p. 256.⁷ Record, *ibid.*, p. 322.⁸ Record and analysis, *ibid.*, pp. 320-321.⁹ Record, *ibid.*, p. 232.¹⁰ Ibid., pp. 308-310.¹¹ Record and analysis, *ibid.*, pp. 317-320.¹² Record, *ibid.*, pp. 310-315.¹³ Ibid., p. 189.¹⁴ U. S. Geol. Surv., 17th Rept., 1895-96, part 2, p. 817.¹⁵ Record, Iowa Geol. Surv. Reports, vol. 5, pp. 305-308.¹⁶ Record, Iowa Geol. Sur. Reports, vol. 5, p. 258.¹⁷ Ibid., vol. 6, pp. 261-262.¹⁸ Ibid., vol. 3, pp. 192-195.¹⁹ Record and analysis, *ibid.*, vol. 6, pp. 266-267.²⁰ Record and analysis, Iowa Geol. Surv. Reports, vol. 6, pp. 304-305; Am. Geologist, vol. 1, pp. 28-31.²¹ Record and analysis, Iowa Geol. Surv., Reports, vol. 6, pp. 304-305.²² Record, Iowa Geol. Surv. Reports, vol. 6, p. 202, 1896.²³ Record and analysis, *ibid.*, pp. 220-222.²⁴ Records and analysis, Iowa Geol. Surv. Reports, vol. 6, pp. 281-282.²⁵ Ibid., pp. 280-281.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN IOWA.

Iowa Geological Survey, volume 3, Second Annual Report, 1893, with accompanying papers, 502 pages, plates, Des Moines, 1895.

Artesian Wells of Iowa, by W. H. Norton, Iowa Geological Survey, volume 6 pages 113-428.

The Water Resources of Illinois, by Frank Leverett, United States Geological Survey, Seventeenth Annual Report, 1895-96, part 2, page 811.

KANSAS.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Alma	Wabaunsee	2,000				
Do	do	1,912	4-2½		Flows.	Salt water and gas.
Anthony ¹	Harper	2,335				
Asherville	Cloud	638	3		-26	Salt water from 50 to 638 feet; mainly blue clay.
Atchison	Atchison	+1,197				All in shale.
Banner	Trego	438	6	Few.	-150	Fresh water at 403 feet; strong salt water at from 1,096 to 2,414 feet.
Benedict (southeast of)	Wilson	2,414	13-6½			Oil well; fresh and salt water also found.
Benedict (near)	do	827	8½-5	1½		Salt water at 650 to 700 feet.
Bronson	Bourbon	850	8-6			Only salt water.
Buffalo	Wilson	1,170				Oil and water wells.
Buffalo (2 miles west)	do	400-800				Salt water only at 457 feet.
Caldwell	Sumner	800	6			Salt water.
Cawker City (2 miles northeast)	Mitchell	468			-217	Do.
Cawker City (10 miles north)	do	416			No flow.	Several gas and oil wells.
Chanute ²	Neosho	982				Large flow of gas; some water.
Do	do	806	6½-5			First water at 650 feet.
Cherokee	Crawford	913	7	500	-100	Gas wells.
Cedarville	Smith					Salt water, and gas found.
Cherryvale	Montgomery	609-617				Oil wells; water at several horizons.
Do. ³	do	1,220	1½		+8	Gas well.
Do	do	1,397-1,500				
Coffeyville	do	550			-65	
Columbus	Cherokee	1,304				
Coolidge	Hamilton	500	5½	90	Flows.	
Devon (near)	Bourbon	800	8-6			Salt water at from 650-700 feet.
Dodge City (¼ miles east)	Ford	800				Unsuccessful.
Doniphan ⁴	Doniphan	763				
Eldorado	Butler					Deep boring, salt water.
Elgin	Chautauqua	±1,400				Abandoned.
Elkader	Logan	408				
Elkader (7 miles S.)	do	500				Unsuccessful. All in blue shale.
Ellsworth	Ellsworth	1,300				Salt 730-880 feet; salt water at 1,300 feet.
Do	do	730	4½		-114	Salt water.
Emporia ⁵	Lyon	2,005	6			Gas prospect; abandoned.
Eminence	Finney					
Erie	Neosho	750		400		Mineral water.
Erie (2 miles north)	do	833		Many.	Flows.	Large flow of oil and gas, and salt water.

¹ Record, Kansas Univ. Geol. Surv. Rept., vol. 1, Pl. 21.

² Ibid., vol. 1, p. 77, pl. 13; vol. 3, pl. 25.

³ Ibid., vol. 1, pl. 11; vol. 3, pl. 22.

⁴ Record, Kansas Univ. Geol. Surv. Report, vol. 1, pl. 18.

⁵ Ibid., vol. 3, pl. 28.

KANSAS—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Erie	Neosho	813				Salt water at 400 feet; oil sand at 550-585 feet.
Eureka ¹	Greenwood	503				Coal prospect; abandoned.
Do	do	+1,100				In progress 1900: salt water 500-700 feet, and 800-900 feet.
Fall River	do	986	10-5½	1,000	-77	Water at 416 feet; salt water at 972 feet.
Do. ²	do	1,480		Many.		
Farlington	Crawford	556				Small flow of gas.
Farlington (2 miles southeast)	do	551				Small flow of oil.
Fleming	do	1,005½	6	Many.	-118	Water also at 800 feet.
Fort Scott	Bourbon	620	5½		Flows.	
Do	do	543	5½	4	Flows.	
Fort Scott (near)	do	750	6½			Gas well; strong flow of water.
Do	do	850-900	8-6			Oil wells; salt water.
Fowler	Meade					
Fredonia ³	Wilson	1,224				
Do	do	2,414		None.		Salt water at 354 and 1,195 feet; abandoned.
Garden City (one-half mile NW.) ⁴	Finney	+1,000				
Do	do	902				
Garden City (8 miles south)	do	1,250				
Girard ⁵	Crawford	500-550				Two gas wells.
Do	do	857-900	10	Many.	-150	
Girard (¾ miles N.)	do	401				Gas.
Goode (7 miles SE.)	do	430			-70	
Goodwater	Gove	501	3	Few.		All in shale; abandoned.
Greatbend (4 miles northeast)	Barton	1,365		10	+30	Saline water from Dakota sandstone, at 344 feet.
Hill City (3 miles from)	Graham	400			No flow.	Shale to bottom.
Horton	Brown	1,100	6	Few.		Water at 45 feet.
Howard	Elk	1,000		None.		Abandoned.
Do. ⁶	do	1,226-1,410				
Hoyt	Jackson	{ 1,206 or 1,406? }	6	None.		
Humboldt ⁷	Allen	793-962		Many.		Three water wells.
Do	do	937-970				Gas wells; water at 145, 218, 645 feet; salt water at 970 feet.
Hutchinson	Reno	+800				Several salt wells.
Independence	Montgomery	1,020				Oil and gas.
Iola	Allen	870				Large flow of gas.
Do. ⁸	do	734-737				Three wells.
Iola (near)	do	906	8½-5			Large flow of gas.
Do	do	928	5			Salt water found.
Do	do	976				
Ionia	Jewell	432				Salt water; abandoned.
Jamestown	Cloud				Flows.	Salt water found.
Jerome	Gove	400				
Jetmore	Hodgeman	1,000				For coal.
Do	do	700 or 800			-20-30	Not in use; abandoned.
Johnson	Stanton	400	8	Many.	-180	
Kanopolis	Ellsworth	881	8-4			Salt water at 645-875 feet.
Kansas City ⁹	Wyandotte	758				
Kendall	Hamilton	500				No water at that depth.

¹ Record, Kansas Univ. Geol. Surv. Report, vol. 3, pl. 27.² Ibid., vol. 1, pl. 12; vol. 3, pl. 24.³ Ibid., vol. 1, pl. 13; vol. 3, pl. 25.⁴ Ibid., vol. 2, p. 27.⁵ Ibid., vol. 3, p. 148.⁶ Ibid., vol. 3, pl. 29.⁷ Ibid., vol. 1, pl. 14; vol. 3, pl. 23.⁸ Ibid., vol. 1, pl. 15.⁹ Ibid., vol. 1, pl. 18.

KANSAS—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Kincaid	Anderson	992				Salt shafts.
Kingman	Kingman	+800				
Kirwin	Phillips	514				Water pure.
Lacrosse	Rush	444	3	20	-240	
Laharpe ¹	Allen	990				Temp. 65°; salt water.
Larned	Pawnee	756		400		
Do	do	743	10-3	250	+50	Salt water.
Lawrence	Douglas	600				Salt water.
Do	do	900				Gas and salt water.
Leavenworth ²	Leavenworth	1,170			Flows.	Gas and water.
Do	do	2,116				Water at 130 feet.
Liberal ³	Seward	485	7	52	-130	
Little River	Rice	1,000	8			Much water to 400 feet, then 600 feet of salt and shale.
Lone Elm	Anderson	1,140				Salt water at 320 feet, no gas or oil; abandoned.
Lovewell (3½ miles northwest)	Jewell	400				Salt water only.
Lyndon ⁴	Osage	1,007				Salt water at 239 feet.
Lyons	Rice	1,230				Salt prospect; abandoned.
Lyons (Bemis Salt Co.)	do	1,625	8-5		-30	Salt well.
McFarland ⁵	Wabaunsee	2,006	4			For gas; unsuccessful.
Madison	Greenwood	1,896½	6			
Mankato	Jewell	500	8		-50	Salt water.
Mapleton ⁶	Bourbon	665				Water at 218 and 616 feet; oil at 647 feet, and salt water at 665 feet.
Marion	Marion	1,800				For coal; unsuccessful.
Marquette	McPherson	400	6	Few.	-70	Salt water.
Marysville	Marshall	1,360		Few.	Flows.	Red beds at 200 feet; salt below.
Meade	Meade	800	6			
Moran	Allen	1,008-1,085	12-4			Two holes; water to surface.
Mound Valley ⁷	Labette	762	7½-6½	1½	+6	Temp. 70°. Salt water and gas.
Neodesha ⁸	Wilson	1,101	8½-5			Oil prospect. Water at 230 and 320 feet; salt water at 420, 685, and 775 feet, and gas at 655 feet.
Do	do	±2,400	8½			Sulphur water at 1,423 feet; salt water below.
Do	do	1,310				
Do	do	2,414	6½	Many.		
Neodesha (near)	do	1,073	6½-5			Oil and gas wells. Water at 811 and 1,073 feet.
Neosho Falls	Woodson	1,245				Salt water at 361 feet.
Ness City (14 miles north)	Ness	656	3	30	-356	Prospect borings.
Ness City (8 miles south)	do	±400	6			
Newton	Harvey	1,045				Do.
Do	do	910-1,076				Abandoned; flowed oil and water.
Niotaze ⁹	Chautauqua	1,158				Unsuccessful; water at intervals to 200 feet, then shale to bottom.
Oakley	Logan	725			-30	
Oberlin	Decatur	800-1,000		-4		

¹ Record, Kansas Univ. Geol. Surv. Report, vol. 1, pl. 14; vol. 3, pl. 23.² Ibid., vol. 1, pl. 20; vol. 3, pl. 26.³ Record, 51st Congress, 1st sess., Senate Ex. Doc. No. 222, p. 158.⁴ Record, Kansas Univ. Geol. Surv. Report, vol. 3, pl. 27.⁵ Ibid., vol. 1, pl. 19; vol. 3, pl. 30.⁶ Ibid., vol. 1, pl. 16.⁷ Ibid., vol. 1, pl. 10; vol. 3, pl. 21.⁸ Ibid., vol. 1, pl. 11; vol. 3, pl. 22.⁹ Ibid., vol. 1, pl. 12; vol. 3, pl. 24.

KANSAS—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Olathe	Johnson	600	.....	.....	.....	Water at 85 feet; salt water at 530 feet; weak flow of gas at 361½ feet.
Osage Mission ¹	Osage	700	.....	.....	.....
Osborne	Osborne	500	.....	.....	.....
Oswego ²	Labette	985	6	.....	-100	Small amount of gas at 585 feet; salt water at about 610 feet.
Do	do	606	.....	.....	-40	Small amount of gas at 548 feet; salt water at 606 feet.
Ottawa	Franklin	1,002	8	.....	.....	Oil at 675 and 702 feet; large volume of gas.
Do	do	1,065	.....	.....	.....	Salt water at 384 and 622 feet; fresh water at 715 and 755 feet; gas and water at 490 feet.
Paola ³	Miami	1,075	.....	.....	.....	City well.
Do	do	500-580	5½-4½	Many.	-0 to -400	Several gas wells
Parsons and vicinity.	Labette	500-1,050	.....	.....	.....	Several wells for gas; not much found; salt water at 400 to 500 feet; no flow; abandoned.
Peru	Chautauqua	1,240-1,700	.....	.....	.....	Three wells.
Peru (near)	do	1,190	.....	.....	.....	Water at 660 and 1,190 feet.
Pittsburg	Crawford	950	7½	75	-80	Salt water.
Pleasanton	Linn	729	5	.....	.....	Salt water at 828 and 918 feet.
Do	do	918	6½	.....	.....	Water at 132 and 656 feet; salt water at 348 and 757 feet, and trace of oil at 353 and 730 feet.
Pleasanton (near) ⁴	do	757	6½-5	.....	.....	Salt water.
Portis (6 miles north-west).	Osborne	546	.....	.....	No flow.	Do.
Portis (8 miles north-west).	do	543	6	.....	-200	Do.
Pratt	Pratt	±800	.....	.....	-15	Thick salt beds 600 to 800 feet; not used.
Pyramids (near) .....	.....	408	8	.....	No flow.	Bad water.
Ransom	Ness	653	6-3	Several.	-60	Water in sandstone under blue shale.
Randolph	Riley	400	.....	.....	.....	Abandoned.
Ravanna (north of)	Finney	+400	.....	Many.	-200	Do.
Do	do	+400	.....	.....	-45	Do.
Richfield ⁵	Morton	670	.....	22	Flows.	Temp. 66°; water at 570 feet.
Do	do	700	.....	3	Flows.	Two wells; temp. 60°.
Do	do	600	.....	6	Flows.	Salt well; 175 feet of salt.
Do	do	640	.....	15	+25	Saline water.
Rago	Kingman	1,000	.....	.....	-300	Salt water.
Russell	Russell	997	10-5	Many.	.....	Do.
St. Marys	Pottawatomie	1,123	.....	.....	Flows.	Salty water; abandoned.
Do	do	520	.....	.....	Flows.	Good water at 200 and 400 feet.
St. Paul	Neosho	661-668	.....	.....	Flows.	Do.
Santa Fe	Haskell	1,200	6	Many.	-200	Good water.
Do	do	1,300	10-5½	.....	-100	Good water.
Scandia	Republic	1,003	.....	.....	-16	Salt water at 590 feet; abandoned.
Smith Center	Smith	600	7	.....	-390	Salt water from sand 535-540 feet under 535 feet of shale.
Smith Center (2 miles southeast).	do	540	.....	Many.	-140	

¹ Record, Kans. Univ. Geol. Surv. Report, vol. 1, pl. 15.² Ibid., pl. 10; vol. 3, pl. 21.³ Ibid., vol. 1, pl. 17.⁴ Ibid., pl. 16.⁵ Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 157.

KANSAS—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Sterling	Rice	916	10-2½	None.	—	Salt well.
Do	do	946	10-2½	Few.	—3	Do.
Stover	Labette	530	7	—	—16	—
Sun (southwest of) ..	Barber	600	—	—	—	For coal; unsuccessful; mostly black shale.
Syracuse	Hamilton	1,000	—	—	—90	—
Thayer	Neosho	825	—	—	—	Oil wells.
Thayer (near)	do	1,064	6½-4½	—	—	Water at 376, 575, 805, and 1,064 feet.
Do	do	895	8½-6½	—	—	Water at 215 feet; gas at 827-830 feet.
Tonganoxie	Leavenworth ..	854	—	—	—	City well.
Topeka ¹	Shawnee	900	—	—	—	—
Do. ²	do	1,638	—	—	—	Coal prospect; no coal; no flowing water.
Toronto ³	Woodson	1,452	—	—	Flows.	Salt water and some oil.
Do	do	940-782	—	—	—	Two wells; some gas.
Tribune	Greeley	500	—	—	—	Unsuccessful.
Valley Falls	Jefferson	1,174	3	2	+40	Very saline water.
Wallace (vicinity) ..	Wallace	800	4	None.	—	Did not reach bottom of shales.
		448	7	—	—	
		400	7	None.	—	
Wamego	Pottawatomie ..	1,000	—	—	+6	Salt water.
Washington	Washington	1,100-1,200	—	1	—	—
Do	do	1,350	6	None.	—	Abandoned.
Do	do	2,200	6	None.	—	Do.
Weir City	Cherokee	442	8½	75	—70	—
Do	do	480	7½	75	—70	—
Do	do	490	6½	—	—70	—
Wellington	Wabaunsee	1,000	—	—	—	Not in use.
Wichita	Sedgwick	1,605	14-4½	—	—70	Salt water at 500 feet.
Do	do	1,025	—	—	—	—
Wilson	Ellsworth	1,375	8-5	—	—	Salt water; abandoned.
Winfield	Cowley	1,200	—	Many.	+6	Salt water.
Yale	Crawford	1,217	6	Many.	—115	—
Vulcan Iron Works ..	Kingman	1,000	—	—	—	Two salt shafts.
	Trego	700	—	—	—	—

PUBLICATIONS RELATING TO DEEP BORINGS IN KANSAS.

Report of J. W. Gregory, field agent for the Middle Division, Fifty-first Congress, first session, Senate Ex. Doc. No. 222, pp. 145-172. Washington, 1890.

Water Resources of a portion of the Great Plains, by Robert Hay, United States Geological Survey, Sixteenth Annual Report, 1894-95, part 2, pp. 535-588, plates. Washington, 1895.

The University Geological Survey of Kansas, by Erasmus Haworth and assistants, vol. 1. 320 pages, plates. Topeka, 1896.

Report of the Board of Irrigation, Survey, and Experiment for 1895 and 1896 to the Legislature of Kansas. 238 pages, plates. Topeka, 1897.

The University Geological Survey of Kansas, Special Report, by Erasmus Haworth and W. R. Crane, vol. 3. 347 pages, plates. Topeka, 1898.

¹ Record, Kans. Univ. Geol. Surv. Report, vol. 1, pl. 17.

² Ibid., vol. 3, pl. 27.

³ Ibid., vol. 3, p. 149, pl. 29.

KENTUCKY.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gals.</i>	<i>Feet.</i>	
Ashland (4 miles south).	Boyd	1,715	13-10			For oil or gas; unsuccessful.
Ashland (6 miles south).	do	2,100	13-10			Do.
Atoka (14 miles west) ¹	Boyle	+1,414				Oil and gas.
Beaver Dam (1½ miles southeast).	Ohio	900				No oil or water; abandoned.
Blaine Creek mouth ² .	Lawrence	2,597				For oil or gas; unproductive.
Blaine Creek mouth (1½ miles from). ³	do	1,840				Do.
Bowling Green ⁴ .	Warren	1,782				But little oil, gas, or water.
Bowling Green (vicinity). ⁵	do	600-1,200				Several prospects for oil or gas; some gas.
Bowling Green (15 miles northwest).	do	600-700				Several wells yielding heavy oil.
Boone's Landing ⁶ .	Meade	500-579				Several gas wells.
Brooksville	Bracken	600				For oil or gas; in progress 1899.
Brummetts Station.	Whitley	1,000	6		-5	Some gas at 300 feet.
Burkesville	Cumberland	1,700				Small showing of oil and gas.
Brandenburg ⁷ .	Meade	400-765				Gas wells; some brine.
Catlettsburg (1 mile south).	Boyd	2,025	10-6½			Gas well.
Catlettsburg (1½ miles south).	do	2,322				For oil.
Cloverfork	Harlan	423	2			
Cloversport ⁸ .	Breckinridge	+896				Several gas wells in vicinity; salt water at 400 feet, strong brine at 600 feet.
Cloyds Landing	Cumberland	+400				Oil well.
Cumberland Falls (vicinity).	Whitley	+400				Salt.
Cynthiana	Harrison	1,000-1,300			-8	Several wells.
Danville	Boyle	560	6			Unsuccessful.
Eddyville (below)	Lyon	1,315				Water 200 to 300 feet.
Elizaville	Fleming	600				For oil.
Frankfort	Franklin	825	6	Many.	Flows.	
Glasgow ⁹	Barren	1,200				
Glasgow (5 miles southwest). ¹⁰	do	1,370				Several gas wells.
Glasgow Junction (3 miles southeast). ¹¹	do	1,511				Salt water at about 700 feet.
Grand Rivers (near).	Lyon	1,315				Oil prospect; abandoned.
Grayson Springs (6 miles). ¹²	Grayson	1,000	6	Many.	Flows.	Temp. 61½°.
Greenup (1½ miles east).	Greenup	940				Some oil at 400 feet; salt water at 500 feet; abandoned.
Greenup (1 mile)	do	+1,300				Some oil at 580 feet; abandoned.
Greenwood (2 miles southeast).	Pulaski	1,600				For oil, none found; abandoned.
Do	do	1,100				Abandoned.
Halsey (near)	Whitley	500	2			Coal prospect; some water at 60 feet.
Harrodsburg	Mercer	1,560	8		Flows.	Water at 1,100 feet; no gas.
Harrodsburg (near)	Jessamine	485	5			Water unfit for use.
Hartford	Ohio	1,000				Salt water.
Hartford (1¼ miles northeast).	do	+1,300			Flows.	Gas and salt water.
Hawesville ¹³	Hancock	+1,500				Salt water only.
Hazzard (near) ¹⁴	Perry	+400				Salt well.
Henderson ¹⁵	Henderson	+459				Coal prospect.

¹ Record, Pa. 2d Geol. Surv. Reports, vol. I⁵, pp. 340-341.² Record, *ibid.*, pp. 335-336.³ Record, *ibid.*, pp. 336-337.⁴ Ky. Geol. Surv., Petroleum and Natural Gas, etc., by E. Orton, pp. 159-160.⁵ *Ibid.*, pp. 160-162.⁶ *Ibid.*, pp. 176-177.⁷ *Ibid.*, pp. 171-172, 176.⁸ *Ibid.*, pp. 191-193.⁹ *Ibid.*, p. 154.¹⁰ Record, *ibid.*, p. 154.¹¹ Record, *ibid.*, pp. 155-156.¹² Ky. Geol. Surv. Report, vol. 1, new series, p. 92.¹³ Ky. Geol. Surv., Petroleum and Natural Gas, etc., by E. Orton, p. 194.¹⁴ Record, Ky. Geol. Surv. Report, 1854-1855, pp. 36-39.¹⁵ *Ibid.*, pp. 32-33; Ky. Geol. Surv., Petroleum and Natural Gas, etc., by E. Orton, pp. 195-196.

KENTUCKY—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Henderson ¹	Henderson ..	+900	.....	.....	Flows.	Brine.
Henderson (near) ..	do	1,024	.....	.....	.....	Do.
Henderson (16 miles south). ²	do	430 or 536	.....	.....	.....	Two wells; one yields gas.
Hendricks.....	Magoffin	2,484	8-5	.....	.....	Some oil; no water below 825 feet.
Hood Creek ³	Lawrence.....	1,625	.....	.....	.....	-Oil well.
Hopkinsville ⁴	Christian	1,600	.....	.....	.....	Some gas and oil at bottom.
Inez.....	Martin	2,200	.....	.....	.....	For oil.
Do.....	do	950	.....	.....	.....	For oil 40 years ago.
Keene.....	Jessamine	2,000	.....	.....	.....	Flow of salt water at 1,400 feet; no gas.
Lagrange ⁵	Oldham	1,500	.....	.....	.....	Salt water at 1,200 feet; no gas.
Do. ⁵	do	1,200	.....	.....	.....	Gas well.
Lagrange (1 mile south). ⁵	.....	565	.....	.....	.....	Sulphur water at 1,607 feet.
Laurel ⁶	Lawrence.....	1,625	.....	.....	.....	For oil or gas; unsuccessful.
..... ⁷	do	1,840-2,507	.....	.....	.....	Salt wells.
Leatherwood Creek (mouth). ⁸	Perry	410	.....	.....	.....	No water supply.
Lexington.....	Fayette.....	875	6	.....	.....	For oil or gas; unproductive.
Louisa (20 miles west). ⁹	Lawrence.....	2,105	.....	.....	.....	Do.
Louisa (9 miles south-west). ¹⁰	do	2,407	.....	.....	.....	Mineral water; temp. 86½° (or 76¼°?).
Louisville (Dupont's). ¹¹	Jefferson	2,086	3	264	+170	.....
Louisville (Phoenix Brewery).	do	1,800	8	Many.	+ 60	.....
Louisville (St. Patrick's). ¹²	do	1,900	.....	Many.	Flows.	Temp. 57.2°; salt water.
Louisville (Haynes's farm). ¹³	do	1,000	.....	.....	.....	Some gas at 400 feet.
Louisville (McGehee farm). ¹³	.....	1,000	.....	.....	.....	No product.
Monticello.....	Wayne.....	200-700	.....	.....	.....	Oil wells.
Morganfield ¹⁴	Union	525	2	.....	.....	For oil; abandoned.
Morgantown.....	Butler	500	.....	.....	.....	Oil, gas, and coal.
Newport ¹⁵	Campbell	2,007	.....	.....	.....	Much water at 1,650 feet.
Owensboro ¹⁶	Daviess	1,000	4	.....	.....	Brine at 765 feet; poor water below.
Do.....	do	1,480	.....	.....	.....	Salt water at 780 feet; none below.
Do.....	do	1,200	.....	.....	.....	But little gas.
Owensboro (2 miles east).	do	1,000	.....	.....	.....	.....
Pactolus (near) ¹⁷	Grayson	1,480	.....	.....	-100	For oil or gas; unproductive; much salt water at 1,475 feet.
Paducah ¹⁸	Calloway	1,250	.....	.....	.....	Salt water at 150 and 1,700 feet.
Fanola.....	Madison	1,700	4	.....	.....	For oil; unsuccessful.
Perryville.....	Boyle	650	6	.....	.....	Oil well.
Pineville.....	Bell	650	.....	.....	.....	Unsuccessful.
Smithland ¹⁹	Livingston.....	1,200	.....	.....	.....	.....
Smithland (Taylor farm).	do	+1,500	.....	.....	.....	.....

¹ Ky. Geol. Surv., Petroleum and Natural Gas, etc., by E. Orton, p. 195.² Ibid., p. 196.³ Record, Pa. 2d Geol. Surv. Reports, vol. I⁵, p. 339.⁴ Ky. Geol. Surv., Petroleum and Natural Gas, etc., by E. Orton, pp. 162-165.⁵ Ibid., pp. 167-168.⁶ Record, Geol. Surv. Penn. Report I⁵, Oil and Gas Region, p. 339.⁷ Record, ibid., pp. 335-339.⁸ Ky. Geol. Surv. Repts. 1854-1855, p. 228.⁹ Record, Pa. 2d Geol. Surv. Repts., vol. I⁵, p. 338.¹⁰ Record, ibid., pp. 337-338.¹¹ Record and analysis, Am. Jour. Sci., 2d series, vol. 27, pp. 174-178.¹² Ky. Geol. Surv., Petroleum, Natural Gas, etc., by Orton, pp. 169-170.¹³ Ibid., p. 173.¹⁴ Ibid., p. 205.¹⁵ Record and analysis, Ohio Geol. Surv. Report 1888, vol. 6, pp. 298-300.¹⁶ Ky. Geol. Surv., Petroleum, Gas, etc., by Orton, p. 194.¹⁷ Record, Pa. Geol. Surv. Report I⁵ on Oil and Gas Region, p. 340.¹⁸ Record, Ky. Geol. Surv. Description of Jackson Purchase Region, pp. 321-326.¹⁹ Ky. Geol. Surv., Petroleum, Gas, etc., by Orton, p. 198.

KENTUCKY—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Uniontown.....	Union.....	1,079	4	.....	Flows.	For gas.
Uniontown (Davis mill).....	do.....	+400	5-6	.....	Flows.	Salt water.
Walton.....	Boone.....	+400	.....	.....	.....	Gas well.
Warfield (near) ¹	Martin.....	+1,307	.....	.....	.....	Do.
West Point (vicinity). ²	Hardin.....	400	.....	.....	.....	For gas; unsuccessful.
Whitesburg.....	Letcher.....	400	.....	.....	.....	Salt wells.
Williamsburg (10 miles above).....	Whitley.....	500	6	.....	.....	For oil; unsuccessful.
Williamstown.....	Grant.....	500	.....	.....	.....	No water below 30 feet.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN KENTUCKY.

Seventh Report on Oil and Gas Fields of Western Pennsylvania for 1887-88, by John F. Carl, Pennsylvania Second Geological Survey Reports, volume I³, 356 pages, Harrisburg, 1890.

Kentucky Geological Survey Report for 1854-55, by D. D. Owen, Frankfort, 1856.

Occurrence of Petroleum, Natural Gas, and Asphalt in Western Kentucky, by Edward Orton, Kentucky Geological Survey Report, 1888-89, 232 pages, Frankfort.

LOUISIANA.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Aldenbridge.....	Bossier.....	400	.....	.....	.....	Four wells; temp. 85°±.
Alexandria.....	Rapides.....	735	10-6	276½	+4	
Do.....	do.....	850	.....	.....	.....
Do.....	do.....	630	.....	.....	.....
Allentown.....	Bossier.....	400	.....	.....	.....	Water at 750 feet.
Bosco City.....	Ouachita.....	400	6	.....	-30	
Baton Rouge.....	East Baton Rouge.....	1,000	6	243	-30	Temp. 70°; two wells Temp. 63°.
Do.....	do.....	760	10-6	.....	Flows.	
Bayou Sara.....	West Feliciana.....	736	4	347	+2	Temp. 60°.
Do.....	do.....	450	.....	.....	+1	
Benton.....	Bossier.....	500	.....	.....	.....	Temp. 62°; salty water; much gas.
Bolinger.....	do.....	500	.....	.....	.....
Boyce.....	Rapides.....	810	.....	18	+15	Temp. 62°; several other wells here.
Cofax.....	Grant.....	1,103	2½	42	+65	
Cote Blanche Island.....	St. Mary.....	450	.....	104	-34	Pumps 347 gallons; Temp. 62°; several other wells here.
Crawford.....	do.....	692	4	18	+2	
Crowley.....	Acadia.....	635	4	312	-6	Pumps 312 gallons. No water.
Delta.....	Madison.....	1,200	.....	.....	.....
Dubach.....	Lincoln.....	.....	.....	.....	.....	Deep well.
Hammond.....	Tangipahoa.....	473	5	300	+12	
Lake Charles.....	Calcasieu.....	535	6-4	104	+18	Four wells; temp. 64°.
Lake Charles (2 miles east).....	do.....	498	4	100	+10	
Do.....	do.....	510	6-4	.....	Flows.	Two wells.
Do.....	do.....	500	.....	.....	.....
Lake City.....	Jefferson?.....	1,200	.....	.....	.....	.....
Marksville.....	Avoyelles.....	800	.....	.....	.....

¹ Record, Pa. Geol. Surv. Report I³ on Oil and Gas Region, pp. 339-340.

² Ky. Geol. Surv., Petroleum, Gas, etc., by Orton, pp. 180-181.

LOUISIANA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Minden.....	Webster.....	<i>Feet.</i> 1,000	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i> No flow.	
New Iberia.....	Iberia.....	600				
New Orleans.....	Orleans.....	{ 1,200 1,000 }			+15	Several wells; temp. 68°.
New Orleans (Canal street).	do.....	3,000				Bored in 1856.
New Orleans.....	do.....	1,300				
Winnfield.....	Winn.....	1,100	8			Temp. 70°. Also gas.

MAINE.

Augusta.....	Kennebec.....	570		10	No flow.	In granite.
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MARYLAND.

Arbutus.....	Baltimore.....	775				Not finished.
Baltimore (National Brewery).	do.....	450	6	200	No flow.	
Baltimore (Malt by property).	do.....	900		Many.	No flow.	
Baltimore (Spring Garden Brewery).	do.....	500			No flow.	
Baltimore (Hannis Distillery).	do.....	800			No flow.	
Baltimore (Seawell).	do.....	562		None.		
Baltimore (Baumschmidt's Brewery).	do.....	400		25		
Baltimore (Von Der Horst's Brewery).	do.....	435	8	25	No flow.	
Baltimore (Brehm's Brewery).	do.....	1,300		120	No flow.	
Baltimore (Adler's Brewery).	do.....	800				
Bay Ridge.....	Anne Arundel.	470	6-4	20		Irony water.
Centerville ¹	Queen Anne.....	665		Many.	Near surface.	Water at 428 and 665 feet.
Claiborne ²	Talbot.....	440	6	Many.		Water also at 380 feet.
Cumberland.....	Allegany.....	2,000	8	None.		Abandoned.
Crisfield.....	Somerset.....	1,018	3	Pumps 200.	Flows.	Flows 40 gallons; saline water.
Do.....	do.....	1,033	4	130	Flows.	Saline water.
Do. ³	do.....	1,090	6		Flows.	Do.
Deer Park.....	Garrett.....	2,010	5		Flows.	
Easton.....	Talbot.....	600	3	None.		No water below 100 feet.
Elkton.....	Cecil.....	490	2½			Water very unsatisfactory; temp. 45°.
Do.....	do.....	400				Abandoned.
Do.....	do.....	407				Unsuccessful.
Fort Washington						
Frederick.....	Frederick.....	1,140-996		70	+3	
Frostburg.....	Allegany.....	700	1½	None.		Abandoned.
Indian Head.....	Charles.....	463	6	11	No flow.	
Salisbury ⁴	Wicomico.....	424				Water at 267 feet.
Sparrows Point.....		495				No water below 210 feet.
Tilghmans Island.....	Talbot.....	370-420		Many.		4 wells.
Tunis Mills.....	do.....	430	2	Pumps 100.	Flows.	Flows 6 gallons.

¹ Record, New Jersey Geol. Surv., Report for 1899, pp. 81-83.² U. S. Geol. Surv., Bull. 138, p. 132.³ Record, U. S. Geol. Surv., Bull. 138, pp. 128-130.⁴ Record, New Jersey Geol. Surv., Report for 1899, pp. 113-115.

MASSACHUSETTS.

Location.	County.	Depth.	Dia- meter.	Yield per minute.	Height of water.	Remarks.
Boston (Eastern Cold Storage).	Suffolk	<i>Feet.</i> 400	<i>Inches.</i> 8	<i>Gallons.</i> 70	<i>Feet.</i> No flow.	
Boston (corner Huntington avenue and Gainesboro street).	do	512	8	Few.	No flow.	Bad water.
Boston (corner Commercial and Prince streets).	do	1,750			No flow.	
Boston (34 Providence street).	do	2,503	7½		5	Sulphur water: good water 459-484 feet; well abandoned.
Boston (Park square)	do	2,567				No water below 500 feet.
Cambridge (Dow Soap Works).	do	500				Unsuccessful.
Cambridge (Morse and White streets).	do	462	6			Do.
Cambridge	do	400				Do.
Dalton	Berkshire	+400		Many.	No flow.	
Dorchester	Suffolk	870-900			No flow.	2 wells; water very salty.
Holyoke	Hampden	400	8	400	-20	
Do	do	800	8	600	-20	
Do	do	720	8	400	-14	
Do	do	1,005	8	Many.	No flow.	Water too irony.
Malden	Middlesex	650	8	65	No flow.	Water of fair quality.
New Bedford	Bristol	510	6	24	No flow.	
North Adams	Berkshire	500	8	625	-4	Very hard water.
Northampton	Hampshire	3,710	8	7	No flow.	Not successful.
Do	do	4,022				Do.
Princeton	Worcester	900		Few.		
Roxbury	Suffolk	502	6		-20	
Do	do	403				
Stockbridge	Berkshire	650	8	•		Do.
Taunton	Bristol	975	8	52	-12	Water too irony.
Turners Falls	Franklin	900	6		No flow.	Water too hard.
Walpole	Norfolk	1,000		15		
Waltham	Middlesex	460		Very few.	No flow.	
Watertown	do	700		Many.		
West Cummington	Hampshire	625	8	2½	No flow.	Water too irony.

MICHIGAN.

Adrian ¹	Lenawee	1,650				Mineral water at 805 feet. Abandoned.
Albion	Calhoun					Several wells.
Algonac ²	St. Clair	1,614				Salt well.
Algonac (5 miles below). ³	do	1,727				Do.
Allegan ⁴	Allegan	{ 1,275 1,400 }				Several borings for oil; not much found.
Alma ⁵	Gratiot	2,863			-2	
Alpena	Alpena	650	5	200	+20	Temp. 52°. Several wells.
Do ⁶	do	1,026-1,269				Several salt wells.
Ann Arbor ⁷	Washtenaw	770 or 775			-40	
Assyria	Barry	1,850				For oil; unsuccessful.
Battlecreek ⁸	Calhoun	440			-16	Water at 116 feet only.
Banks	Bay	774-980				Salt wells.
Bay City	do	715-1,200				Numerous salt wells in vicinity.
Bay City ⁹	Bay	505				Salt wells in upper salt beds.
Do	do	1,600				

¹ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 44, pl. 1.² Ibid., pl. 3.³ Ibid., pl. 2.⁴ Ibid., pp. 44-45, pl. 4.⁵ Analysis, *ibid.*, pp. 45-46; U. S. Geol. Surv. Water Supply and Irrigation Paper, No. 31, p. 83.⁶ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, pp. 46-47, pl. 5.⁷ Ibid., pp. 47-49; Reports, 1873-1876, vol. 3, part 1, p. 92.⁸ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 50.⁹ Analysis, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 182.

MICHIGAN—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Bay City ¹	Bay	2,865				Brine at 2,141-2,306 feet.
Benton Harbor ²	Berrien	1,205				
Do	do	1,400	10-6	Many.	-30	
Big Rapids	Mecosta	1,360		Many.	-30	Mineral water.
Blackmar	Saginaw	1,764				Salt well.
Carrollton	do	743-800				Several salt wells.
Casewell ³	Thuron	1,735-1,770				Salt wells.
Chadwick	Ionia	498				
Charlevoix ⁴	Charlevoix	400-482	8		Flow.	Temp. 46°.
Charlotte ⁵	Eaton	2,209	6		-20	
Do	do	730				
Cheboygan ⁶	Cheboygan	700				
Do	do	452	10-8		To surface.	
Coldwater (west of) ⁷	Branch	447				Water at 223 feet; brine at 282 feet.
Do. ⁸	do	1,200				
Constantine ⁹	Saint Joseph	680				Strong brine at 382 feet.
Do. ¹⁰	do	+1,080				
Corunna ¹¹	Shiawassee	907				
Detroit (9 miles northeast) ¹²	Wayne	770				Some gas and water at 165 feet.
Dowagiac	Cass	1,500				Unsuccessful.
Do	do	2,200				Water at 87 feet; brine at 387 feet.
Do. ¹³	do	1,760				
Do	do	2,300				Water at 90 feet; brine at 780 feet.
East Saginaw ¹⁴	Saginaw	806				Salt well.
East Tawas ¹⁵	Iosco	905				Do.
Essexville ¹⁶	Bay	755				
Flint ¹⁷	Genesee	1,200				Salt well; fresh water at 260 feet.
Florence	Saint Joseph	800				Salt wells.
Forestville	Sanilac	505-600				Abandoned and filled up.
Fountain Point	Carp Lake, Leelanau.		8		+15	
Frankfort ¹⁸	Benzie	1,800				
Do. ¹⁹	do	2,200		160	Flows.	Temperature 58°; mineral water.
Grand Marais	Alger	1,215		None.		Abandoned.
Grand Rapids ²⁰	Kent	2,200				Fresh water with gas and brine at bottom.
Do	do	(?) 700				
Grindstone.	Huron	1,080				Abandoned.
Hillsdale ²¹	Hillsdale	1,350-1,550				Brine at 1,100 feet.
Howell	Livingston	550				Gas; abandoned.
Imlay ²²	Lapeer	1,020				Fresh water at 190 to 200 feet; salt water at 648 to 710 feet.
Ionia	Ionia	400-600	8	Many.	+ 7	No water below 362 feet; temperature 55°.

¹ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 50, pl. 6.² Ibid., p. 51, pl. 7.³ Ibid., p. 53; Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 94.⁴ U. S. Geol. Surv. Water Supply and Irrigation Paper, No. 30, p. 87.⁵ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 53, pl. 8.⁶ Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 53.⁷ Record, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 87-88.⁸ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 54, pl. 10.⁹ Record, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 93.¹⁰ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 54, pl. 11.¹¹ Ibid., p. 54, pl. 12.¹² Ibid., p. 54, pl. 15.¹³ Ibid., p. 55, pl. 16.¹⁴ Ibid., p. 55; Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, pp. 94-96; Analysis, p. 183.¹⁵ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 57; Analysis, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 184.¹⁶ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 58.¹⁷ Ibid., p. 58; Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 97.¹⁸ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 53, pl. 18.¹⁹ Analysis, Ibid., p. 50.²⁰ Record, Ibid., p. 51, pl. 20.²¹ Ibid., p. 62; Mich. Geol. Surv. Reports, 1883-1876, vol. 3, part 1, p. 81.²² Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 63, pl. 22.

MICHIGAN—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Ionia ¹	Ionia	450	.....	.....	.....	Flow of sweet water at 300 feet.
Ithaca ²	Gratiot	637	8	50	-72	Several wells; good water.
Jackson ³	Jackson	2,100-2,455	.....	.....	Flows.	Several wells. Flow of water at 1,050 feet; hot water at 1,820 feet.
Do	do	2,700	.....	.....	.....	Abandoned.
Do	do	206-400	10	Many.	-9	Large water supply; several wells.
Kalamazoo ⁴	Kalamazoo	2,250	.....	.....	.....	.....
Kawkawlin ⁵	Bay	810-1,133	.....	.....	.....	Two salt wells.
Lake Linden	Houghton	1,502-1,508	12-8	100	.....	.....
Lansing "magnetic well." ⁶	Ingham	1,400	.....	1	Flows.	Saline water. Temperature 58½°.
Lansing Hotel	do	740	.....	.....	.....	.....
Lansing Reform School. ⁶	do	506	.....	.....	.....	.....
Ludington ⁷	Mason	2,220	.....	.....	.....	.....
Do. ⁸	do	1,650	.....	.....	.....	.....
Ludington (1 mile south). ⁹	do	2,280	.....	.....	.....	.....
Manistee ¹⁰	Manistee	1,947-2,027	.....	.....	.....	Numerous salt wells in town and vicinity. Black water at 960. Some oil at 1,905 feet.
Do	do	2,015	10-5	.....	-15	Two salt wells.
Marengo ¹¹	Calhoun	460	.....	.....	.....	.....
Marine City ¹²	St. Clair	1,470-1,737	.....	.....	.....	Several salt wells in and near town.
Marine City (city well). ¹³	do	1,777	.....	.....	Flows.	Clear water 1,170-1,370 feet.
Marshall ¹⁴	Calhoun	440	.....	.....	Flows.	.....
Maryville ¹⁵	St. Clair	1,150	.....	.....	.....	Salt water at 745 feet; mineral water 970 and 985 feet.
Melbourne	Saginaw	950	.....	.....	.....	.....
Menominee	Menominee	+400	.....	.....	.....	.....
Midland ¹⁶	Midland	1,300-1,325	.....	.....	.....	.....
Monroe ¹⁷	Monroe	1,765	8	Several.	+4	Well now plugged; water somewhat sulphurous.
Mount Clemens ¹⁸	Macomb	1,060-1,244	.....	.....	.....	Several mineral wells.
Muskegon ¹⁹	Muskegon	1,230	.....	.....	.....	Flows of mineral water at 333 feet and 643 feet.
Do. ²⁰	do	2,627	.....	.....	.....	Strong flow of mineral water at 700 feet, brine at 2,400 feet.
New River ²¹ .....	.....	1,029	.....	.....	.....	Salt well.
Niles	Berrien	1,438	10-5	15	+15	Temperature 60°.
Do. ²²	do	1,140	.....	.....	.....	.....

¹ Record, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, pp. 134-135.² Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, pp. 63-64.³ Ibid., p. 65, pls. 23-25.⁴ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 65, pl. 26.⁵ Ibid., p. 65; Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 96.⁶ Record, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, pp. 117-118.⁷ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 66, pl. 27.⁸ Ibid., pl. 29.⁹ Ibid., pl. 28.¹⁰ Ibid., p. 66, pls. 30-32.¹¹ Ibid., p. 67.¹² Ibid., p. 67, pls. 33-38.¹³ Ibid., p. 67, pl. 39.¹⁴ Ibid., p. 67.¹⁵ Ibid., p. 68, pl. 40.¹⁶ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 69.¹⁷ Ibid., p. 70, pl. 41.¹⁸ Record, and analysis, *ibid.*, pp. 70-71, pl. 42.¹⁹ Record, *ibid.*, p. 71, pl. 43; Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 84.²⁰ Ibid., p. 85.²¹ Ibid., p. 77; Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 73.²² Record, Mich. Geol. Surv. Reports, 1881-1893, part 2, p. 73, pl. 44.

MICHIGAN—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Niles ¹	Berrien	600				Strong brine at 370 feet.
Norris	Wayne	631				For gas; abandoned.
Oscoda ²	Iosco	1,070-1,103				Salt wells.
Owosso ³	Shiawassee	1,000				Brine at 634 feet.
Petoskey	Emmet	575	10-8	450	+18	Temperature 50°.
Pontiac ⁴	Oakland	1,505				Salt water at 1,100 feet.
Port Austin ⁵	Huron	1,198-1,225				Salt wells; sweet water at 336 to 1,100 feet.
Port Hope ⁶	do	787				Salt well.
Port Huron ⁷	St. Clair	498-785				Gas wells.
Port Huron (12 miles northwest).	do				Flows.	
Port Huron ⁸	do	1,700				Gas and salt.
Port Huron Deer-spring.	do	745			-150	Slightly mineral water.
Portsmouth	Bay	1,000				
Do. ⁹	do	664				Salt well.
Provenomont.	Leelanau	700	8		+10	Sulphur water 300 feet in rock.
Romeo ¹⁰	Macomb	1,600			-600	
Royal Oak ¹¹	Oakland	1,400				
Do. ¹²	do	2,502				
Saginaw	Saginaw	741-830				Numerous salt wells.
Do. ¹³	do	860				
Saginaw (south-east). ¹⁴	do	1,764				Brine at 350 and 1,655 feet.
St. Clair ¹⁵	St. Clair	919				Salt wells.
Do. ¹⁶	do	1,632			-300	Salt well.
St. Ignace ¹⁷	Mackinac	919	8	Many.	Flows.	Strong sulphur water.
St. Johns	Clinton	1,200				Unsuccessful.
St. Louis	Gratiot					Deep well.
Salsburg	Bay	1,000-1,013				Several salt wells.
Sandbeach ¹⁸	Huron	702				Salt well.
Do. ¹⁹	do	1,920				For gas; unsuccessful.
Stronach ²⁰	Manistee	1,972				
Tawas City ²¹	Iosco	905				Salt well.
Thunder Bay River (near bed). ²²		1,025				Salt well. Flow of mineral water at 400 feet.
Whiterock ²³	Huron	555-1,311				Several salt wells.
Winona	Bay	1,020				Drill hole for copper ore.
Wyandotte ²⁴	Wayne	2,500				Abandoned.
Do.	do	600-800				Numerous salt wells.
Ypsilanti	Washtenaw	808				
Zilwaukee ²⁵	Saginaw	800-860				Several wells.

¹ Record, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 93.² Analysis, *ibid.*, p. 186.³ Record, *ibid.*, p. 97; Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 78, pl. 45.⁴ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 75, pl. 47.⁵ *Ibid.*, pp. 75-76; Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, pp. 77-78; Analysis, p. 183.⁶ *Ibid.*, p. 76.⁷ *Ibid.*, p. 77, pls. 48-55.⁸ *Ibid.*, pp. 77, pl. 57.⁹ Analysis, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 182.¹⁰ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 78, pl. 59.¹¹ *Ibid.*, p. 79.¹² *Ibid.*, p. 79, pl. 60.¹³ *Ibid.*, p. 79; Analysis, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 182.¹⁴ Record, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, pp. 96-97.¹⁵ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 79, pl. 62.¹⁶ *Ibid.*, pl. 61.¹⁷ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 79, pl. 63.¹⁸ Analysis, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 184.¹⁹ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, pp. 81-82.²⁰ Record, *ibid.*, p. 84, pl. 65.²¹ Record, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 79.²² Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 40.²³ *Ibid.*, pp. 76-77; Analysis, p. 184; Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 86.²⁴ Record, Mich. Geol. Surv. Reports, 1881-1893, vol. 5, part 2, p. 87, pl. 66.²⁵ Analysis, Mich. Geol. Surv. Reports, 1873-1876, vol. 3, part 1, p. 185.

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The Geology of Lower Michigan with reference to deep borings, etc., by A. C. Lane, Michigan Geological Survey, Vol. 5, part 2, 100 pages, plates, Lansing, 1895.

Analysis of many of the well waters are in "Lower Michigan Mineral Waters," by A. C. Lane, U.S. Geological Survey, Water-Supply and Irrigation Papers, No. 31, Washington, 1899.

Water Resources of the Lower Peninsular of Michigan, by A. C. Lane, U. S. Geological Survey, Water-Supply and Irrigation Papers, No. 30, 97 pages, plates, Washington, 1899.

MINNESOTA.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Austin.....	Mower.....	750	10-8	220	-6	Fine water from 600 feet.
Belle Plaine.....	Scott.....	710				
Benson.....	Swift.....	478				
Blue Earth.....	Faribault.....	1,300			-30	
Do.....	do.....	1,240		Many. 5	-30 ×200	First flow at 420 feet; second flow at 425 feet.
Browns Valley ¹	Traverse.....	465				
Brownsville ²	Houston.....	590		1,000	+13	
Dodge Center.....	Dodge.....	504	8	80	-88	Railroad well.
Duluth (12 miles west). ³	St. Louis.....	1,507½	8-5½		-40	Mineral water at 1,225 feet.
East Minneapolis ⁴	Hennepin.....	1,421				
Elk River.....	Sherburne.....	513		Many.	+4	Several wells in vicinity; only flow is at 306 feet.
Faribault.....	Rice.....	520				Signs of gas.
Fond du Lac.....	St. Louis.....	1,508			-10±	Salty water; bored for gas.
Fountain.....	Fillmore.....	579	6	20	-225	
Freeborn.....	Freeborn.....	950				Unsuccessful.
Gladstone.....	Ramsey.....	615			-30	
Glencoe.....	McLeod.....	1,640	8-6	50	-85	
Do.....	do.....	1,000		50		
Graceville.....	Bigstone.....	460	8-6	40	-50	Two wells; granite at 510 feet.
Grove City.....	Meeker.....	700			-57	
Hastings ⁵	Dakota.....	1,160		100	+14	Water slightly salty.
Hayfield.....	Sibley.....	530		None.		
Henderson.....	Kittson.....	707	10-8	400	+70	Temp. 50°.
Humboldt ⁶		644				Salty water at 170-180 feet.
Jordan.....	Scott.....	650?				
Kandiyohi.....	Kandiyohi.....	450				Unsuccessful.
Lake City ⁷	Wabasha.....	820				
Lamberton.....	Redwood.....	400				
Mankato.....	Blue Earth.....	2,204			-90	Unsuccessful.
Do.....	do.....	650	10, 8, 6	500 to 80	+40	Several wells. Water ferruginous.
Mendota ⁸		857	4	10	+10	
Minneapolis.....	Hennepin.....	1,431				Several wells unsuccessful.
Minneapolis (Lake-wood Cemetery) ⁹	do.....	2,150				
Minneapolis (West Hotel). ¹⁰	do.....	622		300	-24	Water at 168 feet.
Minneapolis (C. M. and S. P. R. R. shops).	do.....					

¹ Record, Minn. Geol. Surv., 14th Rept., 1885, p. 14. Report Special Comm. U. S. Senate on Irrigation and Reclamation of Arid Lands, vol. 4, Washington, 1890, p. 48.

² Record, Minn. Geol. Surv., 13th Rept., 1884, p. 59. Report Special Comm. U. S. Senate on Irrigation and Reclamation of Arid Lands, vol. 4, Washington, 1890, p. 48; Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, p. 142.

³ Record, Minn. Geol. Surv. Bull. 5, Gas in Minnesota, pp. 31-35.

⁴ Record, Minn. Geol. Surv. Report, vol. 5, 1876, pp. 154-156.

⁵ Record, Minn. Geol. Surv., 13th Rept., 1884, pp. 56-57; Analysis and Record Minn. Acad. of Natural Sciences Bull., vol. 3, No. 1, pp. 137-141.

⁶ Record and analysis, Minn. Geol. Surv., 13th Rept., 1884, pp. 42-47.

⁷ Record, *ibid.*, p. 58; Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, p. 142.

⁸ Record, Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, p. 141; Minn. Geol. Surv., 13th Rept., 1884, pp. 55, 56.

⁹ *Ibid.*, pp. 137-138; *ibid.*, pp. 50-54.

¹⁰ Analysis, *ibid.*, p. 137; Record, Minn. Geol. Surv., 14th Rept., 1885, p. 11.

MINNESOTA—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Minneapolis (Soldiers' Home).	Hennepin	-----	-----	-----	-----	
Minneapolis (Winslow House).	do	1,421	-----	-----	No flow.	Abandoned.
Minneopa Falls ¹	Blue Earth	1,000	8-6	-----	-----	Flow at 540 feet, and salty water at 940 feet; granite at 940 feet.
Monticello	Wright	500	-----	-----	-18	Good water.
Moorhead ²	Clay	1,901	-----	-----	-----	Water at 120, 135, and 370 feet.
Do. ³	do	1,425	-----	-----	-----	Water at 120 feet and 1,425 feet.
New Germany	Carver	410	3	-----	-----	Water at 100 feet only.
Northfield	Rice	647	8	1,000	+25	Hard water. Supply is from 300 feet.
Owatonna	Steele	640	8	250	-8	
Pine City	-----	700	12-4	75	-70	
Pipestone	Pipestone	537	-----	-----	-----	
Plainview	Wabasha	690	12	100	-----	
Redwing ⁴	Goodhue	500	6	100	+75	Flows from 190-450 feet.
St. Charles	Winona	944	-----	-----	-60	
St. James	Watsonwan	501	10-8	300	-27	Hard water.
St. Paul (G. N. R. R.).	Ramsey	834	-----	-----	-38	
St. Paul (Elevator Co.). ⁵	do	850	-----	-----	-35	
St. Paul (St. P. & D. R. R.)	do	750	-----	-----	-----	
St. Paul Transfer Railroad.	do	575	-----	-----	-----	
St. Paul (West. M. and N. W. R. R.).	do	1,060	-----	-----	-24	
St. Paul city well.	do	1,065	-----	-----	-----	
St. Paul (harvester works). ⁶	do	871½	-----	-----	-----	
St. Paul, Wilgus well.	do	625	-----	-----	-----	
St. Paul Fair Grounds	do	500	-----	-----	-----	
St. Paul, Lake Vadua is.	do	726½	-----	-----	-11	
St. Paul, White Bear Lake.	do	777	-----	-----	-18	
St. Vincent (2 miles northwest). ⁷	Kittson	1,037	-----	-----	-----	
Scott	Stevens	+400	-----	-----	-----	No water.
South St. Paul	Ramsey	487	-----	-----	-5	
Do	do	3,000	-----	-----	-----	For gas.
Stephen	Marshall	-----	-----	-----	-----	No success.
Stillwater ⁸	Washington	3,500	5	-----	-----	For gas, unsuccessful; water at 162 and 300 feet; some salt water at 1,950 feet and some gas at 2,250 feet.
Tower (2 miles east).	St. Louis	400	1½	Many.	-----	Diagonal drill hole in gneiss.
Tracy ⁹	Lyon	724	-----	-----	-37	
Do	do	597	-----	-----	-148	
Tyler	Lincoln	+400	-----	-----	-----	
Do	do	+600	-----	-----	-----	
Walnut Grove	Redwood	400	-----	-----	-----	
Waseca	Waseca	1,157	10-8	200	-120	
White Bear	Ramsey?	777	-----	-----	-15	
Winona	Winona	478	6	500	+10	Temp. 54°; cased 175 feet.
Worthington	Nobles	600	-----	-----	-----	Unsuccessful.
Wyoming	Chicago	505	8-6	Many.	-13	

¹ Record, Minn. Geol. Surv. Bull. 5, Gas in Minnesota, pp. 23-24.² Report on Irrigation, 52d Congress, 1st session, Senate Ex. Doc. No. 41, part 2, pp. 72-74, Washington, 1893.³ Record, Report of Special Comm. U. S. Senate on Irrigation and Reclamation of Arid Lands, vol. 4, p. 48, Washington, 1890; Minn. Geol. Surv. Bull. 5, Gas in Minnesota, pp. 27-31.⁴ Record Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, p. 42; Minn. Geol. Surv., 13th Report, 1884, pp. 57-58.⁵ Record, Minn. Geol. Surv., 13th Rept., 1884, p. 63; Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, p. 140.⁶ Ibid., pp. 59-63; *ibid.*, p. 140.⁷ Record, Minn. Geol. Surv., 14th Rept., 1885, p. 15.⁸ Record, Minn. Geol. Surv. Bull. 5, Gas in Minnesota, pp. 25-27; Am. Geologist, vol. 3, p. 343.⁹ Record, Minn. Geol. Surv., 14th Rept., 1885, pp. 351-352.

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MISSISSIPPI.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Artesia (44½ miles south).	Lowndes.....	700	4-3	10	-90	
Bay St. Louis	Hancock	400-760	4½-2	100-5	Flow.	Many wells. Temperature of deeper wells 78°.
Biloxi	Harrison	850				
Bigbee Valley	Noxubee	±500			Flow.	
Bonhomie	Perry	650			-30	
Brookville	Noxubee	680		10	-75	
Canton	Madison	1,021	8-3	90	+10	Temp. 74°.
Cliftonville	Noxubee	±500			Flow.	Three wells.
Columbus	Lowndes	400		Each 80	Flow.	Two wells; temperature 70°.
Ellisville	Jones	1,160	3			No water below 650 feet.
Forest	Scott	520			-90	Water at 220 feet, court-house well.
Greenwood	Leflore	400			+40	Three wells.
Do	do	506	6	400	-45	
Do	do	400			+40	Twenty wells in adjoining region.
Gulfport	Harrison	700	4½-2	80	+25	Temp. 71° ±.
Houston	Chickasaw	1,500	3	Few.	-50	
Indianola	Sunflower	800				Unsuccessful.
Jackson	Hinds	1,200		Many.		
Do	do	604		Many.		
Longview	Oktibbeha	936	10	25	-5	
Moorhead	Sunflower	950	3		+50	
Mechanicsburg	Yazoo	620	3		-40	
Macon	Noxubee	763			Flows.	Two wells.
Okolona	Chickasaw	600			-65	
Prairie Rock	Noxubee	±600			Flows.	Several wells.
Ravine	do	700		10	-25	
Ripley	Tippah	600	10-8		-25	
Revive	Madison	720			-20	
Sartalia	Yazoo	588	3	15	+4	
Scranton	Jackson	774	6	700	+45	Temp. 74°.
Do	do	750	3		Flows.	
Do	do	780	6			
Do	do	727	2			
Tchula	Holmes	800			Flows.	Two wells.
Do	do	456	2		+16	
Do	do	470			Flows.	
Vicksburg	Warren	1,060		Few.	Flows.	
Wesson	Copiah	1,300				Unsuccessful.
Do	do	1,400				
Yazoo City	Yazoo	635			+20	
Do	do	500	3		-140	
Do	do	475	4	40	+5	Two wells.
Do	do	740				
Do	do	800				
Do	do	1,254				
Yazoo City (18 miles southeast).	do	588			-130	
Yazoo City (25 miles southwest).	do	588	2	14	+12	Temp. 70°.
Yazoo City (4 miles west).	do	696	2		+9	

MISSOURI.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Annapolis (near)		663-400				Several prospect holes.
Bartlett	Shannon	+400				
Do	do	740	6	70	-340	
Baryties	Washington	495				Abandoned.
Bethany	Harrison	654	3½	5	Flows.	Temp. 47°.
Bethel (4 miles north)	Shelby	450	6	1	-90	
Birchtree	Shannon	+400				
Boonslick ¹	Howard	1,008	3	Many.		
Booneville	Cooper	403	6		-78	Water strongly mineral; abandoned.
Brookfield	Linn	451		30	-200	
Brunswick ²	Chariton	1,505	6-4	7	Flows.	Mineral water.
Chillicothe	Livingston	700				No water.
Do	do	539		Many.	-90	
Do	do	481		2	Flows.	
Clayton	St. Louis	1,060				
Clinton	Henry	650	8	200	+20	
Do	do	850	8	175	+20	
Do	do	900	10	400	+20	
Do	do	900	6	125	+20	
Do. ³	do	800	8-5½	400	+10	Water also at 310 and 425 feet.
Do. ⁴	do	913		2,700		Temp. 64°.
Concordia	Lafayette	+200				In progress.
Diamond	Newton					
Eldorado Springs	Cedar	1,400	8		-28	Sulphur water.
Epworth	Shelby	410		1	-80	
Farmington (near)	St. Francois	442,650	2½			Prospect borings for lead.
Fulton	Calloway	750	8	30	-70	
Galbraith Spring ⁵	McDonald	804		Many.		
Granby (sec. 6)	Newton	876	8	600	-40	
Higginsville	Lafayette	1,512	12-5	30	-80	
Jackson	Cape Girardeau	531	4½	Many.	-3	Sulphur water; not in use.
Jefferson City	Cole	1,365				
Joplin		1,375	6	30	-80	Ferruginous water.
Kansas City ⁶	Jackson	1,000-425			-30	Several test borings for gas. Water from 380-390 feet, 590 feet, and 995 feet. Brackish and sulphur water.
Lagrange ⁷	Lewis	840		60		Brackish.
Lamar	Barton	1,000	6	Many.	-150	Good water. Abandoned.
Do	do	+2,000				
Lanahan	McDonald	1,428	6	50	Flows.	Sulphur water.
Lebanon ⁸	Laclede	1,002	8	1	-200	Water at 135 and 750 feet.
Do	do	453	6½	35		Water at 380 and 420 feet.
Lisle	Jackson	405				No water.
Lonetree		1,000				
Louisiana ⁹	Pike	1,275		Many.	Flows.	Temp. 64.2°.
Mexico	Audrain	588	8	10	-100	
Do	do	1,125	8	70		
Do	do	1,100	5½		-80	
Do	do	+1,800				For oil or gas, unsuccessful. Salt water.
Mine Lamotte	Madison	670	2	4	Flows.	
Moberly		510	8	300	-200?	Two wells.
Montgomery City	Montgomery	1,500	10-5½		-30	
Do	do	600	6	70		Temp. 53°.
Mountainview	Howell	645	6		-509	
Nevada	Vernon	860	10	560	-80	
Do	do	1,001	8	700	-80	Flows to +9 feet when not pumped.

¹ Analysis, Mo. Geol. Surv., vol. 3, p. 71.² Analysis, *Ibid.*, pp. 96-97.³ Analysis, Mo. Geol. Surv. Reports, vol. 3, pp. 85-87, 118-119.⁴ Analysis, *Ibid.*, pp. 120-121.⁵ Analysis, Mo. Geol. Surv. Reports, vol. 3, pp. 117-118.⁶ Analysis, U. S. Geol. Surv., 17th report, 1895-96, part 2, p. 827.⁷ Analysis, Mo. Geol. Surv. Reports, vol. 3, pp. 141-143.⁸ Record, Geology of Missouri, by Broadhead, part 2, p. 86.⁹ Record and analysis, *Ibid.*, pp. 94-95.

MISSOURI—Continued.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Nevada ¹	Vernon	800		165	Flows.	
Oakdale	Shelby	+400				
Osceola	St. Clair	500	7½		-20	Several water horizons.
Philadelphia	Marion	470, 558		300	-6	Two wells; much water; little oil.
Poplarbluff	Butler	600	8-6		-10	
Potosi	Washington	522-585	2		-66	Three wells.
Do	do	414			-2	
Racine (4 miles north)	Newton	1,244	9		-80	
Randolph Springs ²	Randolph	969	4	120	Flows.	Temp. 58°; mineral water.
Rockport	Atchison	678	8-6		-16	Prospect hole for coal; water at 143 feet.
St. Charles	St. Charles	1,276	6	40	-40	
St. Charles (2 miles west).	do	1,365				
Ste. Genevieve	Ste. Genevieve	700-800				For oil or gas; unsuccessful.
St. Joseph	Buchanan	1,000	6			Prospect for coal.
Do	do	1,300	6			Do.
Do	do	1,805	6			Temp. 82°; water mineral.
St. Joseph (5 miles east).	do	500	6	Few.		
St. Louis	St. Louis	400-700		30	-200	Many wells.
St. Louis (asylum)	do	3,843½		Few.		Temp. 105°; salty water.
St. Louis (Belcher) ³	do	2,176		1		3 per cent salt at 1,231 feet; temp. 66°.
Do. ⁴	do	2,199	9-3½	75	Flows.	Temp. 73.4°; water from 1,515 feet.
Do. ⁵	do	+1,590	6-3½			Gas at 466 feet; salt water at 520 feet; temp. 69° at 1,351 feet.
St. Louis (power house).	do	1,474			-70	
Near Chain of Rocks	do	735	6	70	-45	Water slightly sulphurous.
Sedalia (2 miles south).	Pettis	1,500	9-6			Prospect hole; full of water.
Springfield	Greene	755	6	750		Water at 610-620 feet.
Steen Prairie	Maries					
Sullivan (5 miles south).	Crawford	1,200			To surface.	Water also at 20, 240, and 800 feet.
Topsy	Mercer	+400				
Truesdall	Warren	+400				
Unionville	Putnam	700				Some water at 215 feet; abandoned.
Warrenton	Warren	450	6-4	1	150	Three wells.
Webb City	Jasper	500	7½		-20	Several water horizons.
Westplains	Howell	575	10	100	-40	
Winona	Shannon	700	8, 4-3	Many.	-400	Two wells.
Wright City	Warren	406	6		-70	Fine water.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN MISSOURI.

Report on the Mineral Waters of Missouri, by Paul Schweitzer, Missouri Geological Survey, 1890-1892, Vol. III, 256 pages. Jefferson City, 1892.

¹Analysis, Mo. Geol. Surv. Reports, vol. 3, pp. 121-122.

²Analysis, *Ibid.*, pp. 73-74.

³Analysis, Mo. Geol. Surv. Reports, vol. 3, pp. 79-81.

⁴Analysis and record, St. Louis Acad. Science, Trans., vol. 1, pp. 80-86, pl. 5.

⁵Record, Am. Jour. Science, 2d series, vol. 15, pp. 460-461.

MONTANA.

Location.	County.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
		<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Billings.....	Yellowstone	1,000				All in shale.
Bozeman.....	Gallatin	600				Bored for oil; unsuccessful.
Chinook ¹	Choteau	956			-50	Waters also at 112, 220, 540, and 620 feet.
Fort Assiniboine.....	do	1,950				Small flow of gas; no water below 65 feet; all clay.
Fort Keogh.....	Custer	811		15	Flows.	
Glendive (court-house).....	Montana	500				Unsuccessful.
Helena.....	Lewis and Clarke.	1,002				
Do.....	do	1,023				Good flow; abandoned.
Do.....	do	900			-100	
Junction.....	Yellowstone	500			Flows.	Small flow also at 144 feet.
Miles City.....	Custer	472	4-2½		Flows.	
Do.....	do	481	4-2½		Flows.	
Do.....	do	456	4-2½		Flows.	
Miles City (court-house).....	do	509	4-2½		Flows.	
Miles City ²	do	456		5	+16	Temp. 57°.
Do.....	do	535	4	2		
Miles City (35 miles west).....	do	420	4-2½		Flows.	
Miles City.....	do	452-514			Flow.	5 wells.
Do.....	do	479	9-2½		Flow.	
Miles City (10 miles east).....	do	553			Flows.	
Miles City (Reform School).....	do	507			Flows.	
Rosebud.....	do	485-502	4-2½		Flows.	3 wells.

¹ Report on Irrigation, 52d Cong., 1st sess., Senate Ex. Doc. 41, part 2, pp. 72-73. Washington, 1893.² Record, Report on Irrigation, 52d Cong., 1st sess., Senate Ex. Doc. No. 41, part 2, pp. 73, 93. Washington, 1893.

[Continued in Water-Supply Paper No. 61.]