

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

PRELIMINARY LIST

OF

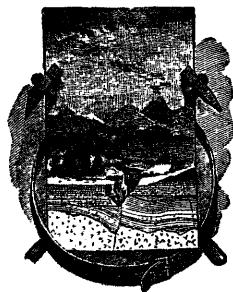
DEEP BORINGS IN THE UNITED STATES

SECOND EDITION, WITH ADDITIONS

BY

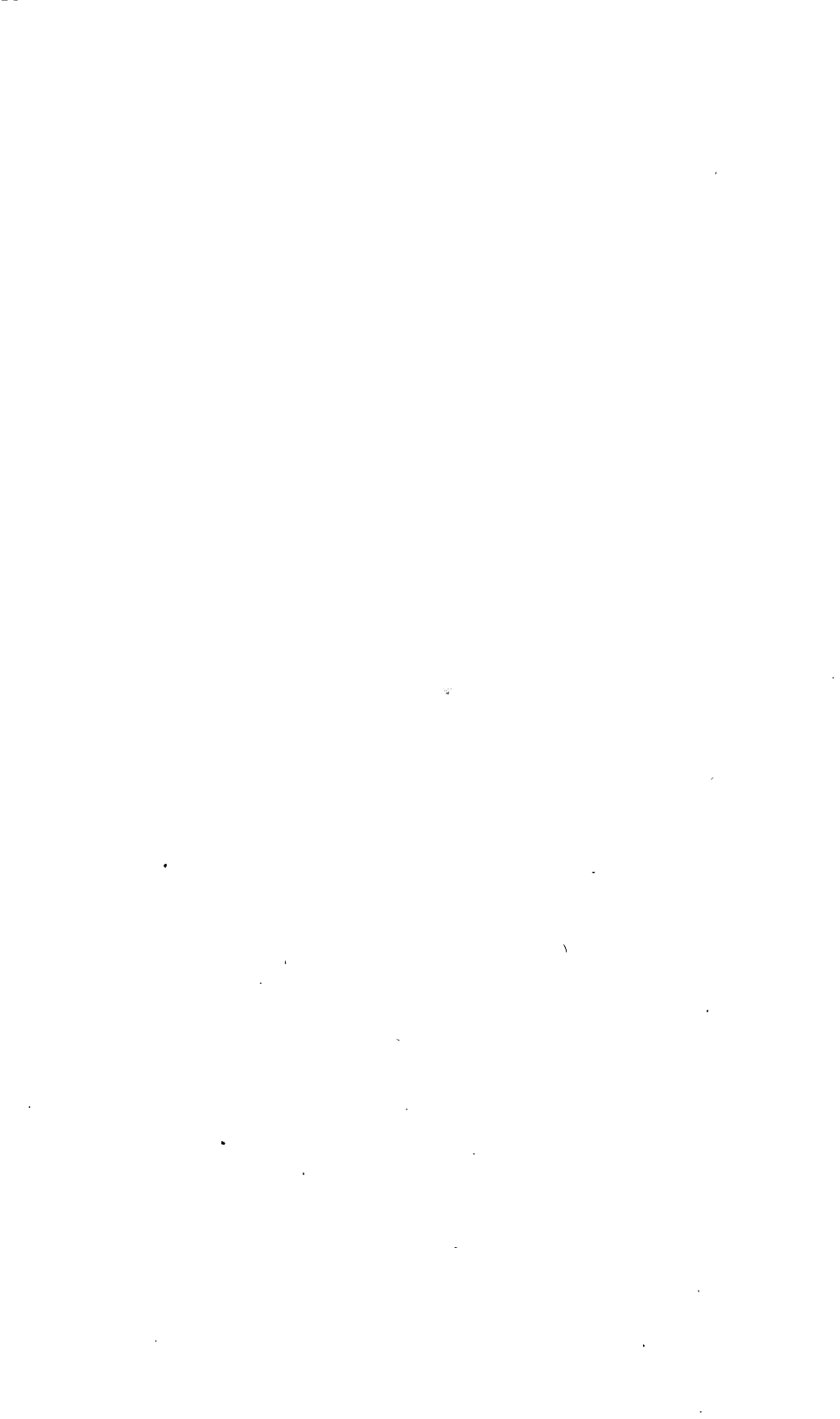
N. H. DARTON

PROPERTY OF U. S. GEOLOGICAL SURVEY.



WASHINGTON
GOVERNMENT PRINTING OFFICE

1905



CONTENTS.

	Page.
Letter of transmittal	5
Introduction	7
Alabama	8
Publications relating to deep borings	10
Arizona	11
Publications relating to deep borings	11
Arkansas	11
Publications relating to deep borings	14
California	14
Publications relating to deep borings	18
Colorado	19
Publications relating to deep borings	23
Connecticut	23
Delaware	24
Publications relating to deep borings	24
District of Columbia	24
Florida	25
Georgia	26
Publications relating to deep borings	30
Idaho	30
Illinois	30
Publications relating to deep borings	38
Indiana	38
Publications relating to deep borings	46
Indian Territory	46
Iowa	47
Publications relating to deep borings	50
Kansas	50
Publications relating to deep borings	56
Kentucky	57
Publications relating to deep borings	59
Louisiana	60
Publications relating to deep borings	63
Maine	63
Maryland	63
Publications relating to deep borings	64
Massachusetts	64
Michigan	65
Publications relating to deep borings	69
Minnesota	70
Publications relating to deep borings	72
Mississippi	73

	Page.
Missouri	75
Publications relating to deep borings	78
Montana	78
Nebraska	79
Publications relating to deep borings	81
Nevada	82
New Hampshire	82
New Jersey	82
Publications relating to deep borings	85
New Mexico	85
Publications relating to deep borings	86
New York	87
Publications relating to deep borings	93
North Carolina	94
Publications relating to deep borings	94
North Dakota	94
Publications relating to deep borings	95
Ohio	96
Publications relating to deep borings	109
Oklahoma	109
Oregon	110
Pennsylvania	110
Publications relating to deep borings	128
Rhode Island	128
South Carolina	128
Publications relating to deep borings	129
South Dakota	129
Publications relating to deep borings	140
Tennessee	141
Publications relating to deep borings	141
Texas	142
Publications relating to underground waters	155
Utah	156
Vermont	157
Virginia	157
Publications relating to deep borings	158
Washington	158
West Virginia	159
Publications relating to deep borings	172
Wisconsin	172
Publications relating to deep borings	174
Wyoming	174
Publications relating to deep borings	175

LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
DIVISION OF HYDROGRAPHY,
Washington, D. C., June 15, 1905.

SIR: I transmit herewith a preliminary list of deep borings in the United States (400 feet or more in depth), by Mr. N. H. Darton, and 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.

By N. H. DARTON.

INTRODUCTION.

The first preliminary list of deep borings in the United States was issued as Water-Supply Papers Nos. 57 and 61. The present publication includes all of the wells listed in these two papers, together with many additional borings, mostly of recent date. Messrs. M. L. Fuller and A. C. Veatch, of the eastern section of hydrology, and other geologists of the Survey have contributed many new data. Descriptions of borings published in reports issued since 1901 have been incorporated as far as practicable. All the entries are by counties.

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.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Baldwin County:					
Fort Morgan	700				
Barbour County:					
Enfaula	+400	4	5½		
Do.	950	6-4	6	- 50	
Harris	700				
Do.	780	3		+ 15	Atandoned; milky water at 140 feet to -15 feet.
Spring Hill	600			- 18	
Blount County:					
Oneonto	600				
Reeds Gap	1,930	6			
Bullock County:					
Bughall	920				Ursuccessful.
Fitzpatrick	900	6		- 30	
Do.	1,300	6	12	- 30	
Union Springs	1,000		Many.		
Do.	848½	6-2½	60		
Do.	848½	8	150	-240	
Do.	569		Many.		Good water.
Do.	750		Many.		Do.
Butler County:					
Greenville	+400	10-8	100	- 60	Two wells.
Calhoun County:					
Anniston	400-550	8	695	- 30	Several wells.
Do.	558	6½		- 4	
Do.	480	10	{ 1,200 to 1,900 }	- 80	
Choctaw County:					
Bladen Springs	1,300			+ 70	Water salt; first flow at 200 feet, second flow at 600 feet.
Butler	660			- 30	
Colbert County:					
Sheffield	1,550				
Coosa County:					
Hanover (?)	480	4		- 40	
Covington County:					
Andalusia	1,145				Water.
Do.	420				
Crenshaw County:					
Brantley	600	4			Good flow; 2 wells.
Cullman County:					
Cullman	700				City well.
Dallas County:					
Boguechitto	±400		0½		In sec. 8, T. 18, R. 8 E.
Do.	460	6	75	+ 25	Temp., 68°.
Burton Hill	544				
Cahaba ¹	400				Temp., 73½°.
Cahaba (on river) ¹	590	6	80	+ 22	Temp., 70°.
Cahaba (5 miles below) ¹	560		Each 250		2 wells.
Cahaba ¹	728		1,200		Temp., 77½°.
Do.	741		1,200	-716	
Do.	400,555				
Hunters Field	550	5	70	+ 18	
Selma ²	409		230		Temp., 67½°.
Do.	470	6			Temp., 72°.
Do.	600	6	80	+ 16	Do.
Do.	487	6	110	+ 28	Temp., 68°.
Do.	650		100	+ 40	4 wells.
Do.	425-500			Flow.	6 wells.
Do.	500-700	5-6	10 +	+ 3	
Do.	424-780	2½-6	10-110		
Tank Station	560	6	90	+ 35	Temp., 70°.
Fayette County:					
Fayette	500			- 30	
Franklin County:					
Russellville	1,400				2 miles east; unsuccessful
Do.	1,300				
Greene County:					
Boligee ¹	415			Flows.	Temp., 68°.
Do. ¹	420			Flows.	Temp., 66°.
Do. ¹	468			Flows.	Temp., 66½°.
Do. ¹	522			Flows.	Temp., 70°.

¹ Record, Am. Assoc. Adv. Science Proc., vol. 10, p. 95.² Ibid, pp. 97-98.

ALABAMA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Greene County—Continued.					
Bolgee (at Finche's ferry). ¹	560				Temp., 71°.
Do.....	500		40	+ 22	
Do.....	450	3	10	+ 10	
Burton Hill ¹	544				Temp., 70°.
Do. ¹	420				
Do. ¹	555				Temp., 75°.
Eutaw ¹	743			- 10	
Eutaw (10 miles southwest). ¹	440-550				Temp., 71°-72½°; 4 wells.
Eutaw.....	400-1,106	3-4			Several wells.
Do.....	420				
Forkland.....	575		20	+ 3	
Hairston.....	530		4	+ 24	2½ miles east.
Steeles Bluff.....	400	3	22	+ 25	
Hale County:					
Akron.....	400	3		- 15	
Evansville Station.....	633	4		- 3	
Greensboro.....	400-800		Many.	- 30	Several wells; good water.
Do.....	1,600				
Greensboro (10 miles southwest).	450 or 850?	12	Many.		
Laneville.....	710			Flows.	Temp., 75°.
Do.....	719			Flows.	Temp., 76°.
Do.....	750			- 20	In progress.
Do.....	715		7, 10		2 wells.
Do.....					
Lock No. 2.....	400	3	30		
Millwood.....	500	6	75		
Do.....	500	4½	75	+ 2	2 wells.
Moundville.....	600		1	- 1	
Do.....	480	3-1½	10	-1 to + 16	
Newbern.....	475		30	+ 4	
Do.....	410-500	One, 3	3-35	One flows.	5 wells.
Powers.....	406	3	7½	+ 25	
Sawyer ville.....	440-640	3	117	-8 to - 10	4 wells.
Stewart.....	600			+ 8	
Do.....	400-620	3	6, 8	-39 to +35	
Henry County:					
Dothan.....	625	8		-150	
Houston County:					
Columbia.....	485	8-6	50	- 8	
Dothan.....	625	8			
Do.....	625	8-6	50	-150	
Jackson County:					
Carpenter.....	400				Unsuccessful.
Larkinsville.....	400				Do.
Jefferson County:					
Birmingham.....	550		70	- 30	
Lauderdale County:					
Florence.....	+400				For gas; unsuccessful.
Lawrence County:					
Jennings (3 miles southeast). ²	5,120	6			Gas, oil, and salt water.
Jennings.....	2,120	6			
Town Creek ³	515				Abandoned.
Macon County:					
Armstrong.....	442				Good water.
Fort Davis.....	422	4		- 62	
Roba.....	450				Good water supply.
Tuskegee.....	500	6			Unsuccessful.
Do.....	760	8			Do.
Madison County:					
Hazlegreen.....	954				For oil; unsuccessful; yields some gas.
Newmarket ⁴	965	2		Flows.	
Marengo County:					
Demopolis.....	765	3	30	+ 20	Temp., 64°.
Do.....	735	4	15	+ 12	
Do.....	850	6½	60	Flows.	
Do.....	800	3	Many.	+ 52	
Demopolis (3 miles south).	1,350		Many.	- 30	
Demopolis (4 miles northeast).	500		200	Flow.	Several wells.
Faunsdale.....	700		8	+ 2½	
Do.....	450-830				5 wells.

¹ Record, Am. Assoc. Adv. Science Proc., vol. 10, p. 95.² Ala. Geol. Surv. Rept. Valley Regions, part 1, pp. 61-62.³ Record, Pa. 2d Geol. Surv. Rept. I⁷, p. 283.⁴ Record, Ala. Geol. Surv. Rept. Valley Regions, part 1, p. 127.

ALABAMA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Marengo County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Linden	1,193	.....	1	Flows.	Water at 1,040 to 1,115 feet.
Do.	1,200	1½	• 20	Flows.	
Marshall County:					
Guntersville	1,006	8-6	.....	.....	Temp., 60°.
Mobile County:					
Fort Gaines	919	6	.....	.....
Mobile	700	6	400	.....	Temp., 76°.
Do.	735	.....	Many.	+ 90	Temp., 78°.
Do.	800	6	500	.....	Temp., 76°.
Do.	800	6	1,000	+ 70	Temp., 78°.
Do.	850	.....	.....	.....
Do. ¹	1,556	.....	.....	.....
Do.	1,526	.....	.....	.....
St. Elmo	550	.....	.....	.....
Montgomery County:					
Montgomery	650-450	6	974-300	- 60	4 wells; originally flowed to +20 feet.
Do.	448-1,091	.....	60-130	-45 to +6	Several wells.
Sprague Junction	400	8-6	.....	- 75	
Morgan County:					
Hartsell ²	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 160 feet.
Perry County:					
Uniontown	895	8	.....	-125	
Do.	1,195	8	300	-120	Water from 870 feet.
Do.	1,085	.....	.....	-200	
Uniontown (10 miles south)	875	4-3	10	- 40	Water at 775 feet.
Pickens County:					
Dancey	450-903	One 2	One 3½	-22 to +20	
Sherman	600-725	4	6½-30	.....	3 wells.
Pike County:					
Troy	2,700	.....	.....	.....	Unsuccessful.
Do.	2,632	.....	75	.....
Do.	350-650	.....	.....	.....
Hannon	480	4	.....	- 40	
Russell County:					
Hatchechubbee	420	.....	8	No flow...	Small supply of water at 250 feet.
Hurtsboro	580	4	.....	- 9	
Do.	530	4	±10	- 9	
Do.	550	3	±11	- 9	
Do.	565	3	±12	- 23	
Do.	526	3	.....	- 8	
Oswichee	465	.....	12	.....
Pittsboro	445	.....	.....	.....
Scale	400	4	.....	- 75	
Sumter County:					
Epes	700	.....	3	+ 1½	
Do.	500-930	2-5	1-28	-24 to +30	Many wells.
Livingston	1,010	.....	.....	.....	2 wells.
Do.	1,062	.....	.....	.....
Warsaw	400-702	2-4	1-5½	-30 to +40	Several wells.
Tuscaloosa County:					
Holton	544	.....	50	.....
Tuscaloosa	520	6	.....	- 14	
Willfords Landing (Sylvan post-office)	400?	.....	.....	.....
Sledges	490	4	Many.	- 60	

¹ Science, vol. 16, p. 836, Nov. 21, 1902.² Ala. Geol. Surv. Rept. Valley Regions, part 1, pp. 62-68.

LIST OF PUBLICATIONS RELATING TO DEEP BORINGS IN ALABAMA.

Report on Valley Regions, Alabama Geological Survey, part 1.
 American Association for the Advancement of Science Proceedings, vol. 10.
 Science, vol. 16, Nov., 1902.

ARIZONA.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Graham County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Pima	420				Unsuccessful.
Safford	500			No flow.	
Thatcher	430		Few.	No flow.	
Maricopa County:					
Gila Bend	1,300			—700	Abandoned.
Phoenix	750	5		—20	
Do.	475				
Do.	1,420				
Phoenix (12 miles west)	1,475				Not completed.
Sentinel	500				
Wickenburg, northwest of.	1,029	5	50	—185	No good results.
	400				
Mohave County:					
Drake	488	10			In progress.
Haviland	600	10	Many.		
Kingman	900		{No water.}		60 miles north.
Sulphur Springs Valley ¹ .	1,100				
Yucca	765				Satisfactory water supply
	534			—325	
Navajo County:					
Winslow	1,700				No fresh water.
Pinal County:					
Florence	413	6	Few.		Well never used.
Yavapai County:					
Ash Fork	1,025	10	No water.		In volcanic rock.
			No water.		
Aubrey	936	12-8			
Yuma County:					
Mohawk	1,100	5½-4½			3 wells.
Do.	500		28		

¹ Record, Am. Philos. Soc. Proc., vol. 40, No. 167, pp. 161-164, 1902.

PUBLICATIONS RELATING TO DEEP BORINGS IN ARIZONA.

American Philosophical Society Proceedings, vol. 40, No. 167., pp. 161-164, 1902.

ARKANSAS.

Location.	Depth.	Diameter.	Yield per minute.	Depth to water.	Remarks.
Ashley County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Crossett	976			— 74	Fresh water 80-110 feet. Sulphur water 450 feet. Salt water 975 feet.
Do.	450			— 36	
Portland	400			— 80	
Benton County:				— 30	Abandoned.
Gentry	492	8-6½	420	— 19	Alkaline.
Do.	± 700			No flow.	
Do.	1,000	7		— 30	
Do.	±1,350				
Bradley County:					
Warren (1 mile east)	648	2½	100	— 36	Water at 700 and 900 feet.
Chicot County:					
Dermott	750	4-2½		— 11	
Clark County:					
Arkadelphia (1 mile east).	551			Flow.	Strong flow of salt water at 450, rock at 551 feet.
Arkadelphia (2 miles east).	410	6-4	Large.	+ 26	
Gurdon	760	10-6			Oil well; abandoned artesian water at 193 feet; salt water at about 600 feet.
Gurdon (4 miles south of, at Old Empire mill).	402	3½		— 60	
Okolona (3 miles south-east).	400			— 30	Hard water.
Cleveland County:					
Anderson	432	2½	42	— 32	Sulphur water. No water.
Kedron (1 mile west, at Kendall's mills)	457	3	Large.	— 50	
Rison	700				

ARKANSAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Columbia County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Waldo.....	1,038	5-4	.....	.....	Abandoned. Some water at 540 feet, rose to -70 feet.
Craighead County:					
Jonesboro (waterworks)	+600				
Jonesboro	1,298	8-6	Many.	- 35	
Crittenden County:					
Turrell	860	6-4	Many.	- 10	
Dallas County:					
Fordyce	502	4	60	- 70	Temp., 72.5°.
Desha County:					
Arkansas City	552	6	65	- 12	Temp., 72°.
Drew County:					
Blissville	490	10-4		- 11	Water at 30, 80, 200, 400, and 490 feet.
Monticello (cotton mill) ..	810	6-2½	52	-144	
Monticello (city well) ..	750	8	110	-126	Temp., 78°.
Monticello (ice works) ..	800	2½		-145	
Monticello	500	8		-125	
Do	604	8-4½	100	-110	
Wilmer	455	4-2½	380	- 2	Temp., 72°; pumped.
Do	800	1		Flows.	Water at 184, 313, 400, and 890 feet.
Do	400				
Garland County:					
Hot Springs	860	6	13		
Hempstead County:					
Columbus	730	3			No water.
Fulton	700	2		Flows.	Good water; well caved because it was not cased.
Fulton (3½ miles south, at Moore place) ..	480	2		Flows.	
Fulton (4½ miles south, at Smith place) ..	480			Flows.	
Fulton (7 miles south, at Ferguson place) ..	655	4		Flows.	Caved in and abandoned.
Do	755				No water.
Guernsey (railroad well)	460	6	58	0	Water first struck at 316 feet.
Guernsey (1¼ miles south)	434	2		+ 18	
Guernsey (1¼ miles southeast) ..	427	2		+ 6	
Hope (city well)	950	5-4			Water 375 to 440 feet; no water below; abandoned.
Hope	404			- 70?	
Hope (waterworks)	500	9-6	150	- 66	
Hope (ice factory)	428	4		- 58	
Hope (oil mill)	426	3		- 62	
Hope	400	4		- 47	
Hope (5 miles southeast) ..	580				At abandoned.
Hope	400	4		- 2	
Do	410			- 30	
Do	406			- 15	
Do	420			- 18	
Do	427			- 26	
Springhill (1 mile north) ..	589	2	Large.	- 30	
Springhill (1½ miles northwest) ..	555	2	Large.	- 20	
Springhill	500	2		± 25	
Springhill (2 miles northwest) ..	434	4		Flows.	
Springhill	541	2		- 16	
Do	408-498	2		{ -37 to +18	5 wells.
Washington	750	3			No water.
Yancy	700				Do.
Hot Spring County:					
Malvern	478		50		
Howard County:					
Allbrook (1 mile east) ..	430	2	6	+ 17	
Allbrook (1 mile north) ..	500	3		- 18	
Allbrook (2¼ miles north)	480	3		- 80	Water first encountered at 380 feet.
Allbrook (2 miles west) ..	466	3		Flows.	
Allbrook	400-496	2-3		{ -22 to +17	Several wells.
Buckrange, center point (2 miles south) ..	500	2		- 98	
Saline Landing ¹	466				
Saratoga	600	3		No flow.	Supplies gin.
Do	440	3			

¹ Record, Ark. Geol. Surv. Rept., vol. I, 1891, p. 105.

ARKANSAS—Continued.

Location.	Depth.	Dia- meter.	Yield per minute.	Height of water.	Remarks.
Howard County—Continued.	<i>Fet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fet.</i>	
Saratoga (3 miles east) ..	788	3½-2	-----	-50	Brackish.
Saratoga (4 miles west, at Saline Landing) ..	455	2½	1	+12	
Saratoga	465	-----	-----	-16	
Tollette	460	3	-----	-30	
Independence County:					
Cushman	2,040	5	10	-----	
Jackson County:					
Newport (1 mile south- west) ..	1,000	8	Many.	-20	
Jefferson County:					
Pine Bluff (waterworks) {	905	8-6	700	-31	2 wells.
Pine Bluff (railroad) ...	915				
Pine Bluff (Sawyer-Aus- tin Lumber Co.) ..	+890	8	650	-22	Temp., 64°.
Pine Bluff	915	8	-----	-47	
Pine Bluff	840	10-5½	185	-20	
Redfield	545	6	20	-60	
Johnson County:					
Clarksville	500	6	-----	-15	
Lafayette County:					
Frostsville	464	6	-----	-36	Water at 112 to 120 and 140 to 160 feet.
				-54	
New Lewisville (2 miles west, at Kelly station) ..	502	-----	-----	-30	Water at 204 and at 468 to 480 feet; lower water strong with H ₂ S.
Stamps	415	8	175	Flows.	Water 233 to 345 feet; sul- phur water at 415 feet; pumped.
Little River County:					
Hudson	830	4	-----	-40	Water hard.
Do	900	-----	-----	-----	
Do	800	4	Many.	No flow.	No water.
Rocky Comfort (1 mile south) ..	700-800	-----	-----	-----	
Rocky Comfort (3½ miles southwest) ..	500	4-2	-----	-30	Do.
Rocky Comfort (10 miles south) ..	560	2	-----	-----	Do.
White Cliffs	460	-----	-----	+25	
Do	450	-----	-----	+ 8	Temp., 65°.
Do	540	-----	-----	-60	Temp., 64°.
White Cliffs (1 mile north) ..	400	-----	-----	Flows.	
White Cliffs (1 mile south) ..	400	-----	-----	Flows.	Salty.
White Cliffs	535	3	-----	Flows.	
Logan County:					
Magazine	1,800	-----	-----	-----	
Madison County:					
Mante	840	6	-----	Flows.	
Miller County:					
Homan (4 miles north- east) ..	486	-----	-----	Slight flow.	2 wells.
Homan (4 miles east) ..	492	-----	-----	Flows.	
Homan (2 miles west) ..	408	2	-----	- 8	Brackish water.
Texarkana (waterworks) ..	930	12-6	190	-28	Do.
Texarkana (1½ miles east)	1,350	12-6	-----	-30	Oil wells; unsuccessful.
Texarkana (16 miles east, at Dooley's ferry) ..	700	-----	-----	-----	Abandoned.
Nevada County:					
Emmet (4 miles south) ..	416	3	10	Flows.	
Emmet (5 miles south) ..	428	-----	-----	- 6	
Emmet (5 miles south- east) ..	419	2	2	+13	Many flowing wells in this region.
Emmet (4½ miles south- east) ..	400	2	-----	+17	
Emmet (6 miles south- east) ..	475	3	-----	-17	
Laneburg (¼ mile north) ..	568	3	+10	- 4	
Laneburg (2 miles north) ..	465	3	2	+11	
Laneburg (1 mile north) ..	520	2	-----	-32	
Laneburg (2¼ miles west)	456	2	-----	0	
Do	436	2	2	+ 5	
Laneburg	419-542	-----	-----	-----	Several wells.
Verde	400-570	2-3	-----	-44 to +17	Do.
Ouachita County:					
Bearden (1 mile east, at Best) ..	1,001	6	200	-40	Water salty and alkaline.
Millville	470	-----	-----	-45	Abandoned; too much quicksand.

ARKANSAS—Continued.

Location.	Depth.	Diam-eter.	Yield per minute.	Height of water.	Remarks.
Phillips County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Helena.....	500	12-6	10	-30	
Do.....	543	8	656	-30	
Pike County:					
Pike City (5 miles south).	1,400	.....	Small.	Flow.	Oil well; unsuccessful.
Bowen.....	400	.....	Many.	No flow.	Several wells of this kind in the county.
Polk County:					
Mena.....	1,615	.....	.....	-20	Abundant supply; proposed as supply for city waterworks.
Do.....	+700	10	Many.	No flow.	
Pope County:					
Russellville (railroad well).	1,006	12-10	.....	.....	Abandoned; a little water at 90 feet.
Randolph County:					
Pocahontas.....	650	6	.....	.....	In progress.
St. Francis County:					
Forrest City.....	465	4	Many.	.....
Do.....	460	6	.....	-160	
Sebastian County:					
Huntington.....	501	5½	20	-25	
Sevier County:					
Ben Lomond (1 mile south).	400	.....	.....	-6	Water struck at 300 feet.
Ben Lomond (¼ mile south).	540	3	.....	-125	
White Cliffs.....	460	.....	.....	+25	
Do.....	450	.....	.....	+8	Temp., 65°.
Do.....	540	.....	.....	-60	Temp., 64°.
Washington County:					
Fayetteville¹.....	1,480	.....	.....	.....

¹ Record, Ark. Geol. Surv. Rept., vol. 2, 1891, pp. 67-69.

LIST OF PUBLICATIONS RELATING TO DEEP BORINGS IN ARKANSAS.

Arkansas Geol. Surv. Report, vol. 1, 1891.

Geology and water resources of northern Louisiana and southern Arkansas, by A. C. Veatch: Prof. Paper U. S. Geol. Survey No. 46. (In preparation.)

CALIFORNIA.

Location.	Depth.	Diam-eter.	Yield per minute.	Height of water.	Remarks.
Alameda County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Alameda.....	489	.....	.....	Surface.	
Do.¹.....	409	.....	.....	-8	
Centerville.....	442	.....	.....	Flows.	
Fitchburg².....	400-500	7-12	1,000	No flow.	Several wells.
Irvington.....	450	.....	.....	Flows.	
Oakland.....	506	.....	112	Flows.	
Ontario.....	457	9½	.....	No flow.	
Butte County:					
Chico.....	686	.....	Several.	No flow.	
Oroville.....	800	3	4	lows.?	
Fresno County:					
Coalinga³.....	400-650	.....	.....	.....	Numerous oil wells in two groups; one 3 miles west, the other 9 miles north.
Fresno.....	575	.....	.....	.....
J. G. James's ranch.....	600-800	7-8	Flows.	+3	Several wells. Temp., 60°.
Kingsburg.....	600	.....	.....	No flow.	
Glenn County:					
Norman (2 miles north)⁴.....	940	2	4	+15	Small amount of gas at 337 feet.
Norman (about ½ mile southeast).	1,100	.....	.....	Surface.	Small amount of gas at 500 feet.
Inyo County:					
Bishop.....	420	.....	.....	.....	In progress.

¹ Record, Cal. State Mining Bureau, 11th Rept., 1891-92, pp. 135-136.

² Ibid., p. 134.

³ Analysis, *ibid.*, 12th Rept., 1893-94, pp. 352-353.

⁴ Record, *ibid.*, 11th Rept., 1891-92, p. 224.

CALIFORNIA—Continued.

Location.	Depth.	Dia- meter.	Yield per minute.	Height of water.	Remarks.
Kern County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Bakersfield.....	480	8	30	Flows.	
Do.....	500	8	300	Flows.	
Do.....	1,100	.....	480	Flows.	
Do.....	600	8	30	Flows.	
Do.....	400	8	1,500	Flows.	
Buena Vista.....	410	.....	.....	.....	Oil at 332 feet.
Delano.....	713	15	3,470	Flows.	
Delano (5 miles south- west).....	822	.....	.....	— 3	
Delano (18 miles west) ..	828	11-7	1,077	.....	Water strata between 484 feet and bottom of well; sulphur and other min- erals.
Miramonte.....	636	8	1,670	Flows.	
Do.....	457	8	.....	.....
Semitropic.....	495	8-7	Many.	Flows.	
Smyrna Colony.....	524-600	.....	.....	.....	2 wells.
Sunset District ¹	500-1,350	.....	.....	.....	Numerous oil and brine wells.
Kings County:					
Hanford ²	500-800	9-7	100-400	Flow.	Numerous wells.
Do.....	1,300	.....	.....	.....
Lassen County:					
Bieber.....	740	4	.....	.....
Susanville.....	960	.....	.....	—10	
Los Angeles County:					
Alhambra.....	400	7	.....	.....	Oil well.
Clearwater (?).....	465	.....	Many.	.....
Downey.....	412	2	60	.....
Garvanza (west of).....	985	.....	.....	.....	For oil; unsuccessful.
Glendora.....	2,038	5½	.....	No flow.	
Long Beach.....	500	8	1,100	Flows.	
Do.....	460	9-7	Many.	Flows.	
Los Angeles ³	450-1,300	.....	.....	.....	Numerous oil wells; some abandoned.
Los Angeles (The Ivan- hoe). ³	+1,000	.....	.....	.....	Small supply of oil; aban- doned.
Los Angeles (United States Hotel). ³	+ 900	.....	.....	.....	Gas at 900 feet.
Los Angeles (Stewart and McFarland). ⁴	1,485	.....	.....	.....	For oil; unsuccessful.
Los Angeles (Angelina Heights). ³	1,186	.....	.....	.....	For oil or gas; abandoned.
Los Angeles (Boyle Heights). ³	600	.....	.....	.....	For oil; unsuccessful.
Los Angeles (Dr. Long's ranch). ³	500	7	.....	.....	Small supply of oil; aban- doned.
Los Angeles (Lookout Mountain). ³	550	.....	.....	.....	Do.
Los Angeles (few miles southeast). ³.....	.....	.....	.....	.....	Gas well.
Los Angeles (4 miles northwest). ⁵	820	.....	.....	.....	Small supply of oil.
Los Angeles (5½ miles west). ³	± 500	.....	.....	.....	Small flow of gas; aban- doned.
Los Angeles (6 miles west). ³	658-1,485	.....	.....	.....	Two wells, for oil; unsuc- cessful.
Los Angeles (10 miles north of west). ⁴	520	.....	.....	.....	Two wells, sulphur water and some gas; aban- doned.
Norwalk.....	480	4	.....	.....	No water.
Pasadena.....	1,200	.....	.....	.....	Numerous oil wells.
Pico.....	600-735	.....	.....	.....	Do.
Puente ⁶	100-1,750	.....	.....	.....
San Gabriel.....	+500	7	.....	.....
Madera County:					
Madera ⁷	1,200	.....	.....	— 3	
Do.....	680	.....	.....	+ 70	
Madera (6 miles west)...	633	7	4	Flows.	
Mendocino County:					
Potter Valley.....	400	.....	.....	— 11	
Merced County:					
Atwater.....	400	7	5	.....
Dos Palos.....	442-550	.....	.....	.....	Several wells.

¹ Cal. State Mining Bureau, 12th Rept., 1893-94, pp. 353-354; record, Cal. State Mining Bureau Bull. No. 3, Gas and Petroleum Yielding Formations, Central Valley, p. 30.

² Ibid., 11th Rept., 1891-92, p. 489.

³ Ibid., Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, pp. 14-17.

⁴ Ibid., 7th Rept., 1887, p. 78.

⁵ Ibid., p. 77.

⁶ Ibid., Bull. No. 11, Oil and Gas Yielding Formations of Los Angeles, Ventura, and Santa Barbara counties, part 1, pp. 18-21.

⁷ Ibid., 11th Rept., 1891-92, p. 211.

CALIFORNIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Merced County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Los Banos ¹	434	.....	.....	Flows.	
Merced.....	600-700	9	167-175	.....
Merced (13 miles south-west).	1,013	10	.....	+ 1½	Strongest flow at 665 and 680 feet.
San Lewis Ranch.....	410-426	7	128-160	.....	Two wells.
Modoc County:					
Cedarville.....	433	.....	.....	No flow.	
Eagleville.....	508	4½	.....	.....
Monterey County:					
Salinas.....	1,435	8	.....	— 6	
Do.....	1,100	11-9	.....	— 10	
Seaside (near).....	617	.....	30	Flows.	Main flow at 610 feet. Water-bearing beds at 270 and 540 feet.
Napa County:					
St. Helena.....	2,000	.....	.....	.....
Orange County:					
Fairview.....	450	7	.....	.....
Placer County:					
Auburn.....	730	.....	.....	.....
Sheridan ²	734	.....	.....	— 19	
Plumas County:					
Beckwith.....	400	3	80	Flows.	
Do.....	500-800	3	100	Flow.	Numerous wells.
Do.....	1,000-1,200	2-3	Many.	Flow.	
Beckwith (8 miles above).	900	3	Many.	.....	Very warm mineral water.
Summit.....	400-800	3	5-125	Flow.	Numerous wells.
Do.....	1,008	3-1	.....	Flow.	
Vinton.....	700	.....	150	Flows.	
Riverside County:					
Riverside.....	580	10	Many.	Flows.	
Winchester.....	400	.....	.....	.....
Sacramento County:					
Arcade.....	2,160	.....	.....	.....
Sacramento ³	876	.....	.....	.....	Gas well.
Do. ³	965	.....	.....	.....	Do.
Do. ³	970	.....	.....	Flows.	Water salty and alkaline.
Sacramento (9 miles northeast). ⁴	2,250	.....	.....	Flows.	Some gas.
San Bernardino County:					
Chino (about 2½ miles northwest).	600	.....	.....	.....	Abandoned.
Colton ⁵.....	.....	.....	.....	.....	408 flowing wells.
Danby.....	630	10	50	—200	
Fenner.....	800	10	Many.	—200	
Ludlow.....	1,800	.....	Few.	.....	Not in use.
North Cucamonga.....	450	.....	Many.	.....
North Ontario.....	2,200	.....	.....	.....	Failure.
San Bernardino.....	605	6	Many.	Flows.	
Do.....	425	3	76	Flows.	
Do.....	415	3	7	Flows.	
San Diego County:					
Flowing Well.....	± 400	.....	.....	.....
Point Loma.....	400	6-5	21	—253	
San Jacinto.....	456-650	7	.....	.....	Several wells.
San Francisco County:					
San Francisco.....	865	8-5	87	.....
San Joaquin County:					
Cutler Salmon Ranch.....	1,250	7-4	.....	.....	Gas well.
Lathrop Junction.....	1,420	8	.....	Flows.	Do.
Roberts Island.....	1,433	7-5	.....	Flows.	Gas well, saline water.
Stockton.....	420	8	.....	+	Warm water.
Stockton (S. F. and S. J. V. R. R.).	497	7	Many.	— 19	
Stockton ⁶	1,002	.....	.....	+ 7	Temp., 77°.
Do.....	1,400-2,000	.....	.....	.....	Gas wells.
Stockton (Jackson well) ⁷	1,700	12-9½	Many.	.....	Gas well.
Stockton ⁷	1,400	.....	.....	.....	Do.
Stockton Asylum (Jackson well). ⁸	+600-1,750	.....	Many.	.....	Two gas wells.
Stockton (St. Agnes College). ⁸	1,720	.....	Many.	.....	Do.
Stockton (court-house) ⁹ .	1,917	12-8	Many.	.....	Gas well.
Stockton (Citizens' Gas Co.).	2,061	.....	Many.	.....	Do.

¹ Record, Cal. State Mining Bureau, 10th Rept., 1890, p. 326.² Ibid., 11th Rept., 1891-92, p. 319.³ Cal. State Mining Bureau, 12th Rept., 1893-94, p. 350.⁴ Record, *ibid.*, 10th Rept., 1890, p. 505.⁵ Physical Data and Statistics of California (State Eng. Dept.), 1886, p. 530.⁶ Record, Cal. State Mining Bureau, 8th Rept., 1888, pp. 559-560.⁷ Ibid., Bull. No. 3, Gas and Petroleum Formations, Central Valley, p. 17.⁸ Ibid., p. 18.⁹ Ibid., pp. 15-16.

CALIFORNIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
San Joaquin County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Stockton	980-1,080		Many.	Flow.	Several wells; temp., 75°.
Stockton (9 miles south-east).	1,404	7-5	Many.		Some gas.
San Luis Obispo County:					
San Luis Obispo	928		Many.	Flows.	For oil; unsuccessful. Sulphur water; temp., 103°; gas at 600 feet.
Santa Barbara County:					
Carpinteria (2 miles from). ¹	700				Oil and gas well.
Moody Gulch ¹	1,400				For oil or gas.
Mount Diablo	900				
Santa Barbara (7 miles east). ²	400-1,600				Several oil wells; some abandoned.
Wasioja (10 miles north-west).	715				Large flow of water at 670 feet.
Santa Clara County:					
Alviso	496	7		+ 0.5	
Do	740	7		+ 1.2	
Do	550	7		Flows.	
Mayfield	604	7	100	Flows. ?	
Milpitas	500-700	7		+ 2	2 wells.
San Jose	412-700	7	Many.	Flow.	Several wells.
Do	400	8	900	Flows.	
Santa Clara	600		Many.	+10	Temp., 60°.
Watsonville	540			- 2	
Santa Cruz County:					
Chittenden	800				For oil.
Sierra County:					
Loyalton	525-750	4	50	Flow.	Several wells.
Do	1,000		20	Flows.	Temp. 130°.
Do	400	3	100	Flows.	
Do	620	4		Flows.	
Do	430-512	3	30	Flow.	Several wells.
Rocky Point	1,132	3	20	Flows.	
Do	1,040	4	10	Flows.	
Sattley	625	2	1	Flows.	
Savilla Colony ³	600		Many.	Flows.	Gas and sulphur water; gas not used.
Sierra Valley	610-888	3	15-15	Flow.	Several wells.
Do	556-900	4	125-300	Flow.	Do.
Do	746	2	16	Flows.	
Siskiyou County:					
Montague ⁴	1,300	10-8			Gas well.
Yreka	700	4½	135	+32	
Sonoma County:					
El Verano ⁵	544			No flow.	
Embarcadero ⁶	405			+15	
Ethel	442	10	Many.	To surface.	
Santa Rosa (4 miles south) ⁶	815		Few.		Flows at intervals.
Stanislaus County:					
Modesto (1 mile east)	1,070		Many.	No flow.	Small flow of gas.
Newman	427	12		Flows.	
Do	445	8	1,250		
Newman Ranch	411	8		4½	Brackish water.
Tulare County:					
Alila ⁷	1,328	9		+ .25	Small flow of gas.
Waukena	868	10	1,050	Flows.	
Grangeville	980	7		- .10	
Limekiln Canyon (?)	500				Oil well.
Pixley	438	8	Many.		
Do	480	7	Many.	+ .1	
Do	600	8		+ .8	
Do	713	9		+ .3	
Do	730	8		+ .2	
Pixley (1½ miles north-west). ⁸	955	9		+ .2	
Pixley (2 miles east)	600	8		.1	
Pixley (vicinity)	1,150	9	1,200	Flows.	
Do	937	9		+ .2	
Pixley (3 miles west)	858	8		+ .7	
Pixley	1,060	9		Flows.	
Pixley (3 miles south-west).	815	9		+ .2	

¹ Record, Cal. State Mining Bureau, 8th Rept., 1888, p. 548; 11th Rept., 1891-92, p. 489.² Cal. State Mining Bureau, 12th Rept., 1893-94, p. 857.³ Ibid., Bull. No. 3, Gas and Petroleum Yielding Formations, Central Valley, p. 20.⁴ Ibid., 12th Rept., 1893-94, p. 351.⁵ Record, ibid., 11th Rept., 1891-92, p. 457.⁶ Ibid., p. 456.⁷ Cal. State Mining Bureau, 11th Rept., 1891-92, p. 488.⁸ Ibid., p. 487.

CALIFORNIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Tulare County—Continued.	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Pixley (6 miles southwest). ¹	1,150	9	.....	+ 1	
Pixley (6 miles west)....	950	8	.....	+ .7	
Pixley (10 miles southwest). ²	895	10	.....	+ .4	
Pomona.....	450-550	6 and 9	.....	.....
Tipton.....	400	7	.....	+ .04	Several wells about the same depth.
Do.....	480	8-6	.....	+ .04	
Do.....	503-1,012	8-9	Many.	Flow.	Several wells.
Traver.....	960	7	Few.	.....
Tulare.....	400	6	.....	+ .8	
Do.....	460	7	500	.....
Tulare (about 20 miles west).	500	7	.....	+ .15	Several wells about this depth.
Tulare (E. Jacob's ranch).	539	9	.....	+ .1	Some gas.
Do. ³	498	9	.....	+ .1	Do.
Do. ⁴	887	9	.....	+ .35	Gas well.
Do.....	835	9	.....	+ .3	
Tulare (city wells).....	552	9	Many.	—15	Several wells.
Tulare.....	720	8	300	Flows.	Several wells about this depth.
Tulare (about 20 miles southwest; Lambertson ranch). ²	1,058	9	Many.	+ .75	Gas at 600 and 700 feet.
Tulare (7 miles west) ⁵ ..	730	8	.....	+ .35	
Visalia.....	775	7	190	Flows	
Waukena.....	450-816	8-9	Many.	Flows.	Several wells.
Ventura County:					
Adams Canyon ⁶	40-2,780	.....	.....	.....	Many oil wells, yielding 900 barrels per month.
Aliso Canyon.....	600-700	.....	.....	.....	Several oil wells.
Brownstone.....	400-800	.....	.....	.....	Several wells.
Buckhorn station (4 miles north).	400	.....	.....	.....	O'l well.
Four Forks ⁷	700-1,100	.....	.....	.....	Several oil wells.
Kentuck.....	700-730	.....	.....	.....	Do.
Little Sespe district.....	805	.....	.....	.....	O'l well.
Mount Cayetana (south-west slope, near Santa Paula Creek). ⁸	430-1,170	.....	.....	.....	Several oil wells.
Nordhoff (1 mile south).	500-800	.....	.....	.....	Do.
Peru (1½ miles south)....	400-570	.....	.....	.....	Do.
Sisi Canyon.....	400-800	.....	.....	.....	Numerous oil wells.
Salt Marsh Canyon ⁹	400-1,600	.....	.....	.....	Several oil wells.
Santa Paula region.....	530-800	.....	.....	.....	Do.
Silverthread oil district (near Santa Paula Creek). ¹⁰	400-1,600	.....	.....	.....	Numerous oil wells.
Tar Creek ⁷	700-1,000	.....	.....	.....	Do.
Tar Creek Canyon.....	400-905	.....	.....	.....	Do.
Torrey Canyon.....	450-1,000	.....	Many.	Flow.	Oil wells.
Wheeler Canyon ⁹	400-900	.....	.....	.....	Several wells.
Wild Bill Gulch ⁹	850-975	.....	.....	.....	O'l wells.
Yolo County:					
Grafton.....	450	6	Many.	.....

¹ Cal. State Mining Bureau, 11th Rept., 1891-92, pp. 487-488.

² Ibid., p. 488.

³ Ibid., p. 489.

⁴ Ibid., pp. 488-489.

⁵ Ibid., p. 487.

⁶ Ibid., Bull. No. 11, Oil and Gas Yielding Forma-

tions of Los Angeles, Ventura, and Santa Barbara counties, part I, pp. 35-36.

⁷ Ibid., p. 27.

⁸ Ibid., pp. 37-38.

⁹ Ibid., pp. 36-37.

¹⁰ Ibid., pp. 33, 35, 37.

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, Eighth 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.

Physical Data and Statistics of California (State Eng. Dept.), 1886.

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.	Depths.	Diameter.	Yield per minute.	Height of water.	Remarks.
Arapahoe County:	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Artesian.....	700		Few.	Flows.	
	565		20	Flows.	
	720		10	+ 35	
Bonita.....	725	3	80	Flows.	
Brighton.....	406	3	30	+ 15	
Do.....	700		Few.	Flows.	
Do.....	500				
Byers.....	450	2	1½		
Byers (6 miles southeast)	800				For oil or gas, unsuccessful.
Denver ¹	407	3-2	30	+ 25	Temp., 62°.
Do.....	444		50		
Do.....	500	3	40	+ 60	Temp., 50°.
Do.....	575	9-6½	Few.	No flow.	
Do.....	604	3-1			
Do.....	625	4	60	+ 60	
Do.....	720	3½	10	+ 35	
Do.....	725	3	70	+ 40	
Do.....	810	4	70	- 5	Flow pumped down.
Do.....	856	3½-2½	10	+ 20	
Do.....	908	2½		- 24	
Do.....	1,069	5			
Do.....	1,103			No flow.	
Do.....	1,250				Drilled for oil salt water to -40 feet; well abandoned.
Fort Logan.....	685			No flow.	
Do.....	558	4		No flow.	
Irondale.....	500	6-4	60	Flows.	
Island Station.....	440	8	60	Flows.	
Do. ²	430	4	15	+ 40	
Do.....	730			-125	
Littleton.....	467	3½	20		Two other similar wells, 440 and 480 feet.
Do.....	500	3½-2½	16		
Do.....	510		25	+ 35	
Do.....	525		9	Flows.	Temp., 62°; several similar wells from 520 to 560 feet deep.
Do.....	580		8	Flows.	
Do.....	601		15	+ 16	Several similar wells from 600 to 675 feet deep.
Do.....	710		45		Several similar wells from 700 to 735 feet deep.
Do.....	810		+1		
Do.....	1,300	8-4	3½	+ 50	
Lyman.....	620		10		
Petersburg.....	600				
Do. ³	720	3½-2½	10	+ 35	
Seranton ⁴	800	3			Coal prospect; no water.
Sheridan.....	580		20		
Do.....	620		10		
Baca County:					
Corrizzo (east of).....	720			- 20	Moderate volume of mineral water.

¹In 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; Mono-

graph, U. S. Geol. Surv., vol. 27, Geology of the Denver basin, by S. F. Emmons, W. Cross, and G. H. Eldridge, 4^o, Washington, 1896.

²Record, 51st Congress, 1st session, Senate Ex. Doc. No. 222, p. 197.

³Ibid., p. 204.

⁴Ibid., p. 207.

COLORADO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Bent County:</i>	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Caddo.....	582				Water at various depths. Abandoned; small amount of water at 430 feet.
Fort Lyon.....	815				
Fort Lyon, northeast of.	780			{ -200 or -580?	
Las Animas.....	+ 500		82	Flows.	Small amount of water at 430 feet.
Las Animas (7 miles northeast).	815		(?)		
T. 21, R. 52, sec. 36.....	720			-300	Good water supply in sandstone from 452 to 474 feet, but well is regarded as a failure.
Do.....	418			{ -150 or -268	
<i>Boulder County:</i>					
Boulder.....	400	2	5	Flows.	Water too alkaline. Unsuccessful. Flowed at 675 feet.
Do.....	+1,000			+ 20	
Boulder (4 miles east)...	600				
Hygiene.....	905				
Langford (4 miles northeast).	400	2	3	Flows.	
Longmont.....	431	4	+ 2		
Do.....	506			No flow.	
Do.....	600	6	40	+ 30	
Do.....	640	3½	Few.		
<i>Cheyenne County:</i>					
Cheyenne Wells ²	1,770				For water; abandoned.
Do.....	1,700				For gas; failure.
Kit Carson.....	1,460				No fresh water; salt water at 450 feet.
<i>Clear Creek County:</i>					
Georgetown.....	658	2	120	+100	
<i>Conejos County:</i>					
Alamosa.....	505	3	3	Flows.	Temp., 65°.
Do.....	604	3	225	Flows.	
Do. ³	856	6-8	1,000	Flows.	
Do.....	465	3½	Many.	Flows.	
Do.....	474	2	Many.	Flows.	
Do.....	1,000	7½-6	Many.	Flows.	
Do.....	900	8	Many.	Flows.	Temp., 75°. 2 wells; temp., 70°.
<i>Costilla County:</i>					
Mosca.....	610	4½		+ 3	
Do.....	420	4		Flow.	
<i>Custer County:</i>					
Colfax.....	627		7	Flows.	
Westcliffe.....	500		None.		Abandoned.
<i>Delta County:</i>					
Delta.....	575	2½	Few.	Flows.	
Do.....	580	3		Flows.	
<i>Denver County:</i>					
Denver (east of).....	795				Unsatisfactory.
Denver (St. Luke's Hospital).					Large flow of fine water.
Denver.....	400-1,100				Several hundred wells.
Do.....	1,350-1,500				Water from lowest Laramie and top Foxhills; considerably mineralized.
<i>Douglas County:</i>					
Acequia.....	442		15	Flows.	
Do.....	596		4	Flows.	
Castle Rock.....	1,700				Failure.
Larkspur.....	560				
Do.....	502				
Sedalia.....	650	2½			Dry; abandoned.
Do.....	710			No flow.	
Do.....	1,440				Water from 200 to 300 feet or ty.
Sedalia (5 miles south) ⁴					
<i>El Paso County:</i>					
Calhan ⁵	566	6			Saline water.
Colorado City.....	2,020				Gas pressure 155 pounds to square inch; now filled with surface water.
Do.....	1,300				Gas at 216 feet; shut off by water. (Blue shale below 35 feet.)

¹ Record, 51st Congress, 1st session, Senate Ex. Doc. No. 222, p. 208.² Record, U. S. Geol. Surv., 16th Ann. Rep., 1894-95, part 2, p. 563.³ Record, 51st Congress, 1st session, Senate Ex. Doc. No. 222, 1890, p. 223.⁴ Ibid., p. 207.⁵ Ibid., p. 216.

COLORADO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
El Paso County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Colorado Springs	1,120				
Franceville Junction	Many.				
Fremont County:					
Canon City	1,600		700	+100	Temp., 90°.
Canon City (near)	1,278	4½	2½	- 15	Water at 350 feet.
Canon City (5 miles south). {	1,000	4	Many.	Flows.	For oil, two wells.
Chandler (one-half mile southwest). {	460	8½-5	Many.	Flows.	Water at various depths: soft water, with little iron and sulphur.
Chandler (three-fourths mile southwest). {	487	3½	Many.	Flows.	Watersoft, with little iron.
Florence ¹	1,075	4½	Many.	Flows.	Numerous oil wells in vicinity.
Do	780		1	Flows.	Water at 1,000 feet.
Do	+1,000		700	Flows.	Temp., 86°.
Do	+ 800		1,000	Flows.	No water.
Do	+ 3,021½				
Westcliffe	+ 500				
Huerfano County:					
Rouse Junction	2,058		Few.	-200	Salt water at 830 feet, small amounts of water at 700 and 1,600 feet.
Walsenburg	1,250				For gas, entirely in shale; salt water at -40 feet
Jefferson County:					
Arvada	460			Flows.	
Kiowa County:					
Sheridan Lake	1,280	6		- 50	Water at 1,200 feet; abandoned.
Kit Carson County:					
Burlington	600		Small.	Flows.	
Lake County:					
Leadville	400		30		
La Plata County:					
Durango	400			Flows.	
Larimer County:					
Loveland ²	2,465		1	Flowed.	Water at 1,365 feet.
Stout ²	1,225		1	+ 30	Poor water, 923 to 1,000 feet.
Las Animas County:					
Barela	1,840				
Do	+1,040		30	-300	Well abandoned.
Hoehne	956				
Thatcher	920	5½		-620	
Salt Creek	2,050				Unsuccessful in finding a sufficient supply of good water.
Troy	400 or 500				
Trinidad	2,595	5½	Many.	-195	
Do	2,713				Shale water from 150 to 250 feet.
Logan County:					
Fleming	423			-160	Very small supply of water.
Mesa County:					
Grand Junction	1,000	6½-5½	Few.	No flow.	Some gas at 444, 700, and 864 feet.
Montezuma County:					
Cortez (9 miles southwest). ³	795		Several.	No flow.	
Montrose County:					
Montrose	825		30	Flows.	Temp., 72°.
Otero County:					
Fowler	1,372				Flow of soft water from upper sandstone of the Dakota.
Holbrook	661		100	+ 80	Penetrated the Dakota sandstone 110 feet.
Iron Springs	1,162			-556	Flows at 240 and 375 feet; unsatisfactory water at 1,006 feet.
Lajunta ⁴	405		8	Flows.	Temp., 68°.
	412	4½	8	Flows.	2 wells; temp., 70°.
	420	8-6	45	Flows.	Temp., 68°.
	439	6			Do.
	640	5½	35	Flows.	Do.
	670	8½	15	Flows.	
	700	6			
	740		15	Flows.	
	740	7½	12½	+ 20	Temp., 75°.
	766	7½	25		Temp., 68°.
	1,162	5½	Many.	Flows.	

¹Record, 51st Congress, 1st session, Senate Ex. Doc. No. 222, pp. 214.²Ibid., pp. 210-211.³Record, Colorado State Engineer. Eighth Annual Report, 1895-96, pp. 69-70.⁴Ibid., Ninth Biennial Report, 1897-98, pp. 28-29.

COLORADO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Otero County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Lajunta (2½ miles south).	1,703	.....	.....	.....	For gas or oil; unsuccessful.
Las Animas (northeast).	715	.....	.....	— 60	Temp., 80°.
Manzanola	1,113	5½	42	Flows.	To test for oil or gas; unsatisfactory result; abandoned.
Do.	2,110	.....	.....	.....	Temp., 63°.
Ordway	1,575	4½	Many.	—250	
Do.	1,508	.....	.....	— 90	
Ordway (18 miles due east).	715	.....	20	— 60	
T. 21, R. 50, sec. 36.	780	.....	.....	.....
Rockyford.	767	5½	130	Flows.	Temp., 78°.
Do.	790	10-4½	68	+ 75	Temp., 74°.
Do.	793	7½	68	Flows.	Temp., 78°.
Do.	820	7½	38	Flows.	Temp., 75°.
Do. ¹	845	4	115	Flows.	Temp., 75°.
Do.	1,038	6	17	Flows.	Temp., 75°.
Sugar City.	1,308	.....	.....	.....	Reached Dakota sandstone at 1,230 feet.
Timpas	795	6½	35	Flows.	
Wyckoff Park (near Rockyford).	855	4	115	.....
Prowers County:					
Amity	699	8-6	.....	—100	Good water at 300 feet.
Granada.	504	.....	80	No flow.	
Lamar ²	527	5½	5	Flows.	Can pump 80 gallons.
Lamar (northwest)	420	.....	.....	No flow.	
Pueblo County:					
Boone (2 miles north)	2,175	.....	.....	.....	For oil or gas; unsuccessful.
Pueblo ³	772	4½	2½	Flows.	
Do.	782	.....	3-5	Flows.	
Do.	789	5½	300	Flows.	
Do.	1,150	.....	13	Flows.	Pressure, 60 pounds.
Do.	1,219	4½	20	+125	Temp., 76°; pressure, 50 pounds.
Do.	1,260	.....	20-25	Flows.	
Do.	1,400	3	½	+140	Temp., 77°.
Do.	1,402	.....	+87	+140	
Pueblo (7 miles northeast).	1,900	.....	.....	—550	For oil or gas; unsuccessful.
Pueblo (10 miles northeast).	2,655	.....	.....	—100	Do.
North Pueblo Heights.	1,820	.....	.....	.....	Small flows at 1,200 and 1,820 feet.
Pueblo (south)	1,412	6	100	Flows.	Pressure, 60 pounds; mineral water.
Salt Creek	2,030	.....	.....	No flow.	Small amount of water at various depths; abandoned.
Rio Blanco County:					
Whiteriver	402	.....	.....	.....	Salt water at 200 feet.
Do.	506½	.....	.....	.....	Much gas at 500 feet.
Rio Grande County:					
Del Norte	607	.....	.....	Flows.	
Saguache County:					
Cotton Creek	405	3	75	Flows.	Temp., 58°.
Crestone	426	3	10	Flows.	
Do.	446	3	75	Flows.	
Lockett.	418	3	.....	+ 11	
Moffat	404	3	Few.	Flows.	
Do.	650	.....	.....	Flows.	
Do.	710	2	.....	+ 1½	
Saguache.	400	4½	.....	.....
Washington County:					
Akron	1,155	10-6	.....	.....	Failure; abandoned.
Otis ⁴	2,400	.....	None.	.....	Abandoned.
Weld County:					
Eaton	970	.....	.....	No flow.	Much water at 230 to 260 feet.
Evans	1,125	.....	Few.	Flows.	Water from 1,125 feet.
Fort Lupton	904	.....	.....	— .4	
Greeley ⁵	446	2½	.....	No flow.	
Do.	970	4	.....	— .20	

¹ Record, Colorado State engineer, Ninth Biennial Report, 1897-98, pp. 28-29.

² Ibid., p. 29; analysis, 51st Cong., 1st session, Senate Ex. Doc. No. 222, 1890, p. 228.

³ Record, 51st Cong., 1st session, Senate Ex. Doc. No. 222, 1890, pp. 213-214; analysis, ibid., p. 229.

⁴ Ibid., p. 217.

⁵ Ibid., pp. 209-210.

COLORADO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Weld County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Greeley.....	1,165	.....	40	Flowed at first.	Several wells.
Do. ¹	2,260	8-4	Few.	-0.40	Water from 1,165 to 1,200 feet.
Grover.....	710	.....	.....	.....	In progress.
Yuma County:					
Wray.....	+500	.....	.....	.....	For oil or coal; unsuccessful.

¹ Analysis, 51st Congress, 1st session, Senate Ex. Doc. 222, p. 226.

PUBLICATIONS RELATING TO DEEP BORINGS IN COLORADO.

Report of L. G. Carpenter, field agent for Colorado, Fifty-first Congress, first session: Senate Ex. Doc. No. 222, pp. 173-232, Washington, 1890.

Report of P. H. Van Diest, on the geological conditions of artesian basins in eastern Colorado and New Mexico, Fifty-first Congress, first session: Senate Ex. Doc. No. 222, pp. 87-97, Washington, 1890.

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, 1895-96, 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.

Preliminary Report on the Geology and Underground Water Resources of the Central Great Plains, by N. H. Darton: United States Geological Survey Professional Paper No. 32, Washington, 1905.

CONNECTICUT.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Fairfield County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Bridgeport.....	800	.....	Several.	No flow.	
Noroton.....	700	.....	None.	.....
Do.....	1,500	.....	4	No flow.	4 gallons at 900 feet.
Do.....	494	6-4½	4	-12	Water-bearing beds at 300 and 350 feet. Water hard.
Stamford.....	450	8	.....	.....	Water unsatisfactory.
Stamford (Yale and Towne Manufacturing Co.).	416	.....	.....	.....
Hartford County:					
Hartford.....	1,250	6	.....	-10	
South Manchester.....	460	8-6	225	+15	
Litchfield County:					
Roxbury.....	486	6	.....	.....
Torrington.....	583	6	25	-8	
Middlesex County:					
Durham.....	980	.....	.....	Flows.	
Middletown.....	800	6	Few.	-15	

CONNECTICUT—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
New Haven County:					
Meriden.....	530	12	70	No flow.	Water very hard. Unsuccessful.
New Haven.....	3,800				
Do.....	4,000	8			
Southbury ¹					
New London County:					
Mystic.....	530		1		
Tolland County:					
Mansfield.....	800	6	14	No flow.	Abandoned.
Do.....	850	6	40	—36	
Rockville.....	5,410		Not any.		
Windham County:					
Pomfret.....	600				
Pomfret Center.....	610	6	12	—25	
Putnam Heights.....	800		Few.	No flow.	
Do.....	400	6	4	No flow.	
Do.....	700		7	No flow.	
Do.....	420	6	2	No flow.	
Do.....	6,004	6	2	—4	

¹Am. Jour. Sci., vol. 62, p. 275, 1890; also Hobbs, 21st Ann.

DELAWARE.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Kent County:					
Bowers Beach ¹	500	3½	200	No flow.	Not much water below 240 feet.
Newcastle County:					
Fort Dupont ²	734	8	Many.	Flows.	Water also at 475 feet. Water from 535 and 660-686 feet.
Middletown ³	535	10-8	330	—50	
Do. ⁴	698				
Do. ⁵	821		Many.	—35	
Wilmington.....	400	8	15-18		
Do.....	1,077		10	—25	
Do.....	416				
Reedy Island ⁶	570		20	Flows.	
Sussex County:					
Delmar ⁷					
Lewes ⁸	400	6	15	At surface.	
Do. ⁸	1,080		15	Flows.	

¹N. J. Geol. Surv. Rept., 1899, p. 110.

²Record, N. J. Geol. Surv. Rept., 1900, pp. 132-134; 1901, pp. 105-107.

³Record, U. S. Geol. Surv. Bull. No. 138, p. 123.

⁴Record, N. J. Geol. Surv. Rept., 1898, p. 115.

⁵Ibid., 1901, pp. 107-109.

⁶Ibid., 1897, pp. 248-249.

⁷Ibid., 1899, pp. 111-112.

⁸Ibid., 1898, pp. 83-87.

LIST OF PUBLICATIONS RELATING TO DEEP BORINGS IN DELAWARE.

New Jersey Geological Survey Reports, by the State Geologist, for 1897, 1898, 1899, 1900, and 1901.

Artesian well prospects in the Atlantic Coastal Plain region, by N. H. Darton: United States Geological Survey Bulletin No. 138.

DISTRICT OF COLUMBIA.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Washington, Heurich's old brewery.....	900		7		Abandoned.
Washington, Riggs House....	558		None.		Unsuccessful.

FLORIDA.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Bradford County:	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Starke	529	8	300	— 81	
Brevard County:					
Artesia	425		100	+ 18	
Eau Gallie	484	6	2,500	+ 46	Temp., 78°.
Do.	435	1½	Many.	+ Many.	
Mico	530	4	Many.	+ 10	
Orchid	450	4	Many.	+ 30	
Roseland	440-465	4	Many.	+0 to 21	3 Wells.
Sebastian	460	4	Many.	+ 16	
Malabar	510	3	Many.	Flows.	Temp., 78°; bored for oil, none found.
Melbourne	400	6		+ 48	Temp., 78°.
Orchid	480	4	Few.	Flows.	Sulphur water.
Roseland	462-450	6	Many.	Flow.	2 wells.
Clay County:					
Green Cove Springs	600	6	600	+ 30	Temp., 80°.
Do.	673	4	150	+ 15	
Do.	815	4	300	+ 33	
Columbia County:					
Lake City	+400		Many.	—	
Do.	520	10		— 100	
Dade County:					
Gomez	1,200	4			
Hobe Sound	1,100	6-4	Several.	+ 6	Sulphur water.
Lake Worth ¹	1,212	4	313	+ 40	
Palm Beach	1,200	4	Several.	Flows.	
De Soto County:					
Punta Gorda	467				Water too salty for use.
Do.	400			Flows.	
Do.	425		25	Flows.	Salt water only.
Do.	408	8	650	+ 40	
Wanchula	650	3	80	+ 6	
Do.	800				
Duval County:					
Jacksonville ²	793	6		+ 17	
Do.	711			Flows.	Sulphur water.
Do.	630	6	432		Temp., 74° to 77°.
Do.	660	6½	950	+ 64	Do.
Do.	1,020	10½			Temp., 81°.
Do.	937	12	432		Temp., 77°.
Do.	490	3	180	+ 62	Temp., 75°.
Do.	637	6	600	+ 62	Temp., 76°.
Do.	650	6	900	+ 62	Do.
Do.	1,020		2,333	+ 62	Temp., 78°.
Do.		8-4			
Do.	616-5,000	4-8	60-400	+2-50	7 wells.
Mandarin	625	4	Many.	+ 40	
Plummer	600	4		+ 20	
Do.	700	8	Many.	Flows.	
St. Nicholas	678	6	Many.	+ 30	
Do.	750	6		+ 60	
South Jacksonville	800			+ 55	Temp., 77°.
Do.	750	6		+ 69	Do.
Escambia County:					
Pensacola	1,400				Navy-yard well; no good water.
Do.	1,252-1,702	4½			4 wells.
Franklin County:					
Apalachicola	475	3½			Temp., 68°.
Do.	450	3	40	+ 4	
Gadsden County:					
Quincy	610	6-4½		— 190	
Hamilton County:					
Jasper	+550				In progress.
Lee County:					
Buckingham	406 and 407	3	200	Flow.	2 wells.
Fort Myers	406-575	2-4	100-200	+4-40	7 wells.
St. James City	400				
Leon County:					
Tallahassee	715			— 98	
Madison County:					
Madison	530	6	100	— 117	
Manatee County:					
Ellentown	400	4	Many.	+ 20	
Palmetto	450	4	20	+ 10	
Do.	426	3		+ 4	
Sarasota	400	6		+ 3	
Marion County:					
Citra	1,200			— 15	
Ocala	1,210	8		— 74	
Do.	1,400			— 30	

¹ Record, Am. Jour. Sci., 3d ser., vol. 41, pp. 105-106.² Representative wells.

FLORIDA—Continued.

Locat'on.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Monroe County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Key West.....	2,350				
Nassau County:					
Fernandina ¹	640	8	800	+ 50	Water from 618 feet.
Do.....	750	6		+ 64	Temp., 77°.
Fernandina (city park).....	700	8	810	+ 40	Temp., 74°.
Fernandina.....	762				
Heart's Road? (railroad junction).....	750	6	Many.	+ 64	Temp., 77°.
Osceola County:					
Kissimmee.....	406	4			
Do.....	606				
Narcoossee.....	416	3		- 27	
Polk County:					
Barlow (8 miles southwest).....	600				Small.
Do.....	400				
Barlow.....	725				Water.
Pasco County:					
Pasadena.....	450			- 86	
Putnam County:					
Huntington.....	420	4	Several.	- 12	
Riverside.....			Many.	Flow.	2 wells.
St. John County:					
St. Augustine ²	1,400		5,500		Temp., 86°. Strong flows also at 400-450 and 500-550 feet.
Do.....	1,500		Many.	Flows.	
St. Augustine.....	1,278				Flows at 468, 1,110, and 1,200 feet; latter "milky with lime." Flow also at 1,225 feet.
Suwannee County:					
Liveoak.....	1,050	6	Many.	- 54	
Volusia County:					
De Land.....	485	6	50	- 22	
Washington County:					
Caryville.....	769	4½	Many.	- 10	

GEORGIA.

Appling County:					
Baxley ³	507	6		-129	Water at 320 and 408 feet.
Do.....	461	8-6	150	- 90	
Baldwin County:					
Milledgeville.....	600 or 700		Many.	No flow.	
Bibb County:					
Macon ⁴	955	12	Not any.		Abandoned.
Brooks County:					
Quitman ⁵	500?	6		- 30	Water at 109 feet.
Bryan County:					
Ways Station ⁶	460	3	200	+ 20	Water at 340 and 440 feet.
Do.....	484	6-2	Many.		
Bulloch County:					
Statesboro.....	415	7-4½	40	-100	
Do.....	(?) 600	4			
Burke County:					
Dry Creek ⁷	763	2		- 30	Water also at 280 and 375 feet.
Do.....	750	5	75	+ 47	Water-bearing beds at 200, 300 and 450 feet; water hard, containing some iron and sulphur; temp., 68°.
Sebastopol.....	676	6		- 2	Water at 200, 345, and 500 feet.
Waynesboro ⁸	992	6		+ 14	Water at 250, 300, and 900 feet.
Do.....	1,260	8		- 52	
Do.....	760			No flow.	
Do.....	425			No flow.	
Do.....	618	4		- 18	
Do.....	876	6			Abandoned.

¹ Ga. Geol. Surv. Bull. No. 7, pp. 75-76.² Am. Jour. Sci., 3d ser., vol. 34, p. 70.³ Ga. Geol. Surv. Bull. No. 7, p. 149.⁴ Ibid., p. 193.⁵ Record, *ibid.*, pp. 156-157.⁶ Ibid., pp. 111-112.⁷ Ga. Geol. Surv. Bull. No. 7, p. 128.⁸ Record, *ibid.*, pp. 125-126.

GEORGIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Calhoun County:					
Arlington ¹	625	6	.....	— 20	Water at 500, 600, and 700 feet; hard and slightly chalybeate.
Leary ²	672	5-2	23	+ 30	
Leary (3 miles north)	400	.....	.....	No flow.	Abandoned.
Camden County:					
Cumberland Island ³	600	4	.....	+ 12	
Do. ³	485	4	.....	+ 12	
Do. ⁴	680	6	555	+ 51	Watersulphurous.
Kingsland	475	2	60	Flows.	
Do. ⁵	500	2	33½	+ 20	
St. Marys ⁶	525	4	Many.	+ 50	Water at 300 and 500 feet.
Tarboro (1½ miles north-east). ⁷	414	2	Many.	+ 50	
Whiteoak ⁸	450	4	300	— 60	Water at 130 and 450 feet.
Chatham County:					
Savannah	+650	.....	.....	— 18	
Do.	1,500	12	Many.	No flow.	
Do.	500	10	.....	.....	2 wells reported.
Do.	402-470	6	Many.	.....	5 wells of old waterworks.
Do. ⁹	475-700	12	13 wells 4,861	.....	City waterworks comprising 13 wells.
Savannah (6 miles south)	1,147	4	.....	+ 31	
Savannah (12 miles west on Great Ogeechee River).	±659	.....	.....	Flows.	Temp., 72°.
Clay County:					
Fort Gaines	650	4-3	150	— 20	
Do.	800	.....	400	— 12	
Cobb County:					
Austell	750?	2	7	+ 2	
Colquitt County:					
Moultrie	571-506	.....	450	—240	2 wells.
Crawford County:					
Everetts Station	+400	.....	.....	.....
Decatur County:					
Bainbridge ¹⁰	900	6-2	.....	— 50	
Do. ¹¹	1,325	.....	.....	.....	Water at 280 and 370 feet.
Do.	965	6-2	.....	— 59	
Dodge County:					
Chauncey ¹²	525	6	.....	— 70	Water at about 300 feet.
Eastman ¹³	680	4	200	—120	
Eastman	+600	.....	Not any.	.....	Abandoned.
Do.	720	.....	.....	—200	
Dooly County:					
Cordele ¹⁴	550	8	.....	— 20	
Do.	700	6	.....	— 30	
Do.	400	8	.....	— 18	
Drayton	400	8	8	Flows.	Temp., 50°.
Dougherty County:					
Albany	665	2	20	Flows.	
Do. ¹⁵	700-780	6-4	20-115	+ 24	Numerous wells; temp., 73½°.
Do. ¹⁶	732	10	225	+ 30	
Albany (16 miles west)	550	.....	.....	.....	Pure water.
Duckers station ¹⁷	547	2	.....	+ 10	
Douglas County:					
Lithia Springs	539	6	12	— 20	
Early County:					
Damascus ¹⁸	547	2	.....	— 7	Water also at 200 feet.
Effingham County:					
Egypt ¹⁹	750	4	.....	— 45	
Meltrim	538	6	Many.	Flows.	Water at 300 and 750 feet.
Emmanuel County:					
Swainsboro ²⁰	400	6	21	— 80	
Do.	400	2	10	— 90	
Floyd County:					
Rome	{ 1,200 and	6?	.....	— 3	2 wells.
Do.	1,850 }	.....	.....	.....
Gulton County:					
Atlanta	638	14	56	— 12	

¹ Record and analysis, Ga. Geol. Surv. Bull. No. p. 185.² Record, *ibid.*, pp. 186-187.³ Analysis, *ibid.*, pp. 78-79.⁴ Record, *ibid.*, pp. 76-77.⁵ Ga. Geol. Surv. Bull. No. 7, p. 79.⁶ *Ibid.*, pp. 74-75.⁷ *Ibid.*, p. 83.⁸ *Ibid.*, p. 82.⁹ Record, *ibid.*, pp. 114-120.¹⁰ Analysis, *ibid.*, pp. 160-161.¹¹ *Ibid.*, p. 162.¹² Ga. Geol. Surv. Bull. No. 7, p. 145.¹³ Analysis, *ibid.*, pp. 144-145.¹⁴ Record, *ibid.*, pp. 159-160.¹⁵ Analysis and record, *ibid.*, pp. 179-181.¹⁶ Record, *ibid.*, pp. 178-179.¹⁷ *Ibid.*, p. 182.¹⁸ *Ibid.*, pp. 183-184.¹⁹ *Ibid.*, pp. 121-122.²⁰ *Ibid.*, p. 43.

GEORGIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Glynn County:					
Bladen ¹	480	3	100	+ 30	Water at 160, 260, and 475 feet.
Brunswick ²	450-490	3	200	+ 28	Numerous wells.
Do.	415	3	.....	+ 19	Temp., 62°.
Do.	540	8	600	+ 12	
Do.	430	4	.....	+ 25	
Do.	460	6	350	+ 12	
Do.	465	4	600	.....
Do.	405-822	2½-4	15-400	Flows. +10 to +57	Temp., 70°.
Evelyn	420	3	.....	+ 14	12 wells.
Everett City	460	2	.....	+ 38	Sulphur water.
Jekyll Island ³	480	6	250	+ 45	
St. Simons Island	480	6-3	100-150	.....	3 wells.
Do. ⁴	438	6	250	+ 40	Water 350 and 435 feet.
Houston County:					
Fort Valley ⁵	1,075	6-4	.....	-100	
Do.	500	.....	Not any.	.....	Abandoned.
Do.	1,200	.....	Not any.	.....
Irwin County:					
Fitzgerald ⁶	680	6-3	.....	- 27	
Do.	800	10	.....	-150	
Do.	1,000	6	.....	-128	
Do.	853	12-8	139	-320	
Jefferson County:					
Bartow	525	3-2	3	+ 10	
Louisville ⁷	450	4	.....	.....	Several wells; those on low ground flow.
Wadley ⁸	445	6	Many.	+ 20	13 wells reported; flow also at 330 feet.
Johnson County:					
Wrightsville ⁹	672	8	.....	- 60	Water at 430 and 672 feet.
Do.	763	3	.....	- 63	
Laurens County:					
Dublin	850	8	.....	.....	First flow at 350 feet.
Lee County:					
Albany	450	6-2	25	- 68	
Leesburg	500-600	8	.....	No flow.	Temp., 68°; mineral water
Do.	540	6-4	5	- 12	
Smithville ¹⁰	900	2½, 4	Many.	+ 20	2 wells.
Liberty County:					
Riceboro ¹¹	460	3	150	+ 20	
Do. ¹²	430	4	100	+ 24	Soft water.
Lowndes County:					
Valdosta ¹³	522	8	.....	-113	Temp., 70°; water at 360, 450, and 515 feet.
Do.	500	10	25	-120	
McDuffie County:					
Thomson	506½	8-6	8	+ 1	
McIntosh County:					
Barrington ¹⁴	450	3	200	+ 20	Flows at 350 and 450 feet
Creytons Island ¹⁴	414	3	.....	+ 50	
Darien	492	4	.....	.....
Do. ¹⁵	530	8	200	+ 15	
Doboy	450	6	250	.....
Evelyn	500	2	.....	+ 45	Sulphurous water.
Valona	455	3	120	+ 60	Temp., 70°.
Macon County:					
Montezuma ¹⁶	500	.....	300	+ 62	2 wells.
Do.	425	.....	5	Flows.	Temp., 62°.
Do.	425	.....	2	Flows.	Do.
Do.	450	2½	30	+ 26	Flows at 60, 150, and 350 feet.
Do.	450	4	.....	+ 26	
Oglethorpe	490	2	66	.....	Temp., 62°.
Marion County:					
Buenavista ¹⁷	583	10	.....	-240	Water at 331 and 364 feet.
Mitchell County:					
Camilla	600	.....	.....	No flow.	Nonflowing.
Montgomery County:					
Lyons ¹⁸	400	3	10	- 84	Main water horizon at 37 feet.
McArthur ¹⁹	900	3	.....	- 60	Water at 419 and 890 feet.

¹ Record, Ga. Geol. Surv. Bull. No. 7, pp. 92-93.² Ibid., p. 86.³ Analysis, *ibid.*, p. 94.⁴ Ga. Geol. Surv. Bull. No. 7, pp. 74-75.⁵ Record, *ibid.*, p. 192.⁶ Ga. Geol. Surv. Bull. No. 7, p. 152.⁷ Record, *ibid.*, p. 132.⁸ Ibid., p. 131.⁹ Ibid., pp. 137-138.¹⁰ Ibid., pp. 176-177.¹¹ Ga. Geol. Surv. Bull. No. 6, pp. 110-111.¹² Ibid., p. 110.¹³ Analysis, *ibid.*, pp. 154-156.¹⁴ Ga. Geol. Surv. Bull. No. 7, p. 109.¹⁵ Record, *ibid.*, pp. 105-108.¹⁶ Ibid., pp. 189-190.¹⁷ Ibid., p. 198.¹⁸ Ibid., p. 146.¹⁹ Ibid., p. 147.

GEORGIA.—Continued.

Location.	Depth.	Dia-me-ter.	Yield per minute.	Height of water.	Remarks.
Wascogee County:	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Columbus, 3 miles south of.	425	3	2	— 4	Water at 400 feet.
Pulaski County:					
Hawkinsville ¹	490	6	.....	Flow.	Temp., 71°.
Do.	497	8-4	15	Flows.	
Randolph County:					
Cuthbert	1,000	6-4	.....	— 30	Water also at 340-400, and 550 feet.
Shellman	410	4	60	— 70	
Richmond County:					
Augusta ²	814	8	18	—196	Water at 500, 600, and 700 feet; hard and slightly chalybeate.
Do. ³	879	6	.....	.....	5 water-bearing strata penetrated.
Scriven County:					
Millen ⁴	430-450	4-6	.....	+ 19	Several wells.
Tewart County:					
Bradley's plantation ⁵ ...	740	3	.....	Flows.	Water from 475 feet.
Florence, 3 miles west on Chattahoochee River.	490	6	1/8	+ 20	
Do.	490	2	1/8	+ 20	
Do.	445	.....	1 1/2	+ 30	
Do.	455	.....	1	+ 20	
Richland	420	6	25	—120	
Winter County:					
Americus	1,725	8-4	.....	— 30	Water at 1,000 feet.
Do.	400	.....	.....	— 10	Supply is derived from the 350-foot level
Do. ⁶	500	.....	.....	— 10	
Do.	900	.....	.....	Flows.	
Do.	550	4	33	+ 1	
Watnall County:					
Collins	800	8	.....	—142	
Hagan	447	3	10	— 60	
Lyons	450	4-2 1/2	.....	— 35	
Manassas	498	6	.....	—148	
Taylor County:					
Reynolds ⁷	700	8-4	60	— 80	
Telfair County:					
Lumber City ⁸	400	2	60	+ 14	6 wells; water also at 300 feet.
Terrell County:					
Dawson ⁹	650	5-2	.....	— 45	
Do.	540	3-200	50	—28 to —40	2 wells.
Thomas County:					
Thomasville ¹⁰	1,900	5 1/2	Many.	—210	
Do.	480	8	Many.	—210	
Do.	440	8	30?	—175	
Ware County:					
Waycross ¹¹	700	12	750	— 60	2 wells pure water.
Do.	500	6	150	.....
Do.	600	4	.....	— 55	
Washington County:					
Tennille ¹²	990	16-4	Many.	—190	Water at 426 and 830 feet.
Washington	431	4 1/2	.....	—134	
Wayne County:					
Jesup ¹³	500	2	.....	— 33	Water also at 287 feet.
Wilcox County:					
Abbeville ¹⁴	540	4	.....	— 25	Water at 90, 139, and 296 feet.
Bowen's Mills	673	2 1/2	60	+ 22	Temp., 74°.
Cooktown	+400	.....	.....	No flow.	3 wells reported.
Wright	785	6-3 1/2	.....	— 80	
Wilkinson County:					
Irwinville	600	3	.....	(?) + 50	
North County:					
Warwick ¹⁵	497	8-2	1	— 5	Sulphur water.
Pelicalville	430	4 1/2	400	.....	Temp., ±70°.
Union Island	475	4	150	.....
Wolf Island	500	2	.....	+ 45	Sulphurous water.

¹ Record, Ga. Geol. Surv. Bull. No. 7, p. 140.
² Ga. Geol. Surv. Bull. No. 7, pp. 128-129.
³ Ibid., p. 130.
⁴ Ibid., pp. 123-124.
⁵ Record, ibid., p. 197.
⁶ Record and analysis, ibid., pp. 174-176.
⁷ Ga. Geol. Surv. Bull. No. 7, p. 194.
⁸ Record, ibid., p. 150; Analysis and record, U. S. Geol. Surv. Bull. No. 138, p. 224.

⁹ Ibid., pp. 187-188.
¹⁰ Ibid., pp. 158-159.
¹¹ Record and analysis, ibid., pp. 96-102.
¹² Record, ibid., pp. 133-136.
¹³ Ibid., pp. 108-104.
¹⁴ Ga. Geol. Surv. Bull. No. 7, p. 151.
¹⁵ Ibid., p. 164.

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 L. H. Darton: United States Geological Survey Bulletin No. 138, 232 pages, plates, Washington, 1896.

IDAHO.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Ada County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Boise	450	.....	270	+ 10	Temp., 80°. Deepest of several wells. Hot wells average 555 gallons per minute, and have a height of +30 feet. Temp., 170°.
Boise County:					
Idaho City	+400	.....	.....	.....	Prospect well; not in use.
Cassia County:					
Oakley	+400	.....	.....	.....
Elmore County:					
Cleft	450	8	.....	.....
Medbury	832	8	70	Flows.	
Fremont County:					
Dubois	615	.....	50	No flow.	Water-bearing beds began at 375 feet.
Lincoln County:					
Bliss	483	8	.....	.....
Minidoka	425	.....	.....	.....
Owinza	400	.....	.....	.....

ILLINOIS.

Adams County:					
Camppoint	1,006	.....	.....	.....
Mendon ¹	1,010	.....	.....	.....
Mendon (1 mile west) ..	400	.....	.....	.....
Payson	1,542	5½-4½	13	-150	Water at 167 and 1,000 feet; brine at 800 and 1,400 feet.
Quincy	550-1,000	.....	.....	.....	5 wells.
Alexander County:					
Cairo	700-750	.....	556	+ 10	4 wells.
Do.	1,025	.....	.....	.....	No water below 750 feet.
Do.	1,040	.....	.....	.....
Boone County:					
Belvidere ²	1,950	8-4	400	- 6	
Do.	1,932	8-6	200	- 6	
Do.	1,231	10-6½	180	- 20	Water-bearing beds at 574-884, 1,070 and 1,231 feet.
Bureau County:					
Buda ³	1,610	6	100	.....	Strong water vein at 29½ feet, which was cased out; well mainly in limestone, from 415-1,470, then sandstone was struck; 4-foot bed of coal at 225 feet.
Ladd ⁴	460	.....	135	Flows.	Shaft for coal. Flowed; gallons at 28 feet, 200 gallons at 173 feet, then decreased to 135 gallons
Ohio ⁵	412	.....	.....	.....
Princeton ⁵	2,500	.....	.....	- 72	
Do.	2,092	9½-4½	320	.....	Water hard, slightly saline from 1,521 to 1,674 feet and 1,850 to 1,975 feet.
Do. ⁶	400	.....	.....	.....

¹ U. S. Geol. Surv. Monograph No. 38, 1899, p. 715.

² U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 810; Monograph No. 38, 1899, p. 573.

³ Ibid., Monograph No. 38, 1899, pp. 628-629.

⁴ Columbia College, School of Mines Quarterly, vol. 16, pp. 238-248.

⁵ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 816; analysis, *ibid.*, pp. 808, 828; Monograph No. 38, 1899, p. 627.

⁶ Record, Economic Geology, Ill., vol. 3, p. 178.

ILLINOIS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Carroll County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Mount Carroll ¹	2,502	5			Much water at 1,200 feet; less from 1,300 to 2,500 ft.
Mount Carroll (4 miles south). ¹					
Savanna ¹	1,432		500	+83	
Cass County:					
Beardstown ²	1,070		17		Water, oil, and grs.
Do. ³	1,050-1,100		175		Several artesian wells; flow of water at about 350 feet; another flow with small amounts of gas and oil at 590 to 600 feet; a third floor near the bottom.
Virginia.....	750				Water at 730 and 750 feet; unfit for drinking.
Champaign County:					
Champaign.....	400				
Do. ⁴	+ 663				
Christian County:					
Pana ⁵	2,507		Few.		Brackish water.
Clark County:					
Marshall.....	500				2 unsuccessful oil borings.
Coles County:					
Charleston.....	2,600				Salt water at 160 and 815 feet.
Do.....	748½				
Mattoon.....	1,647	8	Many.		Salt water at 308 feet, and very salty at 1,500 feet.
Cook County:					
Arlington Heights ⁶	800				
Austin ⁷	1,205		Many.		
Avondale.....	1,968				
Blue Island.....	1,649				
Cragin.....	1,308-1,534				
Cicero.....	1,571				
Chicago ⁸	694	5		-13	Hard water, original head +77 feet.
Do. ⁸	711	4½	400	-13	Original head +77 feet.
Do.....	1,400				Unsuccessful.
Do. ⁸	1,200			At top.	Hard water.
Chicago (Union Stock Yards). ⁹	1,105				
Chicago (Lehman well).	2,604				Brackish water.
Chicago (Swift & Co.).....	2,700				
Chicago (Stockton).....	2,180		840	-30	2 other wells.
Chicago.....	2,186				
Chicago and Western avenues. ¹⁰	700-2,780				Many wells.
Do. ¹¹	711				Test for oil; small amount of oil, strong flow water.
Cragin.....	694				Flow of water at 694 feet.
Evanston ¹¹	1,300-1,534				
Harvey.....	1,602			+ 5	Water at 562 to 832 feet.
Do. ¹²	675-2,075				4 wells.
Hawthorne.....	1,300		250	-10	2 wells.
Do.....	2,075				
Do.....	989				
Do.....	2,005½				
Irving Park.....	2,187				
Kensington.....	1,656				
Do.....	1,283				
Lagrange.....	1,757-2,014			No flow.	
Lemont.....	1,366			+60	
Maywood.....	1,595				
Morgan Park ¹³	1,046			45	Water at 1,040 feet.
New Chicago.....	1,309				
Oakpark.....	1,558				
Do.....	1,568	6½	500	-20	Water from 1,529 feet.
Do.....	2,200			-20	Water from 1,600 and 2,200 feet.
Palatine ¹⁴	1,656			+ 2	Water at 160 and 800 feet.

¹ U. S. Geol. Surv. Monograph No. 38, 1899, pp. 611-612.² Record, Ill. Geol. Surv., pp. 61, 66.³ U. S. Geol. Surv. Monograph No. 38, 1899, p. 711.⁴ Ibid., Folio No. 67.⁵ Ibid., Monograph No. 38, 1899, p. 725.⁶ Ibid., p. 587.⁷ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 810.⁸ Ibid., p. 811.⁹ Record, Economic Geology, Ill., vol. 2, p. 186.¹⁰ U. S. Geol. Surv. Monograph No. 38, 1899, p. 584.¹¹ Ibid., 17th Ann. Rept., 1895-96, part 2, p. 813; analysis, *ibid.*, p. 827; Monograph No. 38, 1899, p. 587.¹² Ibid., Monograph No. 38, 1899, p. 590.¹³ Ibid., pp. 582-590.¹⁴ Record, *ibid.*, 17th Ann. Rept., 1895-96, part 2, p. 816; Monograph No. 38, 1899, p. 585.

ILLINOIS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Cook County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Park Ridge.....	1,500	6-3	.....	-10	
Do.....	1,425	.....	.....	.....
Riverdale.....	434	.....	.....	.....
River Forest.....	980	.....	.....	.....
Riverside ¹	2,200	.....	.....	.....	Several wells about this depth.
Do.....	1,575	.....	.....	.....
South Chicago.....	1,300	.....	.....	.....	2 wells.
Summit Yards.....	1,353	.....	.....	.....
Turners Junction.....	1,601	.....	.....	.....
Winnetka ²	3,081	.....	.....	.....
Do.....	1,570	.....	150	+ 8	Original head +18 feet.
Do.....	1,900	.....	.....	.....
Washington Heights.....	1,308	.....	.....	.....
West Pullman.....	1,274	.....	.....	.....
Cumberland County:					
Greenup.....	640	2	.....	.....	Mineral water.
Dekalb County:					
Dekalb.....	800	8-6	Many.	-25	
Do.....	880	10-8	Many.	-55	
Do. ³	890	14-6	300	-65	Water 125 to 161 and 595 to 890 feet.
Do.....	981	6-4	Many.	-60	
Do. ³	700	.....	Many.	-40	
Do. ³	800-2,470	.....	.....	.....	3 wells.
Malta.....	800	.....	.....	.....
Dewitt County:					
Clinton ⁴	942	.....	.....	.....	Prospect boring for coal
Douglas County:					
Tuscola.....	792	.....	.....	.....
Do.....	3,000	9-6	.....	.....	Temp., 60°.
Dupage County:					
Bensonville ⁵	±2,000	.....	.....	.....
Hinsdale ⁶	864	.....	.....	.....
Naperville.....	1,425	12-6½	140	.....	Water-bearing beds at 792 and 1,425 feet.
West Chicago.....	569	.....	.....	.....	2 wells.
Do.....	2,081	.....	.....	.....
Edgar County:					
Paris.....	2,200	8	Not any.	.....
Do.....	2,500	.....	.....	.....
Fayette County:					
Ramsey.....	+ 400	.....	.....	.....
Vandalia.....	574	.....	.....	.....
Ford County:					
Gibson ⁶	705	.....	.....	.....	Foring for coal.
Paxton ⁶	2,670	.....	Many.	.....
Franklin County:					
Benton.....	780	5	3	-12	
West Frankfort.....	465	.....	.....	.....	Coal prospect.
Fulton County:					
Avon.....	1,818	.....	.....	.....
Canton ⁷	2,500	4	125	+31	Water from 2,050 feet.
Do. ⁷	1,646½	14-6	260	+15	Water from 1,100 to 1,305 feet and 1,403 to 1,646½ feet.
Do. ⁸	2,333	.....	.....	.....	Unsuccessful.
Ipava ⁹	1,570	4	60	.....	Also salty and sulphurous water at about 1,010 feet.
Vermont ¹⁰	3,487	.....	.....	.....	Test boring for coal, oil, etc.; not utilized for water.
Gallatin County:					
Equality.....	1,800	6-3½	.....	.....	Very salty water at 900 feet.
Shawneetown ¹¹	1,513	.....	.....	.....	For oil, only salt water found.
Do. ¹²	1,500	.....	.....	.....	At 500 feet, small vein gas; at 1,500, large quantity salt water.
Greene County:					
Carrollton ¹³	1,330	.....	.....	-50	Water from 1,225 to 1,330 feet.

¹ U. S. Geol. Surv. Monograph No. 38, 1899, p. 589.² Analysis, *ibid.*, 17th Ann. Rept., 1895-96, part 2, p. 828; Monograph No. 38, 1899, p. 587.³ *Ibid.*, Monograph No. 38, 1899, p. 602.⁴ Partial record, *ibid.*, pp. 705-706.⁵ U. S. Geol. Surv. Monograph No. 38, 1899, p. 592.⁶ *Ibid.*, pp. 662-663.⁷ Record, *ibid.*, 17th Ann. Rept., 1895-96, part 2, p. 849; Monograph No. 38, 1899, p. 687.⁸ Record, Ill. Geol. Surv. Rept., vol. 8, pp. 62-63.⁹ *Ibid.*, 17th Ann. Rept., 1895-96, part 2, p. 813; Monograph No. 38, 1899, p. 688.¹⁰ *Ibid.*, Monograph No. 38, 1899, p. 688.¹¹ *Ibid.*, 17th Ann. Rept., 1895-96, part 2, p. 817.¹² Ky. Geol. Surv. Rept., Petroleum, Natural Gas, etc., by E. Orton, p. 205.¹³ Record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 849; Monograph No. 38, 1899, p. 745.

ILLINOIS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks
Grundy County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Carbon Hill ¹	1,900				
Minooka ¹	2,100			+ 46	Strong water vein at 1,985 feet.
Do.	1,162				
Morris ²	406	10	Many.	Flows.	
Do. ²	600				
Do.	604				
Hamilton County:					
McLeansboro	800	8-5½	3½		
Hancock County:					
Carthage ³	1,800	5-3		- 16	Brackish water at about 750 and 1,000 feet.
Do. ³	1,000	10-8		- 20	Water at 865 and 975 feet.
Do. ⁴	1,787			+ 5	Mineral water.
Do. ⁵	975		Many.		Do.
Hamilton	840				
Denver (near) ⁶	1,030		Many.	- 40	
Hamilton	680		36	+ 63	Sulphur water; Ring-land's Sanitarium.
Riverside ⁴	680		35	+ 63	Mineral water.
Do.	1,300	3	1,000	+ 20	
Warsaw	780-800	4	100	+ 65	3 wells; watersulphurous
Do. ⁷	750	6	90	+ 155	Do.
Do. ⁷	860	6	200	+ 62	Original head +98.
Do.	1,600				
Henderson County:					
Stronghurst ⁸	1,601			- 30	Test for oil.
Henry County:					
Cambridge	1,329	9-6	74	-146	
Galva	1,470	9-6	50	-178	
Geneseo ⁹	2,250	6	190	+ 31?	
Do.	1,354				
Kewanee ¹⁰	1,480	9-6	130	150	Water from 1,000 feet; temp., 65°.
Do. ¹⁰	1,050	7-4	80		2 wells; temp., 65°.
Do.	1,073	12-6	80	- 350	Coal, 3 feet, at 187 feet; water at 415 feet.
Woodhull	1,394				
Iroquois County:					
Danforth ¹¹	+1,200				No good water supply.
Gilman	1,746		150	- 7	
Onarga (near) ¹¹	400				Coal boring; no rock encountered.
Sheldon	1,800	10-5	100	- 40	
Jackson County:					
Murphysboro	509	8			Good water at 400 feet; saline water at 450 feet.
Do. ¹²	1,800				Well at brewery; flow of salt water at about 1,300 feet.
Jersey County:					
Jerseyville ¹³	2,003	12-3	200	100	Water at 1,400 to 1,600 feet.
Jo Daviess County:					
East Dubuque ¹⁴	940	5	420	- 95	
Do.	1,000				
Galena ¹⁵	1,209	8	166	+ 85	
Warren	697.875				2 wells.
Kane County:					
Aurora ¹⁶	663				
Do. ¹⁷	1,388	8-6	350		
Do. ¹⁷	2,270			+ 60	
Do. ¹⁷	2,255			+ 60	
Do.	2,235-2,250				3 wells.
Do.	1,971				
Do.	1,457				
Batavia	1,279				

¹ U. S. Geol. Surv. Monograph No. 38, 1899, p. 647.² Record, Economic Geol., Ill., vol. 3, pp. 386-387.³ Ibid., 17th Ann. Rept., 1895-96, part 2, p. 810; Monograph No. 38, 1899, p. 682.⁴ Record, Ill. Geol. Surv. Rept., vol. 8, pp. 64-65.⁵ Ibid., p. 62.⁶ U. S. Geol. Surv. Monograph No. 38, 1899, p. 684.⁷ Ibid., p. 683.⁸ Ibid., p. 680.⁹ Ibid., 17th Ann. Rept., 1895-96, part 2, p. 813; analysis, p. 827; Monograph No. 38, 1899, p. 623.¹⁰ Record, ibid., p. 814; analysis, p. 821; Monograph No. 38, 1899, p. 624.¹¹ U. S. Geol. Surv. Monograph No. 38, 1899, pp. 657-658.¹² Ibid., p. 780.¹³ Ibid., 17th Ann. Rept. 1895-96, part 2, p. 814; analysis, ibid., pp. 808, 827; Monograph No. 38, 1899, p. 747.¹⁴ Ibid., Monograph No. 38, 1899, p. 565.¹⁵ Ibid., 17th Ann. Rept. 1895-96, part 2, p. 813; analysis, p. 827; Monograph No. 38, 1899, p. 565.¹⁶ Ibid., p. 810; Monograph No. 38, 1899, p. 599.¹⁷ Analysis, ibid., p. 820; Monograph No. 38, 1899, p. 599.

ILLINOIS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Kane County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Carpentersville.....	692 and 2,300	.....	.....	.....	2 wells.
Elburn.....	1,375	.....	.....	.....	.....
Geneva.....	400-2,500	.....	.....	.....	4 wells.
Gray Willow ¹	500	.....	.....	.....	.....
Elgin ²	1,400	.....	.....	.....	Water at 487 to 514 feet; sulphur water at 650 to 700 feet.
Do. ³	1,876	.....	.....	+ 2	Also sulphur water at 650 to 700 feet.
Do. ³	2,026	6	.....	+ 27	Sulphur water at 650 to 700 feet; soft water at 2,024 feet.
Do. ⁴	2,230	.....	.....	- 4	Also sulphur water at 650 to 700 feet.
Kankakee County:					
Kankakee ⁵	1,000	4	.....	- 15	Water from 900 feet.
Kendall County:					
Plattville (2 miles north of). ⁶	550	.....	.....	No flow.	Large amount of water.
Knox County:					
Galesburg ⁷	1,236	.....	.....	.....	City water works well No. 2.
Do. ⁸	1,226	14-6	120	-102	Water at 1,060 to 1,226 feet; temp., 60° F.
Do.....	1,999	.....	.....	.....	.....
Knoxville ⁹	1,350	8	80	.....	Water from 1,180 to 1,350 feet; temp., 68° F.
Lake County:					
Highland Park ¹⁰	2,200	8-5	150	+ 9	Water at 900, 1,300, and 1,700 to 2,200 feet; slightly saline and hard.
Do. ¹¹	1,800 and over.	.....	.....	.....	3 wells.
Lake Forest ¹²	560	.....	60	+ 50	.....
Do.....	1,290	.....	.....	.....	.....
Do.....	1,757	.....	.....	.....	2 wells.
Do.....	1,135	.....	.....	.....	.....
Waukegan ¹¹	1,600	.....	.....	.....	Irony water; 3 wells.
Do.....	2,005	.....	.....	.....	.....
Lasalle County:					
Lasalle ¹³	502	6	200	.....	.....
Marseilles ¹⁴	2,189	.....	1	Flow.	Flow is from 298 feet.
Mendota ¹⁵	400	.....	.....	- 47	.....
Do. ¹⁶	857	.....	.....	+ 14	Flows at 187 and 637 feet.
Do.....	470-504	.....	.....	.....	3 wells.
Ottawa ¹⁷	400	.....	.....	.....	Has 200 wells 400 feet deep; water from 290 to 400 feet.
Do. ¹⁸	1,840	.....	.....	+177	Water from 1,640 to 1,840 feet.
Pedicord.....	2,189	.....	8	At surface.	Water from Potsdam 1,845 to 2,143 feet.
Peru ¹⁹	1,360	.....	200	+120	Water at 750 feet also.
Do.....	2,300	.....	.....	.....	.....
Do. ²⁰	1,250	.....	450	+ 85	.....
Ransom (near) ²¹	543	.....	.....	.....	.....
Seneca ²²	600-650	.....	.....	.....	2 wells.
Do. ²³	680	4	.....	+ 15	Water, which is hard and sulphurous, is from 350 and 380 feet.
Streator.....	1,115	8-6	130	No flow.	Water-bearing beds at 596, 706, 834, 1,056, and 1,096 feet.

¹ U. S. Geol. Surv. Monograph No. 38, 1899, p. 597.² Ibid., 17th Ann. Rept. 1895-96, part 2, p. 812.³ Ibid., p. 812; Monograph No. 38, 1899, p. 595-596.⁴ Ibid., p. 812; analysis, p. 827; Monograph No. 38, 1899, p. 595.⁵ Record, ibid., 17th Ann. Rept. 1895-96, part 2, p. 814, analysis, p. 821; Monograph No. 38, 1899, p. 653.⁶ U. S. Geol. Surv. Monograph No. 38, 1899, p. 644.⁷ Analysis, Am. Inst. Mining Eng. Trans., vol. 27, p. 135.⁸ U. S. Geol. Surv., 17th Ann. Rept. 1895-96, part 2, p. 813; Monograph No. 38, 1899, p. 677.⁹ Ibid., p. 814; Monograph No. 38, 1899, p. 677.¹⁰ Ibid., p. 813; Monograph No. 38, 1899, p. 580.¹¹ Ibid., Monograph No. 38, 1899, p. 580.¹² Ibid., 17th Ann. Rept. 1895-96, part 2, p. 814; Monograph No. 38, 1899, p. 580.¹³ Ibid., p. 814; Monograph No. 38, 1899, p. 637.¹⁴ Record, Ill. Geol. Surv., vol. 8, p. 50; U. S. Geol. Surv. Monograph No. 38, 1899, p. 639.¹⁵ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 815.¹⁶ Record, Minn. Geol. Surv., 13th Ann. Rept. pp. 55, 56.¹⁷ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 816; Monograph No. 38, 1899, p. 638.¹⁸ Record, ibid., pp. 798, 799; Monograph No. 38, 1899, p. 638.¹⁹ Analysis, ibid., p. 828; Monograph No. 38, 1899, p. 637.²⁰ U. S. Geol. Surv. Monograph No. 38, 1899, p. 637.²¹ Ibid., p. 641.²² Ibid., p. 638.²³ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 817; Monograph No. 38, 1899, p. 638.

ILLINOIS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Lasalle County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Streator	773	9-7	94	No flow.	Coal at 223 feet; fire clay at 236 feet.
Do. ¹	2,496	.....	.....	+ 45	Water at 450, 2,170, and 2,496 feet.
Vermilion ²	1,000	.....	Many.	Flows.	Flows begin at 380 feet; water slightly saline.
Lee County:					
Amboy ³	2,000	.....	.....	+ 3	Temp., 55° to 60°; water at 330, 1,100, and 1,700 feet.
Do.	2,012	.....	.....	.....	.....
.....	1,640	.....	.....	.....	.....
Dixon ⁴	1,730	.....	Many.	.....	3 wells.
.....	1,810	.....	.....	.....	.....
Do.	1,500-1,800	.....	.....	.....	5 wells.
Pawpaw ⁵	1,048	.....	.....	.....	.....
Sublette	752	.....	.....	.....	.....
Livingston County:					
Chatsworth ⁶	1,200	.....	.....	- 25	.....
Fairbury ⁷	2,002	.....	.....	.....	.....
Do. ⁸	571	.....	.....	.....	Water at 427 feet.
Do.	2,002	8	.....	- 60	.....
McDonough County:					
Macomb	1,350	.....	.....	- 55	.....
Do. ⁹	1,630	.....	.....	.....	Water from 1,135 to 1,360 feet.
McHenry County:					
Algonquin ¹⁰	2,527	.....	.....	.....	Bad water; abandoned.
Harvard ¹¹	900	12-7	90	- 41	Hard water.
Woodstock ¹²	1,014	6½	500	- 60	.....
Do.	410	5	.....	- 130	.....
Do.	957	.....	.....	.....	.....
Macon County:					
Decatur ¹³	507	.....	.....	.....	.....
Madison County:					
Alton	890	6-4	35-40	Flows.	2 wells; mineral water.
Bethalto	1,000	12	15	- 25	Saline water.
Collinsville ¹⁴	575	.....	.....	- 120	2 wells; water slightly saline.
.....	600	.....	.....	.....	.....
Marion County:					
Centrallia ¹⁵	864	6	.....	.....	Unsuccessful.
Marshall County					
Henry ¹⁶	1,800	3½	32	.....	.....
Wenona ¹⁶	1,854	.....	100	- 25	White sulphur water.
Mercer County:					
Aledo ¹⁷	3,115	.....	Many.	- 75	Water at 1,200 feet; salty water from 2,300 to 2,620 and 3,071 feet.
Wanlock					
.....	1,247	.....	.....	.....	.....
Monroe County.					
Columbia ¹⁸	1,010	5½	.....	- 10	Water not pleasant
Waterloo	1,036	9½-7½	20	.....	20-gallon flow at 80 feet also; temp., 50°.
Montgomery County:					
Litchfield ¹⁹	682	.....	.....	.....	Oil with salt water and gas.
Morgan County:					
Alexander (near) ²⁰	1,000	.....	.....	.....	Flow for gas unsuccessful.
Franklin	1,200	.....	.....	.....	For gas.
Jacksonville ²¹	1,600	.....	.....	.....	Water brackish at 2,310 feet.
Do. ²²	2,373	6-4½	30	+ 15	.....
Do. ²²	2,408	5½	85	+ 10	Water brackish at about 2,100 feet.
Do. ²²	3,028	6½-5½	500	+ 30	Water from 1,890 and 3,000 feet; slightly saline.

¹ Ill. Geol. Surv., vol. 7, pp. 50, 59; record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 798; analysis, p. 821; Monograph No. 38, 1899, p. 639.

² U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 818; Economic Geol., Ill., vol. 2, p. 235; U. S. Geol. Surv. Monograph No. 38, 1899, p. 639.

³ Ibid., p. 810; Monograph No. 38, 1899, p. 610.

⁴ Analysis, ibid., p. 827; Monograph No. 38, 1899, p. 609.

⁵ U. S. Geol. Surv. Monograph No. 38, 1899, p. 611.

⁶ Record, Economic Geol., Ill., vol. 3, pp. 595-596.

⁷ U. S. Geol. Surv. Monograph No. 38, 1899, p. 666.

⁸ Ill. Geol. Surv., vol. 6, p. 242.

⁹ Analysis, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, pp. 808, 827; Monograph No. 38, 1899, p. 685.

¹⁰ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 810; Monograph No. 38, 1899, p. 578.

¹¹ Ibid., Monograph No. 38, 1899, p. 576.

¹² Ibid., p. 577.

¹³ Record, Economic Geol., Ill., vol. 3, pp. 538-539.

¹⁴ U. S. Geol. Surv. Monograph No. 38, 1899, p. 749.

¹⁵ Record, Economic Geol., Ill., vol. 2, pp. 138-139.

¹⁶ U. S. Geol. Surv. Monograph No. 38, 1899, p. 669.

¹⁷ Ibid., 17th Ann. Rept., 1895-96, part 2, p. 810; Monograph No. 38, 1899, p. 622.

¹⁸ Ibid., Monograph No. 38, 1899, pp. 765-766.

¹⁹ Record, Ill. Geol. Surv., vol. 7, p. 37; U. S. Geol. Surv. Monograph No. 38, 1899, p. 741.

²⁰ U. S. Geol. Surv. Monograph No. 38, 1899, p. 724.

²¹ Ill. Geol. Surv., vol. 8, p. 67.

²² U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 814; analysis, p. 820; Monograph No. 38, 1899, p. 723.

ILLINOIS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Ogle County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Mount Morris ¹	502	.....	.....	.....
Polo	2,098	.....	Many.	.....
Peoria County:					
Peoria (opposite) ²	734	.....	.....	+ 60	Sulphur water.
Do.	1,800	.....	.....	.....
Perry County:					
Pinckneyville ³	2,000	.....	.....	.....
St. John's ⁴	1,050	.....	6	.....	6 salt wells; brine at 970 feet.
Do. ⁵	3,750	.....	.....	.....	Supply of water at 311 feet, which was soon exhausted; salty water below 520 feet.
Piatt County:					
Monticello	1,100	.....	.....	.....	Flow of mineral water also.
Pike County:					
Barry ⁶	2,510	6	100	- 35	
Pittsfield ⁷	2,200	.....	.....	.....
Putnam County:					
Hennepin ⁸	800	4	80	+ 50	Slightly saline water; temp., 58°.
Randolph County:					
Coulterville ⁹	1,117	.....	.....	.....	Water brackish.
Do.	1,201	.....	.....	.....	No gas or oil found.
Redbud ¹⁰	580	3	4	+ 7	
Do. ¹⁰	1,350	4	.....	- 20	
Sparta ¹¹	480	.....	.....	- 75	
Do. ⁹	840-864	.....	.....	.....	Several borings, furnishing a supply of gas.
Richland County:					
Olney ¹²	2,000	.....	.....	No flow.	Saline water.
Do.	2,200	.....	.....	.....
Rock Island County:					
Carbon Cliff ¹³	915	5½	400	+ 50	Brackish water at 850 feet.
Do. ¹⁴	950	.....	.....	.....
Do.	909	.....	.....	.....
East Moline	1,340	6	240	+ 36	750 and 1,030 to 1,080 feet.
Milan ¹⁵	1,217	.....	.....	.....
Do. ¹⁶	1,157	8-5	318	+ 61	Water from 800 and 1,000 feet.
Do.	1,221	.....	.....	.....
Moline ¹⁷	1,166	.....	250	+ 25	
Do. ¹⁸	1,628	5	350	+ 82	Sulphur water at about 700 feet.
Do.	1,700	.....	.....	.....	2 wells.
Port Byron Junction	2,368	.....	.....	.....
Rock Island ¹⁹	1,340	.....	.....	.....
Do.	1,150	4	400	+ 70	Sulphur water at 750 and 930 feet.
Do. ²⁰	2,282	8-4½	.....	+ 50	Also sulphur water at 800 feet.
Do.	1,068-2,292	.....	.....	.....	3 wells.
St. Clair County:					
Belleville	503	.....	.....	- 80	
Do.	432,569	.....	.....	.....
East St. Louis	1,100	.....	.....	.....
Marissa	685	.....	35	No flow.	Good drinking water, but unfit for boilers.
Mascoutah	3,053	.....	.....	.....
Millstadt ²¹	620	7½	4	- 75	Hard water.
Saline County:					
Eldorado	520	3½	Few.	.....
Sangamon County:					
Divernon	604	.....	Not any.	.....	Coal prospect.
Riverton ²²	2,584	.....	.....	.....	No gas, oil, or water found.
Springfield ²³	Nearly 1,200	.....	.....	No flow	

¹ U. S. Geol. Surv., Monograph No. 38, 1899, p. 605.² Economic Geol., III, vol. 2, p. 449.³ U. S. Geol. Surv. Monograph No. 38, 1899, p. 771.⁴ Ill. Geol. Surv., vol. 7, p. 38.⁵ Partial record, etc., U. S. Geol. Surv. Monograph No. 38, 1899, pp. 772-773.⁶ Analysis, *ibid.*, 17th Ann. Rept., 1895-96, part 2, p. 827. Monograph No. 38, 1899, p. 719.⁷ U. S. Geol. Surv. Monograph No. 38, 1899, p. 721.⁸ *Ibid.*, p. 634.⁹ *Ibid.*, p. 769.¹⁰ *Ibid.*, p. 768.¹¹ *Ibid.*, 17th Ann. Rept., 1895-96, part 2, p. 817.¹² Ill. Geol. Surv. Rept., vol. 7, p. 8. U. S. Geol. Surv. Monograph No. 38, 1899, p. 757.¹³ Record, *ibid.*, vol. 8, pp. 64-65.¹⁴ Record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part, p. 849.¹⁵ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 846.¹⁶ *Ibid.*, p. 815, analysis, pp. 808, 827; Monograph No. 38, 1899, p. 621.¹⁷ Record, *ibid.*, pp. 847, 848.¹⁸ *Ibid.*, p. 848, analysis, pp. 808, 827.¹⁹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 816, analysis, pp. 808, 828; record, pp. 845-846.²⁰ *Ibid.*, pp. 817, 845.²¹ *Ibid.*, Monograph No. 38, 1899, p. 762.²² Ill. Geol. Surv. Report, vol. 8, p. 62.²³ *Ibid.*, vol. 8, p. 312.

ILLINOIS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Schuyler County: Rushville ¹	<i>Feet.</i> 2,500	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	Water has unpleasant taste; discontinued.
Scott County: Winchester ²	412	.....	.....	+ 25	Water from 350 feet.
Shelby County: Shelbyville.....	1,200	6	.....	Flows.	Water is saline, and from 625 feet.
Strasburg.....	704	.....	.....	.....	.....
Stark County: Bradford.....	2,454	8-6	Many.	-175	.....
Tazewell County: East Peoria.....	734	.....	.....	.....	Brackish water at 317 and 734 feet.
Pekin ³	850	.....	.....	.....	Salt at 500 feet.
Do.....	1,000	6	167	+ 65	Salt water at 425 feet; lower water strongly sulphurous; temp., 70°.
Washington Heights.....	1,308	.....	.....	.....	.....
Vermilion County: Danville ⁴	1,149	.....	.....	.....	.....
Danville Junction ⁵	2,008	.....	.....	.....	Brackish water at 1,700 to 1,735 feet.
Rossville ⁶	500	.....	.....	.....	Coal boring.
Wabash County: Lancaster ⁷	+800	6	.....	.....	For oil; unsuccessful.
Mount Carmel ⁸	700	.....	.....	.....	Bored for oil.
Warren County: Alexis.....	1,200	.....	.....	.....	.....
Monmouth ⁹	1,232	.....	.....	.....	No flow water; no gas; no oil.
Do.....	1,400	6-4	210	- 60	.....
Do. ¹⁰	1,230	.....	200	- 60	Water from 1,074 to 1,230 feet.
Do. ¹¹	1,227	.....	.....	- 60	Water at 935 and from 1,074 to 1,227 feet; two wells.
Do.....	1,221	.....	.....	.....	.....
Roseville.....	1,260	.....	.....	.....	.....
White County: Carmi.....	600	.....	Many.	Flows.	.....
Whiteside County: Fulton ¹²	1,246	5	300	+ 61	First flow, 475 feet; sulphur water.
Do.....	1,214	.....	.....	.....	.....
Morrison ¹³	1,190	.....	.....	+ 15	Well not in use.
Sterling ¹⁴	1,450	.....	350	At surface.	.....
Do.....	1,500	.....	.....	.....	.....
Will County: Braidwood ¹⁵	900	4	.....	At surface.	Water from a porous sandstone at 655 to 855 feet, the lower 45 feet being in limestone.
Joliet ¹⁶	477	.....	Many.	Flows.	.....
Do. ¹⁷	1,200	.....	500	.....	2 wells.
Do. ¹⁸	1,700	.....	500	+ 10	Temp., 45°.
Do. ¹⁹	2,076	.....	.....	+ 10	.....
Do.....	2,300	.....	.....	.....	.....
Do.....	1,196-2,140	.....	.....	.....	5 wells.
Do. ¹⁵	1,948	.....	.....	.....	} State penitentiary.
.....	553	.....	.....	.....
Lockport.....	1,921	.....	.....	.....	.....
Wilmington ²⁰	635	4½	.....	46	Sulphurous and magnesia water from 400 to 635 feet.

¹ U. S. Geol. Surv. Monograph No. 38, 1899, p. 712.² Ibid., p. 722.³ Ibid., p. 691.⁴ Record, U. S. Geol. Surv. Folio No. 67.⁵ Ibid., Monograph No. 38, 1899, p. 699, record, U. S. Geol. Surv. Folio No. 67.⁶ Ibid., p. 699.⁷ Record, Economic Geol., Ill., vol. 3, pp. 58-60.⁸ Record in part, *ibid.*, vol. 3 pp. 386-387.⁹ Record, Ill. Geol. Surv. Rept., vol. 8, pp. 62-66.¹⁰ Record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2 p. 848, analysis, pp. 808, 827.¹¹ Ibid., p. 848; analysis, pp. 808, 827. Monograph No. 38, 1899, p. 678.¹² U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 813, Monograph No. 38, 1899, p. 615.¹³ Ibid., Monograph No. 38, 1899, p. 616.¹⁴ Analysis, U. S. Geol. Surv., 17th Ann. Rept., 1895-96 part 2, p. 828. Monograph No. 38, 1899, p. 616-617.¹⁵ U. S. Geol. Surv. Monograph No. 38 1899, p. 650.¹⁶ Record, Economic Geol., Ill., vol. 2, pp. 482, 487; U. S. Geol. Surv. Monograph No. 38, 1899, p. 649.¹⁷ U. S. Geol. Surv. Monograph No. 38 1899, p. 649.¹⁸ Ibid., 17th Ann. Rept., 1895-96, part 2, p. 814; analysis, p. 821.¹⁹ Record, *ibid.*, pp. 799, 814, Monograph No. 38, 1899, p. 650.²⁰ Ibid., 17th Ann. Rept., 1895-96, part 2, p. 818; Monograph No. 38, 1899, p. 650.

ILLINOIS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Williamson County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Marion	1,715	.....	.....	Flow.	For gas and oil; sulphurous and salt water found.
Winnebago County:	1,047	.....	.....	.....
Harlem	1,300-1,996	8-6	116-260	+ 8	5 wells; water from 380 to 400 feet and 1,200 to 1,300 feet.
Rockford ¹					
Do. ²	400	6	.....	- 8	
Woodford County:	1,755	.....	100	-149	Moderately hard water at 750 feet and at about 1,700 feet.
Minonk ³					
Potsdam	1,500	.....	Many.	.....
Review	1,400	6	.....	.....	Temp., 62°.
Do.	1,233	.....	208	54	Salt water from 600 to 1,008 feet.

¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 816; analysis, p. 828.

² Analysis, *ibid.*, p. 828.

³ U. S. Geol. Surv. Monograph No. 38, 1899, p. 670.

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.

Wells of Illinois, by Frank Leverett: United States Geological Survey Monograph No. 38, 1899, pages 550-787.

U. S. Geol. Surv. Folio No. 67 (Illinois-Indiana), by M. R. Campbell and Frank Leverett, Washington, 1900.

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	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Adams County.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Decatur ¹	1,300	.....	.....	.....	For gas; unsuccessful; salt water.
Allen County.	250-450	.....	5,000 in all.	-6(?)	51 wells at waterworks.
Fort Wayne	1,458	.....	.....	.....	For gas, unsuccessful.
Fort Wayne (Bass foundry)	1,900	.....	.....	-900	For gas; unsuccessful; mineral water.
Fort Wayne (Abott's addition). ²	3,020	.....	.....	- 8	For gas, unsuccessful.
Fort Wayne (court-house).					
Bartholomew County:	1,700	.....	.....	.....	Gas well.
Columbus ³	+914	.....	.....	.....	Do.
Elizabethtown	+861	.....	.....	.....	Do.
Hartsville					

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

² Analysis and Record, Ind. Geol. and Nat. Hist. Surv., 16th Ann. Rept., 1888, pp. 129-130.

³ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 722; 18th Ann. Rept., 1896-97, part 4, pp. 487-488.

INDIANA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Benton County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Earl Park.....	1,000	5			Abandoned.
Oxford (5 miles south-west).	537				
Blackford County:					
Hartford City ¹	900-1,000				Over 1,000 wells for oil and gas in the county.
Montpelier ²	975			Flows.	Gas well; hard water.
Do.....	808				
Boone County:					
Lebanon ³	1,350-1,840				Several wells; saline water at 400 and 1,350 feet.
Thorntown.....	1,500	6	5	Flows.	For gas; unsuccessful.
Zionsville ³	1,038			-438	For gas; unsuccessful; salt water at 1,013 feet.
Do.....	800			Flows.	For gas; unsuccessful.
Brown County:					
Nashville.....	500-530			Flows.	2 wells.
Carroll County:					
Deer Creek (one-half mile south).	± 840	6-4			Oil at 825 feet; salt or mineral water at 853 feet.
Delphi ⁴	914				For gas; unsuccessful.
Do.....	1,200				
Delphi (2 miles south-west). ⁵	923	6-4			Salt or mineral water at 923 feet.
Delphi (northeast).....	928	6-4			Salt or mineral water at 928 feet; also oil.
Delphi (southeast, at water tower).	947	6-4		Flows.	Salt or mineral water at 922 feet; also oil and gas.
Delphi (southeast).....	1,315	6-4		Flows.	Salt or mineral water at 898 feet; also oil and gas.
Delphi (northwest).....	1,385	6-4			Salt or mineral water at 923 feet.
Flora.....	±1,100	6-4			Salt water at 1,040 feet; also oil.
Cass County:					
Galveston ⁶	860				Salt water only.
Do.....	934				Several boring for gas; unsuccessful; sulphur water.
Logansport ⁷	+1,075		2	Flows.	
Do.....	1,600				
Royal Center ⁸	+ 925				Oil wells.
Walton.....	1,028				Salt water and some oil.
Clark County:					
Jeffersonville ⁹	960-1,216				For gas; unsuccessful.
Clay County:					
Carbon (2 miles south)...	936				Not successful.
Do.....	1,255	10		- 40	Good water at 350 feet.
Clinton County:					
Frankfort ³	1,446			-600	Salt water at 1,200 feet.
Frankfort (4 miles east).	1,105				For gas; unsuccessful.
Kirklin.....	1,088				Do.
Crawford County:					
English (8 miles south)...	700	3	11	+ 35	
Do.....	887	8	8	+ 50	
English, Clark well ¹⁰ ...	648				Gas at 408 feet; salt water at 648 feet; some oil.
Mifflin ¹¹	1,180				Some oil at 135 feet and some gas at 1,180 feet.
Dearborn County:					
Aurora ¹²	1,000				Brackish water at 195 feet, brine at 831 feet, and gas at 267 feet.
Lawrenceburg.....					Gas wells.
Decatur County:					
Adams.....	± 800				Do.
Greensburg ¹³	862-886				Numerous gas wells.
Millhouses.....	1,000-1,100	6			Several gas wells
St. Omer.....					Gas well.
Sandusky.....	830	6		- 15	

¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 678-681.² Ibid., p. 680.³ Ibid., p. 730.⁴ Ibid., p. 731.⁵ Record, Mich. Geol. Surv., 1881-1893, p. 54, pl. 14.⁶ Record, Ind. Geol. and Nat. Hist. Surv., 19th Ann. Rept., 1894, p. 39.⁷ Ibid., p. 38; U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 732.⁸ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 732.⁹ Record, ibid., p. 724.¹⁰ Record, Ind. Geol. and Nat. Hist. Surv., 17th Ann. Rept., 1891, p. 311.¹¹ Ibid., pp. 311-312.¹² Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 705.¹³ Ibid., pp. 703-704.

INDIANA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Dekalb County:	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons</i>	<i>Fect.</i>	
Auburn	+1,933	.....	.....	.....	Gas wells.
Butler	600	.....	.....	.....	Hard water.
Do. ¹	2,139	.....	.....	.....	For gas, unsuccessful; salt water.
Garrett .....	.....	.....	.....	.....	Small gas well.
Waterloo .....	.....	.....	.....	.....	Gas well.
Delaware County:					
Albany ²	978	.....	.....	.....	Do.
Do.	1,262	8-6½	.....	.....	Oil in small quantity.
Cowan	+ 935	.....	.....	.....	Gas well.
Daleville	+ 870	.....	.....	.....	Do.
Desoto .....	.....	.....	.....	.....	Do.
Eaton ³ .....	.....	.....	.....	.....	Do.
Muncie ⁴	870-955	.....	.....	.....	Numerous wells in vicinity.
Do. ⁵	1,606	.....	.....	-506	Brine at 1,390 feet.
Do.	1,243	.....	.....	.....	Oil.
New Corner .....	.....	.....	.....	.....	Gas well.
Oakville .....	.....	.....	.....	.....	Do.
Royertown .....	.....	.....	.....	.....	Do.
Selma ⁶	1,025	.....	.....	.....	Do.
Shideler .....	.....	.....	.....	.....	Do.
Union Grove	944	.....	.....	.....	Do.
Yorktown	940	.....	.....	.....	Do.
Dubois County:					
Jasper	1,100	8	.....	.....	Salt water at 460 feet, gas at 600 feet, oil and mineral water at 955 feet.
Elkhart County:					
Elkhart ⁷	+ 615	5½	.....	Flowed.	For gas; unsuccessful; salt water at 550 feet.
Goshen ⁸	2,059	.....	.....	Flows.	For gas; unsuccessful; salt water.
Fayette County:					
Connorsville ⁹	851	8	.....	.....	Gas well.
Floyd County:					
Boone Landing .....	.....	.....	.....	.....	Gas wells.
New Albany .....	.....	.....	.....	.....	For gas; unsuccessful.
Tobasso Landing .....	.....	.....	.....	.....	Gas wells.
Fountain County:					
Attica	900	.....	.....	Flows.	Sulphurous water.
Covington (3 miles below)	1,000	.....	.....	.....
Lodi ¹⁰	1,155	10	35	+43	For oil; yields mineral water.
Franklin County:					
Brookville (4 miles south). ¹¹	1,254	.....	.....	.....	Gas wells.
Mount Carmel (1 mile west). ¹²	590	.....	.....	.....
Fulton County:					
Fulton	1,150	.....	.....	.....	Salt water only; abandoned.
Kewanna ¹³	1,089	.....	.....	-84	For gas; unsuccessful.
Rochester ¹³	1,185	.....	.....	.....	Do.
Do.	500	.....	Many.	+ 5	Sulphur water.
Rochester (1½ miles south). ¹²	1,157	.....	.....	-15	Salt water at 1,157 feet.
Rochester	1,500	.....	.....	.....	Water flowed at 240 feet; well abandoned.
Gibson County:					
Fort Branch ¹⁴	408	.....	.....	.....	Several wells.
Princeton	600-790	.....	.....	.....
Do.	1,274	.....	.....	.....
Do. ¹⁴	422-1,020	.....	.....	.....	Do.
Grant County:					
Fairmount ¹⁵	500-1,000	8-4	.....	.....	Gas wells.
Herbst station	1,045	.....	.....	.....	Gas well.
Jonesboro ¹⁶	935	.....	.....	.....	Do.
Marion ¹⁷	+865-1,010	4	.....	Flow.	Numerous gas wells; some yield oil.
Point Gabel .....	.....	.....	.....	.....	Gas well.

¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 733.² Ibid., p. 715.³ Ibid., p. 713.⁴ Ibid., pp. 713-719.⁵ Ibid., p. 731.⁶ Ibid., pp. 715-716.⁷ Ibid., p. 735. Mich. Geol. Surv., 1881-1893, p. 57, pl. 17.⁸ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 735. Mich. Geol. Surv., 1881-1893, p. 60, pl. 19.⁹ Ibid., p. 721.¹⁰ Record, Ind. Geol. Surv., 1st Ann. Rept., 1869, pp. 29-31.¹¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 707.¹² Ibid., Folio No. 105, 1904, p. 8.¹³ Ibid., 11th Ann. Rept., 1889-90, part 1, p. 733.¹⁴ U. S. Geol. Surv. Folio No. 105, 1904, p. 8.¹⁵ Record, Ibid., 11th Ann. Rept., 1889-90, part 1, p. 685.¹⁶ Ibid., p. 688.¹⁷ Ibid., pp. 685-687.

INDIANA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Grant County—Continued.					
Swayzee					Gas wells.
Sweetzer					Gas well.
Upland	1,040				Do.
Van Buren ¹	973				Do.
Greene County:					
Worthington	1,445			Flows?	Sulphur water.
Hamilton County:					
Arcadia ²	974				Gas well.
Atlanta					Do.
Carmel					Gas well; small product.
Cicero					Gas well.
Eagletown					Gas well; small product.
Fishers station					Gas well.
Joliet					Gas well; small flow.
Myers					Gas well; small product.
New Britton					Gas wells.
Noblesville ³	843-860				Do.
Sheridan	1,076				Do.
Swainville			370		Gas well; small product.
Westfield	1,080				Gas well; much salt water.
Do	±1,068				Gas wells.
Hancock County:					
Charlottesville					Gas well.
Greenfield ⁴	990				Gas wells.
McCordsville					Gas well.
New Palestine	1,060			-400	Salt water at 1,003 feet; some gas at 625 and 900 feet.
Fortville	(?)				Gas wells.
Palestine ⁵					Gas well.
Harrison County: ⁶					
Corydon	1,200				Gas boring.
Do	423-728	8-5½			Fresh water 30-130 feet; also salt water in lower strata.
Hendricks County:					
Danville	830				Abandoned.
Do	1,500	8-5	30		First water at 700 feet.
Plainfield	1,385				Gas well.
Henry County:					
Cadiz ⁷	421				Do.
Dunreith					Do.
Greensboro (near)					Do.
Honey Creek	+ 980				Gas wells.
Knightstown					Gas well.
Mechanicsburg					Gas wells.
Middleton	+ 935				Do.
Mount Summit ⁸	1,082			-720	Gas wells; salt water at 1,020 feet.
Newcastle ⁹					Several gas wells with flows of salt water.
Ogden					Gas well.
Spiceland ¹⁰					Gas wells.
Springport ¹¹					For gas; unsuccessful.
Sulphur Springs					Do.
Valley Mills					Gas well.
Howard County:					
Greentown	963				Do.
Kokomo ¹²	920-1,000		Many.	Flows.	Gas wells; much salt water.
Do			Many.		
Do				Flows.	
Sycamore					Gas well.
Tampico	+ 950				Gas wells.
Huntington County:					
Huntington ¹³	1,037			- 87	For gas; unsuccessful.
Markle	1,700	8		Flows.	White sulphur water.
Warren	969				Some oil, abandoned.
Jackson County:					
Brownstown ¹⁴	1,891			- 291	Flow of magnesia water at 565 feet; salt water at 1,891 feet.

¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 689.² Ibid., p. 699.³ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 697.⁴ Record, *ibid.*, pp. 701-702.⁵ Ibid., p. 702.⁶ U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 4, p. 488; 11th Ann. Rept., 1889-90, part 1, p. 725.⁷ Ibid., Water-Sup. and Irr. Paper No. 26, 1899, p. 31.⁸ Record, *ibid.*, 11th Ann. Rept., 1889-90, part 1, p. 706.⁹ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 705-707.¹⁰ Ibid., p. 707.¹¹ Ibid., p. 706.¹² Ind. Geol. and Nat. Hist. Surv., 1835-86, 15th Ann. Rept., pp. 323-326. U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 691-693.¹³ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 739.¹⁴ Ibid., p. 726.

INDIANA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Jackson County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Seymour ¹	1,090-1,204			Flows.	Several gas wells.
Do.	500				Sulphur water.
Jasper County:					
Rensselaer	800				Do.
Do.	1,275				Gas boring; not in use.
Jay County:					
Bryant	1,050				Oil well; abandoned.
Camden					Gas wells.
Como					Gas well.
Dunkirk	± 925				Do.
Hartford	± 925				Do.
Millgrove	± 925				Do.
Portland ²	900-1,500			-300	Gas wells; salt water at 1,500 feet.
Red Key	+ 900				Gas well.
Do.	1,385	8-6½			Oil; gas at 960 feet.
Jefferson County:					
Madison ³	1,004			-700	For gas; unsuccessful.
North Madison	1,500	6	Many.	-200	
Jennings County:					
North Vernon ³	±1,460			+260	Gas boring; unsuccessful; salt water.
Vernon	923				For gas; unsuccessful.
Johnson County:					
Edinburg ⁴	1,583			- 83	For gas; salt water only.
Franklin ⁵	1,113				Gas well.
Greenwood	600			- 45	Water from 320 feet.
Do. ⁴	1,975			-240	For gas; unsuccessful; water at 1,840 and 1,865 feet.
Trafalgar	1,500				Dry well.
Kosciusko County:					
Leesburg	1,800	5			
Warsaw ⁶	700		15		For gas; unsuccessful.
Do. ⁷	1,437			-387	Salt water.
Lake County:					
Crown Point ⁸	1,365			-120	For gas; unsuccessful.
Do. ⁹	3,100				Salt water.
Hammond	1,842				Not successful.
Do.	1,917				2 wells.
Hartsdale	1,700-1,900				Several wells.
Laporte County:					
Lacrosse (3 miles distant).	838			At surface.	Good water.
Laporte					For gas; unsuccessful.
Michigan City	819-833		300	+ 22	Ten°., 57°. Sulphur water.
Michigan City (1 mile west). ¹⁰	541				
Lawrence County:					
Bedford	1,050				
Mitchell	+1,200			- 30	For gas; saline water at 1,200 feet.
Madison County:					
Alexandria	881				Gas wells.
Anderson ¹¹	800				Water, mineral; city supply in part.
Do. ¹²	800-900	8		- 25	Gas wells in vicinity.
Chesterfield ¹³	948				Gas well.
Elwood	± 936				Do.
Florida					Do.
Frankton	840				Do.
Huntsville					Do.
Lapelle					Do.
Markleville	972				Do.
Pendleton ¹⁴					
Perkinsville					Do.
Summitville					
Do.	1,000	8-6		At surface.	
Do. ¹⁵	971			Flows.	Gas well; water at 140 feet.

¹ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 726-727.² Record, *ibid.*, p. 681.³ *Ibid.*, p. 723.⁴ *Ibid.*, p. 728.⁵ *Ibid.*, p. 727.⁶ *Ibid.*, p. 739.⁷ *Ibid.*, p. 736.⁸ *Ibid.*, p. 734.⁹ Borings preserved in county auditor's office.¹⁰ Record, Ind. Geol. and Nat. Hist. Surv., 17th Ann. Rept., 1891, p. 315; U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 4 p. 491.¹¹ U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 4, p. 487.¹² Record, *ibid.*, 11th Ann. Rept., 1889-90, part 1, pp. 711-713.¹³ *Ibid.*, pp. 709-713.¹⁴ *Ibid.*, p. 710.¹⁵ *Ibid.*, p. 709.

INDIANA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Marion County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Bridgeport ¹	1,200	.....	.....	.....	Gas well.
Brightwood.....	455	.....	.....	— 15	Several wells.
Do.....	476	8	139	— 60	Railroad well.
Do.....	1,181	.....	.....	.....	Some gas, oil, and salt water.
Broad Ripple.....	+ 950	.....	.....	.....	Gas wells.
Cumberland.....	+1,039	.....	.....	.....	Salt water.
Indianapolis.....	950-1,039	.....	.....	.....	For gas; unsuccessful.
Do. ²	1,520	.....	.....	.....	Do.
Irvington.....	990	.....	.....	.....	Gas well.
Lawrence.....	1,015	.....	.....	—315	.....
Marshall County:					
Plymouth ³	+1,368	.....	.....	—468	For gas; unsuccessful.
Martin County:					
Loogootee.....	1,200	.....	.....	.....	.....
Shoals.....	960	.....	.....	Flows.	Some salt water.
Miami County:					
Amboy ⁴	940	.....	.....	.....	Salt water at 385 feet.
Bunker Hill ⁵	+1,004	.....	.....	— 20	For gas; unsuccessful; salt water.
Converse.....	200-435	.....	.....	.....	Hard water; brackish water at 435 feet.
Do. ⁶	900-950	.....	.....	.....	Gas wells in vicinity.
Peru ⁷	900-1,050	.....	.....	Tosurface.	Boring for oil and gas.
Peru (2½ miles north) ⁸	1,042	.....	.....	— 50	Salt water at 1,042 feet.
Xenia ⁹	937	.....	.....	.....	Gas wells; flow of water also.
Do.....	936	.....	.....	.....	Do.
Monroe County:					
Bloomington ¹⁰	2,730	.....	.....	.....	No good water; abandoned.
Montgomery County:					
Crawfordsville ¹¹	1,544	.....	.....	.....	For gas; unsuccessful. Sulphur water at 750 feet.
Morgan County:					
Martinsville.....	1,472	.....	.....	.....	For gas.
Do. ¹²	668-704	5-6	30-35	Flow.	6 wells of mineral water.
Monrovia.....	± 500	.....	.....	.....	.....
Mooresville.....	±1,500	.....	.....	.....	.....
Morgantown.....	1,665	8	.....	Nearly to surface.	Gas borings; fresh water at 70 and 490 feet; saline water at 1,100 feet.
Newton County:					
Goodland.....	1,436	.....	.....	.....	.....
Kentland.....	1,200	.....	.....	— 60	.....
Do.....	1,325	.....	.....	.....	For gas; unsuccessful.
Noble County:					
Albion ¹³	1,914	.....	.....	.....	Do.
Kendallville.....	+1,920	.....	.....	.....	Do.
Orange County:					
Paoli.....	1,000	.....	.....	.....	Sulphur water at 250 feet; salt water at 900 feet; lithia water at 1,000 feet.
Owen County:					
Gosport.....	926	.....	Many.	+ 30	White sulphur water.
Spencer.....	1,150	4	200	+ 65	Several wells; saline water.
Parke County:					
Montezuma.....	1,675	4	Many.	+115	Water at 450 and 1,100 to 1,200 feet.
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.
Rockville.....	2,169	.....	.....	.....	For gas; unsuccessful.
Perry County:					
Cannelton.....	750	8-5½	.....	—150	Water and oil.
Pike County:					
Petersburg.....	1,161	.....	.....	.....	Blue lick water.
Do.....	1,200	.....	.....	.....	Gas well.

¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, p. 701.² Record, Ind. Geol. and Nat. Hist. Surv., 1885-86, 15th Rept., p. 331.³ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 735.⁴ Record, Ind. Geol. and Nat. Hist. Surv., 16th Rept., 1888, pp. 186, 187.⁵ Ibid., p. 186.⁶ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 690-691.⁷ 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.

⁸ Ibid., pp. 185, 255.⁹ Ibid., p. 187.¹⁰ Ibid., 15th Rept., 1885-86, p. 332.¹¹ Record, U. S. Geol. Surv., 11th Ann. Rept., part 1, 1889-90, p. 729.¹² Record and analysis, *ibid.*, 18th Ann. Rept., 1896-97, part 4, pp. 490, 498.¹³ Record, *ibid.*, 11th Ann. Rept., 1889-90, part 1, p. 737.

INDIANA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks
Pike County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Petersburg (one-half mile east).	1,310	.....	.....	Flows.	Salt water at 600 and 1,310 feet.
Petersburg (2½ miles northeast).	1,200	.....	.....	— 80	Salt water at 600 feet.
Petersburg (one-half mile north).	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)	1,700	10-4	.....	Flows.	Fresh water at 700 feet; some oil at 1,200 feet.
Rogers	1,785	10-4½	.....	.....	.....
Porter County:					
Furnessville (2 miles northeast). ¹	864	.....	210	+ 18	Several flows; sulphur water at 370 feet.
Hebron .....	.....	.....	.....	.....	For gas; unsuccessful.
Valparaiso ²	1,344	.....	.....	.....	Gas well.
Do. ³	1,336	.....	.....	.....	For gas; unsuccessful.
Pulaski County:					
Francesville	+ 890	.....	.....	.....	Oil and gas; unsuccessful.
Medaryville (6 miles west). ⁴	1,030	.....	.....	.....	Salt water and oil.
Winamac	1,200	.....	45	Flows.	For gas; unsuccessful; flow of water also.
Do.	1,250	.....	.....	.....	.....
Putnam County:					
Greencastle	1,200	6	.....	.....	For gas; unsuccessful.
Do.	2,000-2,700	8-1	.....	Flow.	Several borings; water at several horizons.
Do.	2,750	.....	.....	.....	.....
Reelsville (near)	2,600	.....	Many.	Flows.	Sulphur water; no oil; temperature, 60°.
Do. ⁵	1,240	.....	.....	+ 20	Salt and sulphur water.
Randolph County:					
Farmland ⁶	1,017	.....	.....	.....	Gas well.
Losantville	1,105	.....	.....	.....	For gas; unsuccessful.
Parker (1 mile north) ..	.....	.....	.....	.....	Sulphur water at 250 feet; salt water at 900 feet; lithia water at 1,000 feet.
Ridgeville	981-1,105	.....	.....	.....	Gas borings; unsuccessful.
Union City ⁷	1,093-1,780	.....	.....	.....	Several borings for gas; unsuccessful.
Winchester ⁸	1,000-1,071	.....	.....	.....	Several gas wells.
Ripley County:					
Osgood	950	5	.....	.....	Gas boring; small supply.
Pierceville	965	.....	.....	.....	For gas; unsuccessful.
Rush County:					
Carthage ⁹ .....	.....	.....	.....	.....	Gas near 1,257 feet.
Glenwood	+ 950	.....	.....	.....	For gas; unsuccessful.
Milroy .....	.....	.....	.....	.....	Do.
Rushville and vicinity ¹⁰.	.....	.....	.....	.....	Gas wells.
St. Joseph County:					
South Bend ¹¹	1,670	.....	.....	.....	For gas; unsuccessful.
Do.	2,000	.....	.....	.....	.....
Shelby County:					
Morristown ¹²	921	.....	.....	— 421	Gas well; much salt water.
St. Paul	+ 820	.....	.....	.....	Gas well.
Shelbyville ¹³ .....	.....	.....	.....	.....	For gas; unsuccessful.
Waldron	+ 820	.....	.....	.....	Gas well.
Spencer County:					
Rockport	+ 400	.....	.....	.....	4 gas borings, no product.
Starke County:					
Knox	+1,500	.....	.....	.....	Borings for gas or oil, unsuccessful.
Sullivan County:					
Sullivan	1,000	.....	.....	— 15	Gas boring; much strong brine.
Sullivan (2 miles south-east). ¹⁴	±1,000	.....	.....	Flows.	.....
Sullivan ¹⁵	544	.....	.....	.....	.....
Tippecanoe County:					
Lafayette ¹⁵	410	.....	.....	.....	.....
Do.	1,000	.....	.....	.....	Gas well.

¹ Record, U. S. Geol. Surv., Water-Sup and Irr. Paper No. 21, p. 16, 1899.² Ibid., 11th Ann. Rept., 1889-90, part 1, p. 733.³ Record, Ind. Geol. and Nat. Hist. Surv., 16th Ann. Rept., 1888, p. 264.⁴ Ibid., 17th Ann. Rept., 1891, p. 315.⁵ Record, Ind. Geol. Surv., 1st Ann. Rept., 1869, pp. 29-31.⁶ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 688-689.⁷ Record, *ibid.*, p. 684.⁸ Ibid., pp. 683-685.⁹ Ibid., p. 704.¹⁰ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 704.¹¹ Record, Mich. Geol. Surv., 1881-1893, p. 84, pl. 64; U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 734-735.¹² Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 703.¹³ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 702-703.¹⁴ Record, Ind. Geol. Surv., 1870, pp. 193-194.¹⁵ Ind. Geol. and Nat. Hist. Surv., 1885-86, 15th Ann. Rept., pp. 69-71.

INDIANA—Continued.

Location.	Depth.	Dia- meter.	Yield per minute.	Height of water.	Remarks.
<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Tipton County:					
Circleville.....	+1,078				For gas; unsuccessful.
Kempton ¹	1,035				
Sharpsville ¹	970				For gas; fine flow.
Tipton ²	1,030				Small amount of gas.
Windfall.....	1,002				Gas well.
Union County:					
Liberty ³	971	8-10			For gas; unsuccessful.
Liberty (8 miles from).....	1,000	8-10			Do.
Vanderburg County:					
Evansville.....	1,100				Several wells; brackish water.
Do. ⁴	1,829				Salt water at 1,400 feet.
Do.....	1,500				
Do.....	1,215				
Vigo County:					
Fontanet.....	± 400	8		— 12	
Fontanet (one-half mile southwest).....	440		Many.		
Fontanet (3 miles southwest).....	1,451	8-4	Many.		Water at 400 feet.
Heckland.....	1,615				
St. Marys.....	2,055	8		— 75	
Do.....	830	8		75	
Terre Haute ⁵	2,800	8		Flows.	Sulphur water with little gas.
Do. ⁶	1,793				Brine at 1,300 feet; sulphur water at 1,793 feet; some oil at 1,629 feet.
Do.....	± 1,625				Several borings for oil; unsuccessful.
Do.....	1,772				
Wabash County:					
La Fontaine ⁷	920				Gas well.
North Manchester ⁸	+1,180			— 190	Gas boring; unsuccessful; salt water.
Somerset ⁹	853				Water at 485 feet.
Treaty.....	950	8-5			
Do. ¹⁰	900	8-6		+ 8	
Wabash ¹¹	2,270	6		— 40	For gas; unsuccessful.
Warren County:					
Williamsport.....	1,200			Flows.	Gas well; salt and fresh water also.
Warrick County:					
Boonville.....	1,400			No flow.	Gas well.
Boonville (4 miles west).....	1,500	10 or 12		No flow.	
Boonville.....	1,200	12		Flows.	Salt water.
Chandler.....	1,505				2 flows of salt water and some gas.
Newburg.....	+ 400				
Washington County:					
Salem ¹²	1,800				For gas; unsuccessful.
Do.....	750				Gas well.
Wayne County:					
Cambridge.....	+ 886				For gas; unsuccessful.
Centerville.....	+ 886				Do.
Dalton.....	+ 960				Do.
Dublin.....	1,250			— 250	Gas well.
Fountain City.....	+1,025				For gas; unsuccessful.
Hagerstown.....	766-1,025				Several gas wells.
Richmond.....	945				Gas boring; unsuccessful.
Walnut Level.....	+867				For gas, unsuccessful.
Washington.....	+976				Do.
Wells County:					
Bluffton.....	100-500				Hard water.
Do. ¹³	1,200				For gas; unsuccessful; salt water.

¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 696.² Record, *ibid.*, pp. 695-697; Ind. Geol. and Nat. Hist. Surv., 1885-86 15th Rept., p. 330.³ Record, *etc.*, *ibid.*, pp. 720-721.⁴ Ky. Geol. Surv., Petroleum, Gas, *etc.*, by Orton, pp. 197-198.⁵ Record, Ind. Geol. Surv., 1870, pp. 126-134.⁶ *Ibid.*, p. 126, Ind. Geol. Surv., 1869, pp. 28-29 31, Am. Jour. Sci., 2d ser., vol. 48, p. 271.⁷ Record, *etc.*, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 689-690.⁸ U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 739.⁹ Record, Ind. Geol. and Nat. Hist. Surv., 17th Ann. Rept., 1891 pp. 262-253¹⁰ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 714.¹¹ Ind. Geol. and Nat. Hist. Surv. Rept., 1875, pp. 43-48¹² U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, pp. 725-726.¹³ Record, *ibid.*, p. 740.

INDIANA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
White County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Monon ¹	± 920	.....	.....	Nearly to surface.	Salt water at 880 feet.
Do	+ 880	.....	.....	Nearly to surface.	Gas boring; salt water at 880 feet.
Monticello	+1,050	.....	.....	—550	Salt water at 1,050 feet.
Monticello ¹	+1,150	.....	.....	—650	For gas; unsuccessful; salt water at 1,150 feet.
Whitley County:					
Columbia City ²	1,375	.....	.....	— 20	For gas; unsuccessful; salt water.
Larwell ²	1,593	.....	.....	—200	Do.

¹ Record, U. S. Geol. Surv., 11th Ann. Rept., 1889-90, part 1, p. 731.² Ibid., p. 736.

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.

Wells of northern Indiana, by Frank Leverett: United States Geological Survey, Water Supply and Irrigation Papers Nos. 21 and 26, 1899.

INDIAN TERRITORY.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Cherokee Nation:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Bartlesville	1,700	.....	.....	.....	Oil at 1,286 feet.
Bartlesville (2 miles distant)	1,800	.....	Few.	Flows.	Small quantity crude petroleum.
Chelsea (5 miles west)	300-600	8	.....	.....	Several oil wells.
Salina (1½ miles south-east)	470	.....	.....	Flows.	Salt water.
Do	520	.....	.....	do	Do.
Creek Nation:					
Redfork	1,487	.....	.....	.....	Incomplete; promises large oil field.
Sapulpa	1,480	6	.....	.....	Flow of oil; some salt water.
Sapulpa (6 miles north)	1,440	6	.....	.....	Flow of gas at 1,280 feet with 60 pounds pressure; very little water.
Sapulpa	1,550	.....	.....	.....	Gas at 1,250 feet, with pressure of 50 to 60 pounds.
Do	1,560	.....	.....	.....	Oil; salt water.
Tulsa	1,430	.....	.....	.....	Salty water.
Do	1,424	.....	.....	.....	Salty water; fresh at 266 feet.
Do	1,417	.....	.....	.....	Salty water.
Chickasaw Nation:					
Chickasha	876	10	.....	.....	Salt water at 298 feet; no water below; well in progress.
Choctaw Nation:					
Atoka (15 miles west)	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.
Osage Nation:					
Pawhuska	2,000	.....	.....	.....	Water at 1,145 feet; gas pressure at 2,000 feet prevented further drilling.

IOWA.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Adair County:					
Fontanelle.....	800		None.		Abandoned.
Greenfield.....	900		None.		Coal prospect.
Do.....	512		None.		
Allamakee County:					
Lansing ¹	676	6	700	+ 40	2 wells.
Do.....	740				
Postville ²	515	8½		-300	
Waukon ³	577	8		-280	
Do.....	487				
Appanoose County:					
Centerville ⁴	2,495	12-1	200	-260	Do.
Do ⁴	1,540	1½-7	350	-280	
Do.....	1,527				
Do.....	2,500				
Benton County:					
Vinton ⁵	1,287	6	62	+ 28½	Temp., 56°.
Do ⁶	1,425	6	50	+ 28	Do.
Boone County:					
Boone.....	3,016		Many.	-200	
Do.....	3,000				
Do.....	2,914		None.		
Ogden.....	2,507				
Bremser County:					
Frederika.....	1,025	8-6½	148	- 4	Water-bearing beds at 367, 717, and 883 feet.
Sumner.....	1,784				
Waverly.....	1,720		Many.		
Carroll County:					
Arcadia.....	620				Failure.
Cass County:					
Anita.....	486		Many.		Coal prospect.
Atlantic ⁷	1,310		do	-160	
Cedar County:					
Tipton ⁸	2,700	8-1½	do	- 65	
Cerro Gordo County:					
Mason City.....	600	6-4	60	No flow.	3 wells.
Do.....	1,200	8	80	do	
Do ⁹	1,473	8-6		- 75	
Cherokee County:					
Cherokee.....	1,120	12-9	+6	-206	Water-bearing beds at 225, 375, 405, 475, and 535 feet; temp., 60°; water hard
Clarke County:					
Osceola.....	1,953			No flow.	
Clay County:					
Spencer.....	800	6	Many.		
Do.....	400				
Spencer (10 miles south). ..	600	4½-3½			Abandoned.
Clayton County:					
McGregor ¹⁰	1,006	6-3	20	+ 62	Temp., 54°.
Do. ¹¹	520	6-3		+ 20	Temp., 52°.
Monona ¹¹	420				
Monota.....	417	6	70	-212	
Do.....	452	6	None.		Abandoned.
Clinton County:					
Clinton ¹²	1,035-1,497	10-5	1,736	+ 68	5 wells.
Do. ¹²	1,065	5½		+ 35	
Do. ¹²	1,674	8-5	1,500	+ 45	
Do.....	1,159				2 wells.
Do.....	1,175				
Do.....	1,132				
Lyons.....					
Davis County:					
Bloomfield.....	1,817				
Delaware County:					
Manchester ¹³	1,870	10-5		- 14	
Des Moines County:					
Burlington.....	2,430	6-5	70	- 38	
Do.....	507	5½	45	Flows.	
Dickinson County:					
Lakepark.....	700	4	55	-300	Temp., 50°.
Dubuque County:					
Dubuque ¹⁴	802	4			Water at surface.
Do. ¹⁴	955	6	340	+ 81	

¹ Record, Iowa Geol. Surv. Rept., vol. 6, 1896, p. 200.² Ibid., p. 189.³ Ibid., p. 202.⁴ Record and analysis, *ibid.*, pp. 326-328.⁵ Record, *ibid.*, vol. 3, pp. 192-195.⁶ Record and analysis, *ibid.*, vol. 6, 1896, pp. 266-267.⁷ Record, *ibid.*, pp. 336-339.⁸ Ibid., pp. 261-262.⁹ Record and analysis, *ibid.*, pp. 193-195.¹⁰ Ibid., pp. 185-188.¹¹ Iowa Geol. Surv. Rept., vol. 6, 1893, p. 188.¹² U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 811; analysis, p. 827.¹³ Record and analysis, Iowa Geol. Surv. Rept., vol. 6, 1896, pp. 214-219.¹⁴ Ibid., pp. 208-214.

IOWA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Dubuque County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Dubuque	1,262	6	450	.....
Do. ¹	1,954	3	40	+ 1	
Do.	1,300-1,400	13	2,000	Flow.	2 wells.
Do. ¹	1,765	3	40	.....
Do. ¹	1,000	5	580	+ 41	Several wells 965-1,060 feet.
Do.	2,027	.....	.....	.....
Do.	960	.....	.....	.....
Do.	1,317	.....	.....	.....	2 wells.
Do.	1,927	.....	.....	.....
Do.	1,416	.....	.....	.....
Do.	1,100	.....	.....	.....
Franklin County:					
Hampton	1,708	.....	.....	.....
Fremont County:					
Randolph	1,768	8	Many.	No flow.	
Greene County:					
Jefferson	2,021	8-5	.....	- 40	
Grundy County:					
Grundy Center	485	.....	.....	-150	
Hamilton County:					
Webster City ²	1,250	8-6	70	+ 16	
Hancock County:					
Britt ³	684	7	.....	- 16	
Do.	535	4½	.....	-510	
Hardin County:					
Ackley ⁴	920	.....	.....	.....
Harrison County:					
Dunlap ⁵	1,535	6½	.....	.....
Henry County:					
Mount Pleasant ⁶	1,125	.....	165	- 30	
Howard County:					
Cresco	1,158	.....	.....	.....
Ida County:					
Holstein ⁷	2,004	8-4	.....	-275	
Iowa County:					
Amana ⁸	1,640	.....	100	+ 30	Temp., 60°.
Cono Township ⁹	416	.....	.....	Flows.	
Homestead ¹⁰	2,224	10-4	.....	-117	
Jackson County:					
Sabula ¹¹	973	.....	720	+ 78	
Jasper County:					
Newton ¹²	1,400	5	Many.	- 90	
Jones County:					
Anamosa ¹³	2,007	10-5	300	- 56	
Do.	1,734	.....	.....	.....
Monticello ¹⁴	1,198	.....	175	- 40	
Keokuk County:					
Sigourney ¹⁵	1,880	6-4½	.....	- 30	
South English	420	4	None.	.....	Abandoned.
Whatcheer	636	.....	.....	.....
Kossuth County:					
Algona ¹⁶	1,050	.....	.....	- 69	
Lee County:					
Fort Madison ¹⁷	689	6	600	+ 20	
Do. ¹⁸	720	6	.....	+ 85	Temp., 55°.
Do. ¹⁸	764	4	.....	+ 20	
Keokuk ¹⁹	710	6	250	+ 35	Temp., 64°; two other wells 700 feet deep.
Do. ¹⁹	800	6	.....	+ 47	Temp., 50°.
Do. ¹⁹	2,000	12-10	3 wells	+ 30	Temp., 65°; 3 wells.
Do.	900	.....	.....	.....
Do. ¹⁹	2,230	10	300	+ 30	Another well 1,805 feet; water also at 600 and 900 feet.
Do.	1,987	6-4	.....	.....
Do.	935	.....	Many.	Flow.	
Montrose	850	.....	.....	.....
Mount Clara ²⁰	939	.....	.....	- 10	Formerly flowed 200 gal- lons.

¹ Record and analysis, Iowa Geol. Surv. Rept., vol. 6, 1896, pp. 208-214.² Ibid., pp. 220-222.³ Analysis, *ibid.*, p. 195.⁴ Record, *ibid.*, vol. 3, pp. 189-192; vol. 6, pp. 219-220.⁵ Record and analysis, *ibid.*, vol. 6, 1896, pp. 257-259.⁶ Ibid., pp. 320-321.⁷ Record, *ibid.*, p. 222.⁸ Record and analysis, *ibid.*, pp. 286-287.⁹ Iowa Geol. Surv. Rept., vol. 3, 1898, p. 561.¹⁰ Record and analysis, *ibid.*, vol. 6, pp. 288-285.¹¹ U. S. Geol. Surv., 17th Rept., 1895-96, part 2, p. 817.¹² Record, Iowa Geol. Surv. Rept., vol. 6, p. 292.¹³ Ibid., pp. 262-265.¹⁴ Record and analysis, *ibid.*, p. 265.¹⁵ Record, *ibid.*, pp. 305-308.¹⁶ Ibid., p. 196.¹⁷ Record and analysis, *ibid.*, pp. 321-322.¹⁸ Ibid., pp. 321-322.¹⁹ Ibid., pp. 323-326.²⁰ Ibid., p. 322.

IOWA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Linn County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Cedar Rapids.....	1,450	5	150	+ 14	3 wells.
Do.....	1,300 to 2,100				Do.
Mahaska County:					
Oskaloosa ¹	2,800-3,000				Abandoned.
Do.....	2,517				
Marion County:					
Pella ²	1,803	12-5	250	- 90	
Mills County:					
Glenwood ³	2,000	10-4½	83	-173	
Do. ³	1,910		80	- 5	
Montgomery County:					
Redoak.....	560				Coal prospect.
Muscatine County:					
West Liberty ⁴	1,768	6-4½	1½	Flows.	Temp., 65°.
Wilton Junction ⁵	1,360	8-6	300	- 78	
O'Brien County:					
Sanborn.....	1,224	6	80	-459	
Osceola County:					
Sibley.....	763	4½	106	-200	
Page County:					
Clarinda ⁶	1,002			Flowed.	Coal prospect.
Shenandoah.....	700				
Palo Alto County:					
Emmetsburg ⁷	874			- 34	
Do.....	810	6	42	- 26	
Plymouth County:					
Lemars ⁸	1,560				
Pocahontas County:					
Pocahontas (3 miles south).....	632				Unsuccessful.
Pocahontas (near).....	1,300		Many.		
Bellville Township.....	1,300				Abundant supply.
Polk County:					
Des Moines ⁹	3,000	10-3	400	- 45	
Saylorville.....	1,800				
Pottawattamie County:					
Council Bluffs ¹⁰	1,114				
Do. ¹⁰	860				
Council Bluffs (school for deaf). ¹⁰	1,091	4	56	+ 50	
Council Bluffs.....	840				
Poweshiek County:					
Grinnell ¹¹	2,003	10-4	105	-230	
Do.....	2,002				
Sac County:					
Odebolt.....	500				
Wall Lake.....	427				
Scott County:					
Davenport (bottling works). ¹²	780		300	+ 59	
Davenport (Malt and Grain Co.). ¹²	1,076	5	300	+ 13	Water from 1,050-1,076 feet.
Davenport (Gas Co.). ¹²	1,200	5-4	400	+ 47	2 wells; water from near bottom.
Davenport (Glucose Co.). ¹³	2,100-2,107	5		+ 77	4 wells.
Do. ¹⁴	1,500	5	250	+ 54	
Davenport (city park) ¹⁵	1,797	5	+125	- 22	Water at 1,175 feet.
Davenport (Kimball House). ¹⁶	1,080	5	120	+ 20	Water at 1,075 feet.
Davenport (packing company). ¹⁴	1,180	8-5	250	+ 45	
Davenport (Schmidt Building). ¹⁴	1,200	4	73	+ 24	
Davenport (woolen mills). ¹⁴	1,053	3½	300	+ 35	Water from 700 and 1,050 feet.
Davenport (ice company). ¹⁴	1,067	6-4	240	+ 10	Water from 775 and 1,064 feet.

¹ Record, Iowa Geol. Surv. Rept., vol. 6, pp. 308-310.² Ibid., pp. 310-315.³ Record and analysis, *ibid.*, pp. 340-347.⁴ Ibid., pp. 281-282.⁵ Ibid., pp. 280-281.⁶ Iowa Geol. Surv. Rept., vol. 6, pp. 339-340; record, *ibid.*, vol. 12, pp. 28-32.⁷ Record, *ibid.*, pp. 196-197.⁸ Ibid., pp. 232-235.⁹ Ibid., pp. 294-299.¹⁰ Analysis, Iowa Geol. Surv. Rept., vol. 6, p. 340.¹¹ Record and analysis, *ibid.*, pp. 287-292.¹² U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 812; Iowa Geol. Surv. Rept., vol. 6, p. 272.¹³ Record, *ibid.*, p. 842; Iowa Geol. Surv. Rept., vol. 6, p. 272.¹⁴ Ibid., p. 811; Iowa Geol. Surv. Rept., vol. 6, p. 272.¹⁵ Am. Geol., vol. 3, 1889, p. 117; Iowa Geol. Surv. Rept., vol. 6, pp. 272-280; record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, pp. 842-847.¹⁶ Record, U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, p. 844.

IOWA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Scott County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Davenport (Malting Co.)	2,088				
Davenport (Syrup Refining Co.)	2,107				
Davenport	1,300	10-8	310	Flows.	Water began to flow at 99 feet.
Sioux County:					
Granville	450		Many.	150	
Hull ¹	1,230	10-6		-100	
Story County:					
Nevada	940	11-6		-49	
Taylor County:					
Bedford	425				Coal prospect.
Union County:					
Creston	500-600				Two borings for coal; unsuccessful; found water.
Van Buren County:					
Farmington	705				
Wapello County:					
Ottumwa ²	2,047	8	700	+108½	Temp., 70°.
Do. ³	1,554	10-4		+49½	Temp., 64°.
Washington County:					
Washington ³	1,611	10-4½	95	-54	
Do. ⁴	1,217	12-6	62	-58	
Winneshiek County:					
Calmar	1,140	4	70	-320	
Do. ⁵	1,223	8		-100	
Woodbury County:					
Sioux City ⁶	2,011		3	Flows.	Water at 570 and rose to -12; at 1,250 feet flowed.

¹ Analysis, Iowa Geol. Surv. Rept., vol. 6, p. 199.⁴ Ibid., pp. 304-305.² Record and analysis, *ibid.*, pp. 317-320.⁵ Ibid., pp. 191-192.³ Ibid., pp. 304-305; Am. Geol., vol. 1, pp. 28-31.⁶ Record, *ibid.*, vol. 5, p. 258.

PUBLICATIONS RELATING TO DEEP BORINGS IN IOWA.

Iowa Geological Survey, Second Annual Report, 1893, volume 3, 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.

Artesian wells of the Belle Plaine area, by H. R. Mosnat: Iowa Geological Survey Report, volume 9, 1898, pages 521-562.

KANSAS.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Allen County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Iola	870				Large flow of gas.
Do. ¹	734-737				3 wells.
Iola (near) ²	906	8½-5			Large flow of gas.
Do.	928	5			Salt water found.
Do.	976				
Laharpe ³	990				
Do.	1,050				
Moran	1,008-1,085	12-4			2 holes: water to surface.
Humboldt ³	793-962		Many.		For oil or gas; water at 190, 465, and 550 feet.
Do.	937-970				Gas wells; water at 145, 218, 645 feet; salt water at 970 feet.
Anderson County:					
Kincaid	992				
Lone Elm	1,140				Salt water at 320 feet, no gas or oil; abandoned.
Atchison County:					
Atchison	+1,197				

¹ Record, Kan. Univ. Geol. Surv. Rept., vol. 1, pl. 15.² Analysis, *ibid.*, vol. 7, pp. 249-252.³ Ibid., vol. 1, pl. 14; vol. 3, pl. 23.

KANSAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Barber County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Sun (southwest of).....	600	.....	.....	.....	For coal; unsuccessful; mostly black shale.
Barton County:					
Great bend (4 miles northeast).	1,365	.....	10	+ 30	Saline water from Dakota sandstone, at 344 feet.
Bourbon County:					
Bronson.....	850	8-6	.....	.....	Salt water at 650 to 700 feet.
Devon (near).....	800	8-6	.....	.....	Salt water at from 650 to 700 feet.
Fort Scott ¹	620	5½	.....	Flows.	Gas well; strong flow of water.
Do.....	543	5½	4	Flows.	Oil wells; salt water.
Fort Scott (near).....	750	6½	.....	.....	Water at 218 and 616 feet; oil at 647 feet; salt water at 665 feet.
Do.....	890-900	8-6	.....	.....	Water at 45 feet.
Mapleton ²	665	.....	.....	.....
Brown County:					
Horton.....	1,100	6	Few.	.....	Deep boring, salt water.
Butler County:					
Eldorado.....	± 2,060	6½-5	.....	.....	Brine at 735 and 4,350 feet; fresh water at 1,710 feet.
Rosalia (near).....	.....	.....	.....	.....	Oil well; salt water at 510, 775, and 1,060 feet.
Chautauqua County:					
Chautauqua (near).....	1,479	8½-4½	.....	.....	Abandoned.
Elgin.....	± 1,400	.....	.....	.....	Oil in very small quantity; brine at 365 and 1,800 feet.
Hale.....	1,106	8½-6½	.....	.....	Abandoned; flowed oil and water.
Niotaze ³	1,158	.....	.....	.....	3 wells.
Peru.....	1,240-1,700	.....	.....	.....	Water at 660 and 1,190 feet.
Peru (near).....	1,190	.....	.....	.....
Sedan.....	1,700	.....	.....	.....
Cherokee County:					
Columbus.....	1,304	.....	.....	- 65	
Weir City.....	442	8½	75	- 70	
Do.....	480	7½	75	- 70	
Do.....	490	6½	.....	- 70	
Cheyenne County:					
Wheeler ⁴	446	4	.....	.....
Cloud County:					
Asherville.....	638	3	.....	- 26	Salt water from 50 to 638 feet; mainly blue clay.
Jamestown.....	.....	.....	.....	Flows.	Salt water found.
Cowley County:					
Winfield.....	1,200	.....	Many.	+ 6	Salt water.
Do.....	900	.....	.....	.....
Crawford County:					
Cherokee.....	913	7	500	-100	First water at 650 feet.
Farlington.....	556	.....	.....	.....	Small flow of gas.
Farlington (2 miles southeast).	551	.....	.....	.....	Small flow of oil.
Fleming.....	1,005½	6	Many.	-118	Water also at 800 feet.
Girard ⁵	500-550	.....	.....	.....	2 gas wells.
Do.....	857-980	10	Many.	-150	
Girard (¾ miles north).....	401	.....	.....	.....	Gas.
Goode (7 miles southeast)	430	.....	.....	- 70	
Pittsburg.....	901-950	7½	75	- 80	
Do.....	1,200-1,500	.....	90-100	-120	Cased 130 feet; temp., 72°.
Yale.....	1,217	6	Many.	-115	
Decatur County:					
Oberlin.....	800-1,000	.....	.....	.....
Jennings.....	1,050	.....	.....	-400	Sunk for oil; unsuccessful; large volume of water from lower sandstone.
Kanona.....	1,620	.....	.....	-450	Water in considerable amount in sand from 1,450 to 1,550 feet.
Dickinson County:					
Abilene ⁷	1,260	5	.....	+ 23	Mineral water.
Doniphan County:					
Doniphan ⁸	763	.....	.....	.....
Douglas County:					
Lawrence.....	600	.....	.....	.....	Salt water.
Do. ⁹	1,400	.....	Few.	Flows.	Gas and salt water.

¹ Analysis and record, Kan. Univ. Geol. Surv. Rept., vol. 7, pp. 262-267.² Record, *ibid.*, vol. 1, pl. 16.³ *Ibid.*, pl. 12; vol. 3, pl. 24.⁴ U. S. Geol. Surv. Bull. No. 131, p. 115, 1895.⁵ Record, Kan. Univ. Geol. Surv. Rept., vol. 3, p. 148.⁶ Analysis, *ibid.*, vol. 7, pp. 267-268.⁷ *Ibid.*, pp. 130-131.⁸ Record, *ibid.*, vol. 1, pl. 18.⁹ Analysis, *ibid.*, vol. 7, p. 151.

KANSAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Elk County:	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Howard	1,000		None.		Abandoned.
Do. ¹	1,226-1,410				
Ellis County:					
Hays (15 miles southwest).	1,177			+ 15	Artesian water at 500 feet; salt water a short distance below and at intervals to 933 feet.
Ellsworth County:					
Ellsworth	1,300				Salt, 730 to 880 feet; salt water at 1,300 feet.
Do.	730	4½		-114	Salt water.
Kanopolis ²	881	8-4			Salt water at 645 to 875 feet.
Wilson ³	1,385	8-5			Salt water; abandoned.
Finney County:					
Eminence					
Garden City (one-half mile northwest). ⁴	+1,000				
Garden City	902				
Garden City (8 miles south).	1,250				
Ravanna (north of)	+ 400		Many.	-200	Abandoned.
Ravanna	+ 400			- 45	Do.
Ford County:					
Dodge City (1½ miles east)	800				Unsuccessful.
Franklin County:					
Ottawa	1,002	8			Oil at 675 and 702 feet; large volume of gas.
Do.	1,065				Salt water at 384 and 622 feet; fresh water at 715 and 755 feet; gas and water at 490 feet.
Geary County:					
Junction City (vicinity).	800				Salt water; abandoned.
Gove County:					
Goodwater	501	3	Few.		All in shale; abandoned.
Catalpa (vicinity)	400				Good supply of fine water; no flow.
Jerome	400				
Jerome (near)	400				Good supply of fine water at 400 feet; no flow.
Graham County:					
Hill City (3 miles from) ..	400			No flow.	Shale to bottom.
Greeley County:					
Horace	1,370	10	30	- 830	Dakota sandstone reached at 1,050 feet.
Tribune	500				Unsuccessful.
Greenwood County:					
Eureka ⁵	503				Coal prospect; abandoned.
Do.	+1,000				In progress 1900; salt water 500 to 700 feet and 800 to 900 feet.
Do.	1,255				Brine at 499 feet.
Fall River	986	10-5½	1,000	- 77	Water at 416 feet; salt water at 972 feet.
Do. ⁶	1,480		Many.		
Madison	1,896½	6			For gas; unsuccessful.
Neal	940	10-8½			For oil; water-bearing bed at 822 feet.
Do.	875				
Hamilton County:					
Coolidge	500	5½	90	Flows.	
Kendall	500				No water at that depth.
Do.	537		70		Pumped; no flow.
Syracuse	1,000			- 90	
Harper County:					
Anthony ⁷	2,335				
Harvey County:					
Halstead	+ 400				Prospect borings.
Newton	1,045				Do.
Do.	910-1,076				
Haskell County:					
Santa Fe	1,200	6	Many.	- 200	Good water at 200 and 400 feet.
Do.	1,300	10-5½		- 100	
Hodgeman County:					
Jetmore	1,000				For coal.
Do.	700 or 800			-20-30	Not in use; abandoned.

¹ Record, Kan. Univ. Geol. Surv. Rept., vol. 3, pl. 29.² Record, Mineral Resources of Kansas, 1898, pp. 94-95.³ Ibid., p. 97.⁴ Record, Kans. Univ. Geol. Surv. Rept., vol. 2, p. 27.⁵ Ibid., vol. 3, pl. 27.⁶ Ibid., vol. 1, pl. 13;⁷ Ibid., vol. 1, pl. 21; Mineral Resources of Kansas, 1898, p. 90.

vol. 3, pl. 25.

KANSAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Jackson County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Hoyt	{ 1,206 or 1,406(?) }	{ 6 }	None.	.....
Jefferson County:					
Valley Falls	1,174	3	2	+ 40	Very saline water.
Jewell County:					
Ionla	432	.....	.....	.....	Salt water; abandoned.
Lovewell (3½ miles north-west)	400	.....	.....	.....	Salt water only.
Mankato	500	8	.....	— 50	Salt water.
Johnson County:					
Olathe	600	.....	.....	.....	Water at 85 feet; salt water at 530 feet; weak flow of gas at 361½ feet.
Kingman County:					
Kingman	+ 800	.....	.....	.....	Salt shafts.
Kingman (1½ miles north). ¹	1,410	.....	.....	.....	Salt.
Rago	1,000	.....	.....	.....	Salt well; 175 feet of salt.
Volcan Iron Works	1,000	.....	.....	.....	Two salt shafts
Labette County:					
Mound Valley ²	762	7½-6½	1½	+ 6	Temp., 70°. Salt water and gas.
Oswego ³	985	6	.....	— 100	
Do	600	.....	.....	— 40	Small amount of gas at 548 feet; salt water at 606 feet.
Parsons and vicinity	500-1,500	.....	.....	.....	Several wells for gas; not much found; salt water at 400 to 560 feet; no flow; abandoned.
Stover	530	7	.....	— 16	
Lane County:					
Shields (3 miles north)	400	.....	.....	.....	Limited supply of water from thin sandstone in upper part of Benton.
Leavenworth County:					
Leavenworth ⁴	1,170	.....	.....	Flows.	Gas and water.
Do	2,116	.....	.....	.....
Tonganoxie	854	.....	.....	.....	City well.
Linn County:					
Pleasanton	729	5	.....	.....	Salt water.
Do	918	6½	.....	.....	Salt water at 828 and 918 feet.
Pleasanton (near) ⁴	757	6½-5	.....	.....	Water at 132 and 656 feet; salt water at 348 and 757 feet, and trace of oil at 353 and 730 feet.
Logan County:					
Elkader	408	.....	.....	.....	Unsuccessful; all in blue shale.
Elkader (7 miles south)	500	.....	.....	.....	Unsuccessful; water at intervals to 200 feet, then shale to bottom.
Oakley	725	.....	.....	— 30	Unsuccessful.
Winona	1,856	.....	.....	.....	Gas prospect; abandoned.
Lyon County:					
Emporia ⁵	2,005	6	.....	.....
McPherson County:					
Canton (5 miles southeast).	500	.....	.....	.....
Marquette	400	6	Few.	— 70	Salt water.
Marion County:					
Marion	1,800	.....	.....	.....	For coal; unsuccessful.
Montgomery County:					
Cherryvale	609-617	.....	.....	.....	Gas wells.
Do. ⁶	1,220	1½	.....	.....	Salt water and gas found.
Do	1,397-1,500	.....	.....	.....	Oil wells; water at several horizons.
Coffeyville	550	.....	.....	.....	Gas well.
Independence	1,020	.....	.....	.....	Oil and gas.
Do. ⁷	1,100	.....	.....	Flows.	
Do	1,041	8½	.....	.....	Gas well.
Do	1,160	8½-6½	.....	.....	Gas well; water-bearing beds at 275, 640, and 895 feet.

¹ Record, Mineral Resources of Kansas, 1898, p. 91, pl. 8.² Record, Kans. Univ. Geol. Surv. Rept., vol. 1, pl. 10; vol. 3, pl. 21.³ Ibid., vol. 1, pl. 20; vol. 3, pl. 26.⁴ Ibid., vol. 1, pl. 16.⁵ Ibid., vol. 3, pl. 28.⁶ Ibid., vol. 1, pl. 11; vol. 3, pl. 22.⁷ Analysis, *ibid.*, pp. 149-150.

KANSAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Morton County:					
Richfield ¹	670		22	Flows.	
Do.....	701		6	+125	Water is of unsatisfactory quality.
Do.....	600		6	Flows.	Temp., 66°; water at 570 feet.
Do.....	640		15	+ 25	2 wells; temp., 60°.
Marshall County:					
Marysville.....	1,360		Few.	Flows.	
Marysville (near).....	1,100				
Meade County:					
Fowler.....					
Meade.....	800	6			Red Beds at 200 feet; salt below.
Miami County:					
Paola ²	1,075				City well.
Do.....	500-580	5½-4½	Many.	-0 to -400	Several gas wells.
Mitchell County:					
Asherville.....	638			- 26	Abundant supply of very salty water.
Cawker City (2 miles northeast).....	468			-217	Salt water.
Cawker City (10 miles north).....	416			No flow.	Do.
Neosho County:					
Chanute ³	741-982	4½			Several gas and oil wells.
Do.....	806	6½-5			Large flow of gas; some water.
Do.....	752	5	5		Oil well; brine at 385 feet; oil at 720, 724, and 728 feet.
Erie.....	750		400		Mineral water.
Erie (2 miles north).....	833		Many.	Flows.	Large flow of oil and gas, and salt water.
Erie.....	813				Salt water at 400 feet; oil sand at 550 to 585½ feet.
Galesburg.....	973				Salt water; abandoned.
Rollin (near).....	652		48		Oil well.
St Paul.....	661-668			Flows.	Salt water; abandoned.
Thayer.....	825				Oil wells.
Thayer (near).....	1,064	6½-4½			Water at 376, 575, 805, and 1,064 feet.
Thayer.....	895	8½-6½			Water at 215 feet; gas at 827-830 feet.
Ness County:					
Danby (6 miles southwest).....	385			-110	
Ness City (14 miles north).....	656	3	30	-356	
Ness City (8 miles south).....	±400	6			Satisfactory supply of soft water from Dakota sandstone.
Ness City (10 and 12 miles southwest).....	450, 437				Water in sandstone under blue shale.
Ransom.....	653	6-3	Several.	- 60	
Osage County:					
Lyndon ⁴	1,007				Salt water at 239 feet; salt prospect; abandoned.
Osage Mission ⁵	700				
Osborne County:					
Osborne.....	500				
Portis (6 miles northwest).....	546			No flow.	Salt water.
Portis (8 miles northwest).....	543	6		-200	Do.
Pawnee County:					
Larned.....	756		400		
Do.....	743	10-8	250	+ 50	Temp., 65°; salt water.
Phillips County:					
Cactus (6 miles south).....	480			- 50	
Kirwin.....	514				
Long Island (4½ miles northeast).....	650				Bored for oil or gas.
Phillipsburg (a few miles northwest).....	430				Small supply of water.
Pottawatomie County:					
Onaga.....	602	3-2	5		Gas and flowing water at 533 to 559 feet.
St. Marys.....	1,123			Flows.	Salt water.

¹ Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 157.

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

² Record, Kans. Univ. Geol. Surv. Rept., vol. 1, pl. 17.

⁴ Record, Kans. Univ. Geol. Surv. Rept., vol. 3, pl. 27.

⁵ Ibid., vol. 1, pl. 15.

KANSAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Pottawatomie County—Ctd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
St. Marys.....	520			Flows.	Salt water.
Wamego.....	1,000			+ 6	Do.
Pratt County:					
Pratt.....	±800			— 15	Thick salt beds 600 to 800 feet; not used.
Pyramids (near).....	408	8		No flow.	Bad water.
Reno County:					
Arlington.....	1,000				Salt.
Hutchinson.....	+800				Several salt wells
Hutchinson (south of) ¹ ..	1,307				Salt.
Republic County:					
Scandia.....	1,110			— 16	Good water.
Rice County:					
Little River ²	964	8			Much water to 400 feet, then 600 feet of salt and shale.
Lyons.....	1,230				Salt prospect; abandoned.
Lyons (Bemis Salt Co.)..	1,625	8-5		— 30	Salt well.
Lyons (salt shaft) ³	1,005				
Sterling.....	916	10-2½	None.		Do.
Do. ⁴	980	10-2½	Few.	— 3	Do.
Riley County:					
Randolph.....	400				
Rooks County:					
Stockton (9 miles south).	460			— 60	Much good water.
Rush County:					
Bison.....	1,403			Flows.	Salt water.
Lacrosse.....	444	3	20	—240	Water pure.
McCracken.....	558	8¼-6½	20		Water-bearing beds at 278 and 382 feet; water salty.
Russell County:					
Russell.....	997	10-5	Many.	—300	Saline water.
Sedgwick County:					
Wichita.....	1,605	14-4½		120	Salt water at 500 feet.
Do.....	1,025				
Seward County:					
Liberal ⁵	485	7	52	—130	Water at 130 feet.
Scott County:					
Elkador (7 miles south).	500				No water supply.
Shawnee County:					
Topeka ⁶	900				
Do. ⁷	1,638				Coal prospect; no coal; no flowing water.
Smith County:					
Cedarville (near).....	+ 400				No water supply.
Portis (6 miles north-west).	546				Salty water.
Smith Center.....	600	7		—390	Salt water at 590 feet; abandoned.
Smith Center (12 miles southeast).	540		Many.	—140	Salt water from sand 535 to 540 feet under 535 feet of shale.
Stanton County:					
Johnson.....	420	8	Many.	—180	
Sumner County:					
Caldwell.....	800	6			Salt water only at 457 feet.
Trego County:					
Banner.....	438	6	Few.	—150	All in shale.
Three miles north of Smoky Hill River, near western border of the county.	446				
Wakeeney (12 miles southeast).	700				
Wakeeney.....	438		50		No flow.
Wabaunsee County:					
Alma.....	2,000				
Do.....	1,912	4-2½		Flows.	Salt water and gas.
McFarland ⁸	2,006	4			
Wellington.....	1,000				Not in use.
Wallace County:					
Wallace (vicinity).....	800	4	None.		} Did not reach bottom of shale.
	448	7			
	400	7	None.		
Washington County:					
Washington.....	1,100-1,200		1		
Do.....	1,350	6	None.		Abandoned.
Do.....	2,200	6	None.		Do.

¹ Record, Mineral Resources of Kansas, 1898, p. 92.² Ibid., p. 95.³ Ibid., p. 93.⁴ Ibid., p. 97.⁵ Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 158.⁶ Record, Kans. Univ. Geol. Surv. Rept., vol. 1, pl. 17.⁷ Ibid., vol. 3, pl. 27.⁸ Ibid., vol. 1, pl. 19; vol. 3, pl. 30.

KANSAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Wilson County:					
Benedict (southeast of)	2,414	13-6 $\frac{1}{2}$	.....	.....	Fresh water at 403 feet; strong salt water at from 1,096 to 2,414 feet.
Benedict (near)	827	8 $\frac{1}{2}$ -5	1 $\frac{1}{2}$	.....	Oil well; fresh and salt water also found.
Do	1,050-1,147	4 $\frac{1}{2}$	.....	.....	For oil; salt water only.
Buffalo	1,170	.....	.....	.....	Only salt water.
Buffalo (2 miles west)	400-800	.....	.....	.....	Cil and water wells.
Fredonia ¹	1,224	.....	.....	.....
Do	2,414	.....	None.	.....	Salt water at 354 and 1,195 feet; abandoned.
Neodesha ²	1,101	8 $\frac{1}{2}$ -5	.....	.....	Oil prospect; water at 230 and 820 feet; salt water at 420, 685, and 775 feet, and gas at 655 feet.
Do	\pm 2,400	8 $\frac{1}{2}$	.....	.....
Do	1,310	.....	.....	.....
Do	2,414	6 $\frac{1}{2}$	Many.	.....	Sulphur water at 1,423 feet; salt water below.
Neodesha (near)	1,078	6 $\frac{1}{2}$ -5	.....	.....	Oil and gas wells; water at 811 and 1,078 feet.
Woodson County:					
Neosho Falls	1,275	.....	.....	.....	Salt water at 361 feet.
Toronto ³	1,452	.....	.....	Flows.	Salt water and some oil.
Do	940-782	.....	.....	.....	2 wells; some gas.
Do	1,140	.....	.....	.....	Oil at bottom of well.
Wyandotte County:					
Kansas City ⁴	758	.....	.....	.....
Do	2,360	.....	.....	.....

¹ Record Kans. Univ. Geol. Surv. Rept., vol. I, pl. 12; vol. 3, pl. 24.

² Ibid., pl. 11; vol. 3, pl. 22.

³ Ibid., vol. 3, p. 149, p¹ 29.

⁴ Ibid., vol. 1, pl. 18; analysis, vol. 7, p. 255.

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.

Mineral Resources of Kansas, 1898.

The United States Geological Survey Bulletin No. 131, p. 115, Washington, 1895.

Mineral waters, by E. H. S. Bailey and others: University Geological Survey of Kansas, vol. 7, 1902.

Preliminary report on the geology and underground water resources of the central Great Plains, by N. H. Darton: United States Geological Survey Professional Paper No. 32, Washington, 1905.

KENTUCKY.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gals.</i>	<i>Feet.</i>	
Barren County:					
Glasgow ¹	1,200				
Glasgow (5 miles south-west). ²	1,370				Several gas wells.
Glasgow Junction (3 miles southeast). ³	1,511				Salt water at about 700 feet.
Bell County:					
Pineville.....	650				Oil well.
Boone County:					
Walton.....	± 400				Gas well.
Boyd County:					
Ashland (4 miles south).....	1,715	13-10			For oil or gas; unsuccessful.
Ashland (6 miles south).....	2,100	13-10			Do.
Ashland Township.....	1,580				
Catlettsburg (1 mile west). ⁴	2,025	10-6½			Gas well.
Catlettsburg (1½ miles south).....	2,322				For oil.
Boyle County:					
Atoka (14 miles west). ⁵	+1,414				Oil and gas.
Danville.....	560	6			Unsuccessful.
Perryville.....	650	6			For oil; unsuccessful.
Bracken County:					
Brooksville.....	600				For oil or gas; in progress 1899.
Breathitt County:					
(Township unknown).....	850				
Breckinridge County:					
Cloversport ⁶	+ 896				Several gas wells in vicinity; salt water at 400 feet; strong brine at 600 feet.
Butler County:					
Morgantown.....	500				Oil, gas, and coal.
Calloway County:					
Paducah ⁷	1,250				
Campbell County:					
Newport ⁸	2,007				Much water at 1,650 feet.
Carter County:					
(Township unknown).....	1,480				
Christian County:					
Hopkinsville ⁹	1,600				Some gas and oil at bottom.
Cumberland County:					
Burkesville.....	1,700				Small showing of oil and gas.
Cloyds Landing.....	± 400				Oil well.
Daviess County:					
Owensboro ¹⁰	1,000	4			Brine at 765 feet; poor water below.
Do.....	1,480				Salt water at 780 feet; none below.
Do.....	1,200				
Owensboro (2 miles east).....	1,000				But little gas.
Fayette County:					
Lexington.....	875	6			No water supply.
Fleming County:					
Elizaville.....	600				For oil.
Floyd County:					
Township unknown.....	1,005-1,930				5 wells.
Franklin County:					
Frankfort.....	825	6	Many	Flows.	
Fulton County:					
Hickman.....	830				
Do.....	+ 576				
Grant County:					
Williamstown.....	500				No water below 30 feet.
Grayson County:					
Grayson Springs (6 miles). ¹¹	1,000	6	Many.	Flows.	Temp., 61½°.
Pactolus (near) ¹²	1,480			- 100	For oil or gas; unproductive; much salt water at 1,475 feet.

¹ Ky. Geol. Surv., Petroleum, Gas, etc., by E. Orton, p. 154.² Record, *ibid.*, p. 154.³ *Ibid.*, pp. 155-156.⁴ Record, U. S. Geol. Surv. Folio No. 69, p. 3, 1900.⁵ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁵, pp. 340-341.⁶ Ky. Geol. Surv., Petroleum, Gas, etc., by E. Orton, pp. 191-193.⁷ Record, Ky. Geol. Surv., Description of Jackson Purchase Region, pp. 321-326.⁸ Record and analysis, Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 298-300.⁹ Ky. Geol. Surv., Petroleum, Gas, etc., by E. Orton, pp. 162-165.¹⁰ *Ibid.*, p. 194.¹¹ Ky. Geol. Surv. Rept., vol. I, new ser., p. 92.¹² Record, Pa. Geol. Surv. Rept., Vol. I⁵, p. 340.

KENTUCKY—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Greenup County: Greenup (1½ miles east).....	<i>Feet.</i> 940	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	Some oil at 400 feet; salt water at 500 feet; abandoned.
Greenup (1 mile).....	+1,300				Some oil at 580 feet; abandoned.
Hancock County: Hawesville ¹	±1,500				Salt water only.
Hardin County: Westpoint (vicinity) ²	400				For gas; unsuccessful.
Harlan County: Cloverfork.....	423	2			
Harrison County: Cynthiana.....	1,000-1,300			— 8	Several wells.
Henderson County: Henderson ³	+ 459				Coal prospect.
Do. ⁴	+ 900			Flows.	3 in ³ .
Henderson (near).....	1,024				Do.
Henderson (16 miles south). ⁵	430 or 536				2 we ¹ ls; one yields gas.
Jefferson County: Louisville (Dupont's) ⁶ ...	2,086	3	264	+170	Mineral water; temp., 86½° (or 76½°?).
Louisville (Phoenix Brewery). ⁷	1,800	8	Many.	+ 60	
Louisville (St. Patrick's). ⁸	1,900		Many.	Flows.	Temp., 57.2°; salt water.
Louisville (Haynes's farm). ⁹	1,000				Some gas at 400 feet.
Louisville (McGehee farm). ⁸	1,000				No product.
Jessamine County: Harrodsburg (near).....	485	5			Water unfit for use.
Keene.....	2,000				For oil 40 years ago.
Johnson County: Township unknown.....	1,318-1,750				2 we ¹ ls.
Kenton County: Covington.....	1,360				
Lawrence County: Blaine Creek mouth ⁹	2,597				For oil or gas; unproductive.
Blaine Creek mouth (1½ miles from). ¹⁰	1,840				Do.
Griffith Creek.....	2,407				
Hood Creek ¹¹	1,625				Oil well.
Laurel ¹²	1,625				Sulphur water at 1,607 feet.
— ¹³	1,840-2,597				For oil or gas; unsuccessful.
Louisa (20 miles west) ¹⁴	2,105				For oil or gas; unproductive.
Louisa (9 miles south-west). ¹⁵	2,407				Do.
Township unknown.....					
Lee County: Township unknown.....	815				
Letcher County: Whitesburg.....	400				Salt wells.
Livingston County: Smithland ¹⁶	1,200				Unsuccessful.
Smithland (Taylor farm)	+1,500				
Lyon County: Eddyville (below).....	1,315				Water 200 to 300 feet.
Grand Rivers (near).....	1,315				Oil prospect; abandoned.
Madison County: Panola.....	1,700	4			Salt water at 150 and 1,700 feet.
Mageoffin County: Hendricks.....	2,484	8-5			Some oil; no water below 825 feet.

¹ Ky. Geol. Surv., Petroleum, Gas, etc., by E. Orton, p. 194.² Record, Pa. Geol. Surv. Rept., Vol. I⁵, pp. 180-181.³ Record, Ky. Geol. Surv. Rept., 1854-55, pp. 32-36; Petroleum, Gas, etc., pp. 195-196.⁴ Ky. Geol. Surv., Petroleum, Gas, etc., p. 195.⁵ Ibid., p. 196.⁶ Record and analysis, Am. Jour. Sci., 2d ser., vol. 27, pp. 174-178.⁷ Ky. Geol. Surv., Petroleum, Gas, etc., pp. 169-170.⁸ Ibid., p. 173.⁹ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁵, pp. 335-336.¹⁰ Ibid., pp. 336-337, U. S. Geol. Surv. Folio No. 105.¹¹ Ibid., p. 339.¹² Record, Pa. 2d Geol. Surv. Rept., Vol. I⁵, p. 339.¹³ Ibid., pp. 335-339.¹⁴ Ibid., p. 338.¹⁵ Ibid., pp. 337-338.¹⁶ Ky. Geol. Surv., Petroleum, Gas, etc., p. 198.

KENTUCKY—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Marion County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Warfield (township).....	1,307	.....	.....	.....
Martin County:					
Inez.....	2,200	.....	.....	.....
Do.....	950	.....	.....	.....	For oil.
Warfield (near) ¹	+1,307	.....	.....	.....	Gas well.
Township unknown.....	1,119	.....	.....	.....
Warfield (township).....	1,790-1,826	.....	.....	.....	2 wells.
Meade County:					
Boones Landing ²	500-579	.....	.....	.....	Several gas wells.
Brandenburg ³	400-765	.....	.....	.....	Gas wells; some brine.
Mercer County:					
Harrodsburg.....	1,560	8	.....	Flows.	Water at 1,100 feet; no gas.
Ohio County:					
Beaver Dam (1½ miles southeast). Hartford.....	900 1,000	.....	.....	.....	No oil or water; abandoned.
Hartford (1½ miles northeast). Oldham County:	+1,300	.....	.....	Flows.	Salt water. Gas and salt water.
Lagrange ⁴	1,500	.....	.....	.....	Flow of salt water at 1,400 feet; no gas.
Do. ⁴	1,200	.....	.....	.....	Salt water at 1,200 feet; no gas.
Lagrange (1 mile south) ⁴	565	.....	.....	.....	Gas well.
Perry County:					
Hazzard (near) ⁵	+ 400	.....	.....	.....	Salt well.
Leatherwood Creek (mouth). ⁶	410	.....	.....	.....	Salt wells.
Pike County:					
Township unknown.....	1,590	.....	.....	.....
Powell County:					
Township unknown.....	1,303	.....	.....	.....
Pulaski County:					
Greenwood (2 miles southeast). Do.....	1,600 1,106	.....	.....	.....	For oil, none found; abandoned. Abandoned.
Union County:					
Morganfield.....	525	2	.....	.....	For oil; abandoned.
Uniontown.....	1,079	4	.....	Flows.	For gas.
Uniontown (Davis mill). Warren County:	+ 400	5-6	.....	Flows.	Salt water.
Bowling Green ⁸	1,782	.....	.....	.....	But little oil, gas, or water.
Bowling Green (vicinity). ⁹	600-1,200	.....	.....	.....	Several prospects for oil or gas; some gas.
Bowling Green (15 miles northwest). Bowling Green.....	600-700 1,300	.....	.....	.....	Several wells yielding heavy oil. Oil well.
Do.....	600	.....	.....	.....	Do.
Wayne County:					
Monticello.....	200-700	.....	.....	.....	Oil wells.
Whitley County:					
Brummetts Station.....	1,000	6	.....	— 5	Some gas at 300 feet.
Cumberland Falls (vicinity). Halsey (near).....	± 400 500	..... 2	.....	.....	Salt. Coal prospect; some water at 60 feet.
Williamsburg (10 miles above). Township unknown.....	500 1,900	6	.....	.....	For oil; unsuccessful.
Do.....	1,003 1,715 2,032 2,141	.....	.....	.....	4 wells.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁴ pp. 339-340.² Ky. Geol. Surv., Petroleum, Gas, etc., pp. 176-177.³ Ibid., pp. 171-172, 176.⁴ Ibid., pp. 167-168.⁵ Record, Ky. Geol. Surv. Rept., 1854-55, pp. 36-39.⁶ Ky. Geol. Surv. Rept., 1854-55, p. 228.⁷ Ky. Geol. Surv., Petroleum, Gas, etc., p. 205.⁸ Ibid., pp. 159-160.⁹ Ibid., pp. 160-162.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN KENTUCKY.

Seventh report on oil and gas fields of western Pennsylvania for 1887-88, by John F. Carrl: Pennsylvania Second Geological Survey Reports, Volume I⁵, 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.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Acadia Parish:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Crowley.....	635	4	312	— 6	Pumps 347 gallons; temp., 62°; supply from 120 to 180 feet. Many oil wells.
Evangeline ¹	1,500-2,600				
Avoyelles Parish:					
Marksville.....	+1,282	16-4			Oil well in progress.
Bienville Parish:					
Arcadia (Railroad well).....	540	8-6	50	-130	Water at 40, 165, and 520 feet; hard.
Arcadia (compress).....	535	5-3½		- 36	
Bossier Parish:					
Bossier.....	600	4		- 30	Water at 225 feet; blue clay, no water 250 to 600 feet.
Collinsburg (6 miles southwest of, at Lake Point).....	600	2½		- 15	Water 232 to 242 feet; blue clay, no water 242 to 600 feet.
Caddo Parish:					
Dixie (3 miles southwest of).....	425				Hard, salty water; abandoned.
Furrh.....	750	3			No water.
Shreveport (ice factory) ²	996	4	30	+ 15	Brine with gas; temp., 83°; fresh water at 200 feet, which pumps 25 gallons.
Shreveport (Texas and Pacific Junction).....	561	7		- 50	Water at 280 feet; no water below.
Unl.....	650				No water.
Calcasieu Parish:					
Calcasieu.....	2,200		250	No flow.	Oil well; salty water.
Edgerly.....	535	10	225		Pumps 1,800 gallons per minute; water very warm.
Fenton (8 miles southeast) ³	2,100				Oil well; abandoned.
Lake Charles.....	535	6-4	104	+ 18	Four wells; temp., 64°.
Do ⁴	500	6	210	Flows.	
Do.....	510	6-4		Flows.	Two wells.
Lake Charles (Hoo-Hoo Park).....	2,400				For oil; unsuccessful.
Lake Charles (2 miles east).....	498	4	100	+ 10	
Lake Charles (2 miles southeast) ⁵	2,406				Do.
Money Hill.....	2,200		250	Flows.	Artesian salt water, 1,000 to 1,005 feet; hot artesian salt water, 2,200 feet.
Oberlin (6 miles southeast, at Spring Hill) ⁶	+1,500				For oil; unproductive.
Sulphur ⁷	450				Sulphur test well.
Do ⁸	1,230				Sulphur test well; strong flow of artesian water.
Do ⁹	602				
Sulphur (6 miles southwest) ⁹	+ 800				Oil well in progress.
Sulphur (3 miles west) ⁹	450				For oil; abandoned in large gravel.
Vinton ¹⁰	1,000			Flows.	Artesian sulphur water, 400 to 600 feet.
Do ¹¹	540		33	Flows.	
Vinton (4 miles north) ¹²	500				Oil well abandoned in large gravel.
Welsh ¹²	1,500				Abandoned oil well; many oil wells in this vicinity.
Caldwell Parish:					
Columbia.....	503	4-2	20	+ 35	
Cameron Parish:					
Hackberry.....	1,457				For oil; unproductive.
Catahoula Parish:					
Leland.....	1,850	6		+ 6	Salt water with gas; temp., 86.4°.

¹ La. Geol. Surv. Rept., 1902, p. 268, U. S. Geol. Surv. Bull. 212, pp. 127-130.

² Record, La. Geol. Surv. Rept., 1899, p. 200.

³ U. S. Geol. Surv. Bull. 212, p. 137.

⁴ La. Geol. Surv., 1902, p. 240.

⁵ Record, *ibid.*, p. 271.

⁶ La. Geol. Surv., 1902, p. 270.

⁷ Record, *ibid.*, 1899, p. 25.

⁸ *Ibid.*, 1902, p. 272.

⁹ U. S. Geol. Surv. Bull. 212, p. 137.

¹⁰ *Ibid.*, p. 135.

¹¹ La. Geol. Surv., 1902, p. 241.

¹² U. S. Geol. Surv. Bull. 212, p. 136.

LOUISIANA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Claiborne Parish:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Haynesville.....	600	4-3	1	- 20	Soft water.
Concordia Parish:					
Ferriday.....	950			Flows.	Brine.
De Soto Parish:					
Frierson (2½ miles north-east).....	1,500	8-4	10	Flows.	Salt water with gas at 998; temp., 70°.
East Baton Rouge Parish:					
Baker ¹	850	2		+ 16	
Baton Rouge ²	758	8-1½	350	- 6	
Do.....	760	10-6		Flows.	Pumps 350 gallons.
Grant Parish:					
Colfax ³	1,128	2½	40	+ 65	Temp., 62°; salt water; much gas.
Pollock.....	910	8-4	2	Flow.	Artesian water at 225 feet; no water below.
Rochelle.....	565		1	Flows.	Salt water with some gas; pumps 75 gallons.
Iberia Parish:					
Avery Island (Petite Anse) ⁴	1,005				Rock salt below 166 feet.
Delcambre (Jeffersons Island) ⁵	2,090				Rock salt below 344 feet.
Do.....	442				
Jeanerette ⁶	700			- 5	
Weeks (Grande Cote) ⁷	500				Rock salt below 140 feet.
Jackson Parish:					
Jonesboro.....	545	5	40	- 34	
Do.....	538	4		- 34	
Jonesboro (1 mile south, at Plymouth).....	521				Water at 360 to 380, 418 to 430, 492 to 520 feet.
Lincoln Parish:					
Ruston (waterworks).....	425	8-6	68	-110	Water from 100 to 126 and 373 to 425 feet.
Ruston (compress).....	449	4	68	-140	
Madison Parish:					
Delta.....	1,200			- 38	No water below 135 feet.
Natchitoches Parish:					
Goldonna.....	475				Test well.
Luella.....	707	4		Flows.	Artesian salt water at 640 and 700 feet.
Marthaville (3 miles west, at Boleyn).....	412	1		+ 20	Bored deeper and lost flow.
Montrose.....	496	6			Abandoned; no water.
Natchitoches (Normal School) ⁸	726	6-2½		Flows.	Salt water; pumps 25 gallons.
Do.....	457	4		- 4	Salt water.
Orleans Parish:					
New Orleans ⁹	600-700			Flows.	Many wells; water brackish.
Do.....	1,000-1,200			+ 15	Several wells; temp., 68°.
Do. ⁹	1,356		40	Flows.	Salty, gas escapes 830 cubic feet in 24 hours.
New Orleans (2 miles north, at Lake City). ¹⁰	900			+ 60	Temp., 78°.
Ouachita Parish:					
Cheniere (3 miles south-east).....	515			Flows.	Artesian water 265 to 275, 355 to 430, 465 to 515 feet.
Monroe (ice factory).....	485	5-3½	50	+ 40	Soft water.
Do.....	400	7-8½	20	Flows.	Do.
Monroe (light and power house).....	500			Flows.	
Monroe.....	+400	7-3½		+ 40	Many artesian wells.
Do.....	±400	4	30	Flows.	Soft water.
Monroe (one-half to 1½ miles north).....	±400			Flow.	3 wells.
Rapides Parish:					
Alexandria (water-works).....	560	4-2½	70	+ 12	Pumping capacity 250 gallons.
Do.....	760	10-4			Do.
Alexandria (city square).....	473	1½	±10	- 60	Flowed until city water-works installed.
Alexandria.....	606	2		- 49	Do.
Alexandria (ice factory).....	580	8		- 60	Abandoned.
Alexandria.....	621	8			Do.
Alexandria (ice factory).....	924		125	Flows.	Soft water.
Alexandria (railroad well).....	858	6-4			Water at 850 feet; abandoned.

¹ La. Geol. Surv. Rept., 1902, p. 230.² Ibid., p. 229.³ Record, *ibid.* p. 211.⁴ Ibid., Rept. 1899, p. 244.⁵ Ibid., p. 255.⁶ Ibid., 1902, p. 232.⁷ Ibid., 1899, pl. 27.⁸ Record, La. Geol. Surv. Rept., 1902, p. 210.⁹ Ibid., pp. 221-222.¹⁰ Ibid., p. 222.

LOUISIANA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Rapides Parish—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Boyce (railroad well) . . .	810	6-4	.....	+ 18	Well caved and abandoned; artesian fresh water at 300 and 625 feet artesian salt water at 808 feet; temp., 60°.
Pineville (State insane asylum).	1,020	.....	.....	.....	.....
Pineville	720	6	.....	.....	Oil well; abandoned.
Do	428	.....	.....	.....	.....
Sabine Parish:	704	6	30	-100	Water at 188 to 190, 220 to 230, 251 to 264, 436 to 444, 460 to 462, 505 to 507, 524 to 528, 536 to 540, 545 to 549, 560 to 566, 670 to 704 feet.
Loring .....	.....	.....	.....	.....	Salty and alkaline.
Loring (1 mile west, at Plymouth).	566	4	20	-100	Artesian water at 212 and 350 feet.
Negreet ¹	630	8	30	+ 18	Water from 160 feet.
Noble	400	.....	.....	.....	Salty.
Plymouth	521	4	25	-100	.....
St. Landry Parish:	2,103	.....	.....	Flows.	Soft artesian water at 537 to 555 feet; strong artesian sulphur water at 2,003 feet.
Melville (10 miles south)	.....	.....	.....	.....	Abandoned oil well; artesian water at 356 to 367 feet.
St. Martin Parish:	523	.....	.....	.....	Oil well; in progress; salt water at 1,261 feet.
Breaux Bridge (Anse la Butte). ²	.....	.....	.....	.....	Rock salt below 270 feet.
Do. ³	+1,261	.....	.....	.....	Quicksand.
St. Mary Parish:	400	.....	.....	.....	Rock salt below 240 feet.
Belle Isle ⁴	400	.....	.....	.....	Rock salt below 370 feet.
Do	465	.....	.....	.....	Rock salt below 248 feet.
Do	660	.....	.....	.....	Pumps 347 gallons; temp., 62°.
Do	748	.....	.....	.....	.....
Crawford	692	4	18	+ 2	.....
Crawford (2 miles south, at Cote Blanche).	450	.....	104	-32	.....
Glencoe ⁵	625	.....	.....	.....	Flows.
Do	612	.....	.....	.....	.....
St. Tammany Parish:	585	1½	25	+15	.....
Abita Springs ⁶	572	.....	21	+ 2	.....
Covington ⁷	630	2	30	Flows.	Temp., 73°.
Covington (1 mile east, at Claiborne).	610	2½	60	Flows.	Do.
Covington (2 miles north). ⁸	560	2	.....	+18	.....
Covington (10 miles northwest, at Singletree's still). ⁹	598	.....	.....	Flows.	.....
Mandeville Junction ¹⁰ ..	.....	.....	.....	.....	.....
Tangipahoa Parish:	570	.....	.....	.....	Artesian water at 300 feet.
Hammond ¹¹	473	5	300	+12	.....
Do	740	8-6	.....	.....	No water.
Vernon Parish:	.....	.....	.....	.....	Do.
Pickering	1,015	4-3	.....	.....	.....
Webster Parish:	736	4	347	+ 2	Temp., 63°.
Yellow Pine	450	.....	.....	+ 1	.....
West Feliciana Parish:	1,011	10	20	+35	Salt water; temp., 75°.
Bayou Sara .....	.....	.....	.....	.....	.....
Do .....	.....	.....	.....	.....	.....
Winn Parish:	600	6	.....	-18	Salt water; temp., 75°.
Coldwater (Drake's Salt Works).	454	4	.....	-90	2 wells; company refuses information.
Dodson (1 mile south, at Pyburn).	700	.....	.....	.....	Abandoned; too much quicksand.
Dodson (2 miles south, at Winona).	454	4	.....	-90	Soft water; shells common from 20 to 490 feet.
Winnfield .....	.....	.....	.....	.....	Too much quicksand, well abandoned.
Winona .....	.....	.....	.....	.....	.....

¹ Record, U. S. Geol. Surv. Bull. 212, p. 55.² Ibid., pp. 130-131.³ Ibid., p. 63.⁴ Record, La. Geol. Surv. Rept., 1899, p. 224.⁵ Ibid., p. 258.⁶ La. Geol. Surv. Rept., 1902, p. 226.⁷ Ibid., p. 224.⁸ Ibid., p. 227.⁹ Ibid., p. 223.¹⁰ Record, ibid., p. 228.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN LOUISIANA.

Subterranean waters of Louisiana, by G. D. Harris: Geological Survey of Louisiana, Report of 1902, pp. 203, 260.

Oil in Louisiana, by G. D. Harris, *ibid.*, pp. 265-275.

Underground Waters of Southern Louisiana, by G. D. Harris.

Oil fields of the Texas-Louisiana Gulf Coastal Plain, by C. W. Hayes and William Kennedy: U. S. Geological Survey Bulletin 212, 1903.

Geology and water resources of northern Louisiana and southern Arkansas, by A. C. Veatch: Prof. Paper U. S. Geol. Survey No. 46. (In preparation.)

MAINE.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Cumberland County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Portland	505	6	13	-100	Rock at 100 feet.
Kennebec County:					
Augusta	570	.....	10	No flow.	In granite.
Hancock County:					
Castine	675	8	.....	-27	

MARYLAND.

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

¹ Record, N. J. Geol. Surv. Rept., 1899, pp. 81-83.

² Record, U. S. Geol. Surv. Bull. 138, pp. 128-130.

³ U. S. Geol. Surv. Bull. 138, p. 132.

MARYLAND—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Talbot County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Tilghmans Island	370-420	.....	Many.	.....	4 wells.
Tunis Mills.....	430	2	Pumps 100.	Flows.	Flows 6 gallons.
Wicomico County:					
Salisbury ¹	424	.....			Water at 267 feet.
Worcester County:					
Pocomoke City ²	496	6	50	Flows.	Pumps 100 gallons per minute.

¹ Record, N. J. Geol. Surv. Rept., 1899, pp. 113-115.² Ibid., pp. 116-117.

PUBLICATIONS RELATING TO DEEP BORINGS IN MARYLAND.

United States Geological Survey Bulletin No. 138, pp. 128-132.

New Jersey Geological Survey Reports for 1898 and 1899.

MASSACHUSETTS.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Berkshire County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Dalton.....	+400	.....	Many.	No flow.	
North Adams.....	500	8	625	—4	Very hard water.
Stockbridge.....	650	8			Unsuccessful.
Bristol County:					
Fall River (?).....	407	8	75		
New Bedford.....	510	6	2½	No flow.	
New Bedford (Clarks Cove Guano Co.).	504	.....		
Taunton.....	975	8	52	—12	Water too irony.
Franklin County:					
Turners Falls.....	900	6		No flow.	Water too hard.
Hampden County:					
Holyoke.....	400	8	400	—20	
Do.....	800	8	600	—20	
Do.....	720	8	400	—14	
Do.....	1,005	8	Many.	No flow.	Water too irony.
Hampshire County:					
Northampton.....	3,710	8	7	No flow.	Unsuccessful.
Do.....	4,022	.....			Do.
West Cummington.....	625	8	2½	No flow.	Water too irony.
Middlesex County:					
Malden.....	650	8	65	No flow.	Water of fair quality.
Waltham.....	460	.....	Very few	No flow.	
Watertown.....	700	.....	Many.		
Norfolk County:					
Franklin.....	450	6	27	—10	
Readville.....	500	8	1,500	—15	
Walpole.....	1,000	.....	15		
Suffolk County:					
Boston.....	610	.....		
Boston (Eastern Cold Storage). ..	400	8	70	No flow.	
Boston (corner Huntington avenue and Gainsboro street).	512	8	Few.	No flow.	Bad water.
Boston (corner Commercial and Prince streets).	1,750	.....		No flow.	
Boston (No. 34 Providence street).	2,503	7½		5	Sulphur water; good water 459-484 feet; well abandoned.
Boston (Park square)....	2,567	.....			No water below 500 feet.
Cambridge (Dow Soap Works).	500	.....			Unsuccessful.
Cambridge (Morse and White streets).	462	6			Do.
Cambridge.....	400	.....			Do.
Dorchester.....	870-900	.....		No flow.	2 wells; water very salty.
Roxbury.....	502	6		—20	
Do.....	403	.....		
Worcester County:					
Princeton.....	900	.....	Few.		

MICHIGAN.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks
Alger County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Grand Marais	1,215		None.		Abandoned.
Allegan County:					
Allegan ¹	1,275-1,400				Several borings for oil; not much found.
Alpena County:					Temp., 52°; several wells.
Alpena	650	5	200	+20	Several salt wells.
Do. ²	1,026-1,269				Salt well; flow of mineral water at 400 feet.
Thunder Bay River (near bed). ³	1,025				
Barry County:					
Assyria	1,850				For oil; unsuccessful.
Bay County:					
Banks	774-980				Salt wells.
Bay City	715-1,200				Numerous salt wells in vicinity.
Do. ⁴	505				Salt wells in upper salt beds.
Do.	1,600				
Do.	1,003-1,007				2 wells.
Do. ⁵	2,865				Brine at 2,141-2,306 feet.
Bay City (near) ⁶	495	3			
Essexville ⁷	755				
Garfield ⁸	800				
Kawkawlin ⁹	810-1,133				2 salt wells.
Kawkawlin (3 miles east). ¹⁰	465				
Portsmouth	1,000				
Do. ¹¹	664				Salt well.
Salsburg	1,000-1,013				Several salt wells.
South Bay City ¹²	3,508				
Winona	1,020				Drill hole for copper ore.
Benzie County:					
Frankfort ¹³	1,800				
Do. ¹⁴	2,200		160	Flows.	Temp., 58°; mineral water.
Berrien County:					
Benton Harbor ¹⁵	1,205				
Do.	1,400	10-6	Many.	-30	
Do.	750	8		-30	Abundant yield of strong mineral water.
Berrien Springs ¹⁶	874				
Niles	1,428	10-5	15	+15	Temp., 60°.
Do. ¹⁷	1,140				
Niles and Benton Harbor (between). ¹⁸	700-1,600				
Niles ¹⁹	600				Strong brine at 370 feet.
Branch County:					
Coldwater (west of) ²⁰	447				Water at 223 feet; brine at 282 feet.
Do. ²¹	1,200				
Do.	2,200				
Calhoun County:					
Albion					Several wells.
Battlecreek ²²	440			-16	Water at 116 feet only.
Marengo ²³	460				
Marshall ²⁴	440			Flows.	
Cass County:					
Dowagiac	1,500				Unsuccessful.
Do.	2,200				Water at 87 feet; brine at 387 feet.
Do. ²⁴	1,760				
Do.	2,300				Water at 90 feet; brine at 780 feet.
Charlevoix County:					
Charlevoix ²⁵	400-482	8		Flow.	Temp., 46°.

¹ Record, Mich. Geol. Surv. Rept., 1881-1893, vol.

5, part 2, pp. 44-45, pl. 4.

² Ibid., pp. 46-47, pl. 5.³ Mich. Geol. Surv. Rept., 1873-1876, vol. 3, part 1, p. 40.⁴ Analysis, *ibid.*, p. 182.⁵ Record, *ibid.*, 1881-1893, vol. 5, part 2, p. 50, pl. 6.⁶ Ibid., 1900-1903, vol. 8, part 2, p. 170.⁷ Ibid., 1881-1893, vol. 5, part 2, p. 58.⁸ Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 224.⁹ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 65; 1873-1876, vol. 3, part 1, p. 96.¹⁰ Ibid., 1900-1903, vol. 8, part 2, p. 169.¹¹ Analysis, *ibid.*, 1873-1876, vol. 3, part 1, p. 182.¹² Record, Ann. Rept. State Board of Geol. Surv. of Mich., 1901, pp. 224-225.¹³ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 59, pl. 18.¹⁴ Analysis, *ibid.*, p. 59.¹⁵ Record, *ibid.*, p. 51, pl. 7.¹⁶ Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 213.¹⁷ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 73, pl. 44.¹⁸ Ann. Rept. State Board of Geol. Surv. of Mich., 1901, pp. 213-214.¹⁹ Record, Mich. Geol. Surv. Rept., 1873-1876, vol. 3, part 1, p. 93.²⁰ Ibid., pp. 87-88.²¹ Ibid., 1881-1893, vol. 5, part 2, p. 54, pl. 10.²² Ibid., p. 50.²³ Ibid., p. 67.²⁴ Ibid., p. 55, pl. 16.²⁵ U. S. Geol. Surv. Water-Sup. and Irr. Paper No. 30, p. 87.

MICHIGAN—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Cheboygan County:	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Cheboygan ¹	700	.....	.....	.....
Do.....	452	10-8	.....	To surface.	
Do. ²	2,750	.....	.....	.....
Indian River.....	414	2	.....	-12	
Chippewa County:					
Neebish Island ³	565	.....	.....	.....
Clinton County:					
St. Johns.....	1,200	.....	.....	.....	Unsuccessful.
Do. ⁴	608	.....	.....	.....	Waterworks well.
Crawford County:					
Grayling.....	.....	.....	.....	.....	Many wells.
Do.....	2,560	6	.....	.....
Do. ⁵	2,750	.....	.....	.....
Delta County:					
Escanaba ⁶	640	.....	.....	.....
Eaton County:					
Charlotte ⁷	2,209	6	.....	-20	
Do.....	730	.....	.....	.....
Emmet County:					
Petoskey.....	575	10-8	450	+18	Temp., 50°.
Genesee County:					
Flint ⁸	1,200	.....	.....	.....	Salt well; fresh water at 260 feet.
Gladwin County:					
Gladwin.....	400	4	.....	.....
Do.....	400	6	100	+24	
Gratiot County:					
Alma ⁹	2,863	.....	.....	-2	
Ithaca ¹⁰	637	8	50	-72	Several wells; good water.
St. Louis ¹¹	1,314	.....	.....	.....	Deep well.
Hillsdale County:					
Hillsdale ¹²	1,350-1,550	.....	.....	.....	B-rine at 1,100 feet.
Houghton County:					
Lake Linden.....	1,502-1,508	12-8	100	.....
Huron County:					
Caseville ¹	1,750-1,770	.....	.....	.....	Salt wells.
Do. ¹³	1,760-2,270	.....	.....	.....	Do.
Grindstone.....	1,080	.....	.....	.....	Abandoned.
Do. ¹³	(?) 1,000	.....	.....	.....	Salt well.
Harbor Beach ¹³	+702	.....	.....	.....	Do.
New River ¹³	1,029	.....	.....	.....	Do.
Old Bay Port ¹³	2,000	.....	.....	.....	Salt well; never in operation.
Pigeon River ¹³	1,760	.....	.....	.....	Pigeon River Furnace Co.'s salt well (later Lake Huron Iron Co.).
Port Austin ¹⁴	1,198-1,225	.....	.....	.....	Salt wells; sweet water at 336 to 1,100 feet.
Port Crescent ¹³	1,250	.....	.....	.....	Salt well.
Port Hope ¹⁵	787	.....	.....	.....	Do.
Sandbeach ¹⁶	702	.....	.....	.....	Do.
Do. ¹⁷	1,920	.....	.....	.....	For gas; unsuccessful.
Verona Mills (near) ¹⁸	400	5½	.....	.....
Whiterock ¹⁹	555-1,311	.....	.....	.....	Several salt wells.
Ingham County:					
Lansing "magnetic well." ²⁰	1,400	.....	1	Flows.	Saline water; temp., 58½°.
Lansing Hotel.....	740	.....	.....	.....
Lansing Reform School ²⁰	506	.....	.....	.....
Mason (near) ²¹	401,409	.....	.....	.....
Meridian (near) ²²	514	.....	.....	.....

¹ Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 53.² Record, Ann. Rept. State Board of Geol. Surv. of Mich., 1901, pp. 230-231.³ Record, *ibid.*, p. 227.⁴ Record, Mich. Geol. Surv. Rept., 1900-1903, vol. 8, part 2, p. 136.⁵ Record, State Board of Geol. Surv. of Mich., 1901, pp. 231-232.⁶ *Ibid.*, pp. 228-229.⁷ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 53, pl. 8.⁸ *Ibid.*, p. 53; 1873-1876, vol. 3, part 1, p. 97.⁹ Analysis, *ibid.*, pp. 45-46; U. S. Geol. Surv. Water-Sup. and Irr. Paper No. 31, p. 83; record, Mich. Geol. Surv. Rept., 1900-1903, vol. 8, part 2, p. 175.¹⁰ Record, *ibid.*, pp. 63-64.¹¹ Mich. Geol. Surv. Rept., 1900-1903, vol. 8, part 2, p. 174.¹² Record, *ibid.*, 1881-1893, vol. 5, part 2, p. 62; 1873-1876, vol. 3, part 1, p. 81.¹³ Mich. Geol. Surv. Rept., 1896-1900, vol. 7, part 2, p. 224.¹⁴ Record, *ibid.*, 1881-1893, vol. 5, part 2, pp. 75-76; 1873-1876, vol. 3, part 1, pp. 77-78; analysis, p. 183.¹⁵ *Ibid.*, p. 76.¹⁶ Analysis, *ibid.*, 1873-1876, vol. 3, part 1, p. 184.¹⁷ Record, *ibid.*, 1891-1893, vol. 5, part 2, pp. 81-82.¹⁸ *Ibid.*, 1896-1900, vol. 7, part 2, pp. 175-176.¹⁹ Mich. Geol. Surv. Rept., 1873-1876, vol. 3, part 1, pp. 76-77; analysis, p. 134; record, 1881-1893, vol. 5, part 2, p. 86; 1896-1900, vol. 7, part 2, p. 160.²⁰ Record, *ibid.*, pp. 117-118.²¹ *Ibid.*, 1900-1903, vol. 8, part 2, pp. 216, 217.²² *Ibid.*, p. 207.

MICHIGAN—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Ionia County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Chadwick	498				
Ionia	400-600	8	Many.	+ 7	No water below 362 feet, temp., 55°.
Do. ¹	450				Flow of sweet water at 300 feet.
Saranac	447	2		- 1½	
Iosco County:					
East Tawas ²	905				Salt well.
Oscoda ³	1,070-1,103				Salt wells.
Tawas City ⁴	905				Salt well.
Jackson County:					
Jackson ⁵	2,100-2,455			Flows.	Several wells. Flow of water at 1,050 feet; hot water at 1,820 feet.
Do.	2,700				Abandoned.
Do.	206-400	10	Many.	- 9	Large water supply; several wells.
Kalamazoo County:					
Kalamazoo ⁶	2,250				
Kent County:					
Grand Rapids ⁷	2,200				Fresh water with gas and brine at bottom.
Do.	(?)700				
Lapeer County:					
Imlay ⁸	1,020				Fresh water at 150 to 200 feet; salt water at 648 to 710 feet.
Leelanau County:					
Fountain Point (Carp Lake)		8		+ 15	
Provemont	700	8		+ 10	Sulphur water 300 feet in rock.
Lewanee County:					
Adrian ⁹	1,650				Mineral water at 805 feet; abandoned.
Do.	1,800				
Blissfield ¹⁰	2,402				
Britton ¹¹	1,700				
Riga ¹²	+1,275				
Livingston County:					
Howell ¹³	550				Gas; abandoned.
Mackinac County:					
St. Ignace ¹⁴	919	8	Many.	Flows.	Strong sulphur water.
Do. ¹⁵	1,166				
Macomb County:					
Mount Clemens ¹⁶	1,060-1,244				Several mineral wells.
Do.	1,265	5½			
New Baltimore ¹⁷	1,640				
Romeo ¹⁸	1,600			- 600	
Manistee County:					
Manistee ¹⁹	1,947-2,270				Numerous salt wells in town and vicinity.
Do.	2,015	10-5		- 15	Black water at 960. Some oil at 1,905 feet.
Do.	1,900				2 salt wells.
Stronach ²⁰	1,972				4 wells.
Mason County:					
Ludington ²¹	2,220				
Do. ²²	1,650				
Ludington (1 mile south). ²³	2,260				
Mecosta County:					
Big Rapids	1,360		Many.	- 30	Mineral water.
Menominee County:					
Menominee	+400				

¹ Record, Mich. Geol. Surv. Rept., 1873-1876, vol. 3, part 1, pp. 134-136.² Ibid., 1881-1893, vol. 5, part 2, p. 57; analysis, 1873-1876, vol. 3, part 1, p. 184.³ Analysis, *ibid.*, 1873-1876, vol. 3, part 1, p. 186.⁴ Record, *ibid.*, p. 79.⁵ Ibid., 1881-1893, vol. 5, part 2, p. 65, pls. 23-25.⁶ Ibid., p. 65, pl. 26.⁷ Ibid., p. 61, pl. 20.⁸ Ibid., p. 63, pl. 22.⁹ Ibid., p. 44, pl. 1.¹⁰ Record, Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 219.¹¹ Ibid., pp. 219-220.¹² Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 219.¹³ Ibid., p. 219.¹⁴ Ibid., p. 66, pl. 27.¹⁵ Ibid., p. 66, pl. 29.¹⁶ Ibid., p. 66, pl. 28.¹⁷ Record, Mich. Geol. Surv. Rept., 1900-1903, vol. 8, part 2, p. 218.¹⁸ Ibid., 1881-1893, vol. 5, part 2, p. 79, pl. 63.¹⁹ Record, Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 228.²⁰ Record and Analysis, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, pp. 70-71, pl. 42.²¹ Record, Ann. Rept. State Board of Geol. Surv. of Mich., 1901, pp. 221-222.²² Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 78, pl. 59.²³ Ibid., p. 66, pls. 30-32; Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 235.²⁴ p. 84, pl. 65.²⁵ Ibid., p. 66, pl. 27.²⁶ Ibid., p. 66, pl. 29.²⁷ Ibid., p. 66, pl. 28.

MICHIGAN—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Midland County:					
Midland ¹	1,300-1,325				
Do.....	400		Many.		
Monroe County:					
Monroe ²	1,765	8	Several.	+ 4	Well now plugged; water somewhat sulphurous.
Muskegon County:					
Muskegon (vicinity) ³	+2,050				Ryerson-Hills well.
Do. ³	1,515				
Do. ³	1,500				
Do. ⁴	1,230				Flows of mineral water at 333 feet and 643 feet.
Do. ⁵	2,627				Strong flow of mineral water at 700 feet, brine at 2,400 feet.
Do.....	2,000				
Oakland County:					
Pontiac ⁶	1,505				Salt water at 1,100 feet.
Royal Oak ⁷	1,400				
Do. ⁸	2,502				
Ogemaw County:					
West Branch (8 miles southwest). ⁹	403	6-4			
Roscommon County:					
Roscommon.....	600				Some oil.
Saginaw County:					
Blackmar.....	1,764				Salt well.
Carrollton.....	743-800				Several salt wells.
East Saginaw ¹⁰	806				Salt well.
Melbourne.....	950				
St. Charles ¹¹	800-900				Salt wells.
Saginaw.....	741-830				Numerous salt wells.
Do. ¹²	860				
Saginaw (southeast). ¹³	1,764				Brine at 350 and 1,655 feet.
Salina ¹⁴	715				
Zilwaukee ¹⁵	800-860				Several wells.
St. Clair County:					
Algonac ¹⁶	1,614				Salt well.
Algonac (5 miles below). ¹⁷	1,727				Do.
Marine City ¹⁸	1,470-1,737				Several salt wells in and near town.
Marine City (city well) ¹⁹	1,777			Flows.	Clear water 1,170-1,370 feet.
Marine City ²⁰	1,751				Salt well.
Maryville ²¹	1,150				Salt water at 745 feet; mineral water 970 and 985 feet.
Port Huron.....	600	8-6			
Do.....	728	10-8		- 19	
Do. ²²	498-785				Gas wells.
Port Huron (12 miles northwest).				Flows.	
Port Huron ²³	1,700				Gas and salt.
Port Huron Deerspring.....	745			- 150	Slightly mineral water.
St. Clair ²⁴	919				Salt wells.
Do. ²⁵	1,682			- 300	Salt well.
Do. ²⁶	1,807				
Do. ²⁷	1,855				Do.

¹ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 69.

² Ibid., p. 70, pl. 41.

³ Record, etc., Ann. Rept. State Board of Geol. Surv. of Mich., 1901, pp. 233-234.

⁴ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 71, pl. 43; 1873-1876, vol. 3, part 1, p. 84.

⁵ Ibid., 1873-1876, vol. 3, part 1, p. 85.

⁶ Ibid., 1881-1893, vol. 5, part 2, p. 75, pl. 47.

⁷ Ibid., p. 79.

⁸ Ibid., p. 79, pl. 60.

⁹ Ibid., 1900-1903, vol. 8, part 2, p. 158.

¹⁰ Ibid., 1891-1893, vol. 5, part 2, p. 55; 1873-1876, vol. 3, part 1, pp. 94-96, analysis, p. 183.

¹¹ Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 224.

¹² Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 79, analysis, *ibid.*, 1873-1876, vol. 3, part 1, p. 182.

¹³ Ibid., 1873-1876, vol. 3, part 1, pp. 96-97.

¹⁴ Ibid., 1900-1903, vol. 8, part 2, pp. 175-176.

¹⁵ Analysis, *ibid.*, 1873-1876, vol. 3, part 1, p. 185.

¹⁶ Record, *ibid.*, 1881-1893, vol. 5, part 2, p. 44, pl. 3.

¹⁷ Ibid., pl. 2.

¹⁸ Ibid., p. 67, pls. 33-38.

¹⁹ Ibid., p. 67, pl. 39.

²⁰ Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 241.

²¹ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 68, pl. 40.

²² Ibid., 1873-1876, vol. 3, part 1, p. 77.

²³ Ibid., 1896-1900, vol. 7, part 3, pl. 1.

²⁴ Ibid., 1881-1893, vol. 5, part 2, p. 79, pl. 62.

²⁵ Ibid., pl. 61.

²⁶ Record, etc., Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 222.

²⁷ Record, *ibid.*, p. 241.

MICHIGAN—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
St. Joseph County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Constantine ¹	680	.....	.....	.....	Strong brine at 382 feet.
Do. ²	+1,080	.....	.....	.....
Florence.....	800	.....	.....	.....	Salt wells.
Sanilac County:					
Croswell ³	675	.....	.....	.....	Waterworks well
Forestville.....	505-600	.....	.....	.....	Abandoned and filled up
Lexington (3 miles south). ⁴	900	.....	.....	.....
Marlette ⁵	624	.....	.....	.....
Valley Center ⁶	685	.....	.....	.....
Shiawassee County:					
Corunna ⁷	907	.....	.....	.....
Durand ⁸	635	.....	.....	.....
Owosso ⁹	1,000	.....	.....	.....	Brine at 634 feet.
Van Buren County:					
Bangor ¹⁰	1,300	.....	.....	.....	Strong brine flows.
Washtenaw County:					
Ann Arbor ¹¹	1,326	6½	.....	.....
Do. ¹²	770 or 775	.....	.....	— 40	
Milan ¹³	890	.....	.....	.....
Ypsilanti ¹⁴	965	.....	.....	.....
Do.....	808	.....	.....	.....
Do.....	730	.....	.....	.....
Wayne County:					
Detroit (9 miles north-east). ¹⁴	770	.....	.....	.....	Some gas and water at 165 feet.
Detroit ¹⁵	2,097	.....	.....	.....
Norris.....	631	.....	.....	.....	For gas; abandoned.
Trenton ¹⁶	1,370	.....	.....	.....
Wyandotte ¹⁶	2,500	.....	.....	.....	Abandoned.
Do.....	600-800	.....	.....	.....	Numerous salt wells.
Do. ¹⁶	1,300	.....	.....	.....
Wyandotte (near) ¹⁷	1,603	.....	.....	.....	River Rouge Improvement Co.'s well.
New River ¹⁸	1,029	.....	.....	.....	Salt well.

¹ Record, Mich. Geol. Surv. Rept., 1873-1876, vol.

3, part 1, p. 93.

² Ibid., 1881-1893, vol. 5, part 2, p. 54, pl. 11.³ Ibid., 1896-1900, vol. 7, part 3, p. 11.⁴ Ibid., p. 12.⁵ Mich. Geol. Surv. Rept., 1896-1900, vol. 7, part 3, p. 30.⁶ Record, *ibid.*, p. 11.⁷ Ibid., 1881-1893, vol. 5, part 2, p. 54, pl. 12.⁸ Ibid., 1900-1903, vol. 8, part 2, p. 199.⁹ Ibid., 1873-1876, vol. 3, part 1, p. 97; 1881-1893, vol. 5, part 2, p. 78, pl. 45.¹⁰ Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 214.¹¹ Record, *etc.*, *ibid.*, pp. 214-215.¹² Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, pp. 47-49; 1873-1876, vol. 3, part 1, p. 92.¹³ Record, Ann. Rept. State Board of Geol. Surv. of Mich., 1901, p. 219.¹⁴ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 54, pl. 15.¹⁵ Record, Ann. Rept. State Board of Geol. Surv., 1901, p. 217.¹⁶ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 87, pl. 66.¹⁷ Ibid., p. 218.¹⁸ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 73; 1873-1876, vol. 3, part 1, p. 77.

PUBLICATIONS RELATING TO DEEP BORINGS IN MICHIGAN.

Geology of the lower Peninsula of Michigan, by C. Rominger: Michigan Geological Survey, vol. 3, part 1, 225 pages, New York, 1876.

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.

Analyses of many of the well waters are to be found 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 Peninsula of Michigan, by A. C. Lane: U. S. Geological Survey Water-Supply and Irrigation Papers No. 30, 97 pages, plates, Washington, 1899.

Geological report on Huron County, Michigan, by A. C. Lane: Geological Survey of Michigan, 1896-1900, vol. 7, part 2.

Coal of Michigan, by A. C. Lane: Geological Survey of Michigan, 1900-1903, vol. 7, part 2.

Report of the State Board of Geological Survey of Michigan, for 1901, by A. C. Lane.

MINNESOTA.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Bigstone County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Graceville.....	460	8-6	40	— 50	2 wells; granite at 510 feet.
Do.....	522	.....	Several.	No flow.	
Blue Earth County:					
Lake Crystal.....	.....	.....	.....	— 71	Unsuccessful.
Mankato.....	2,204	.....	.....	— 90	
Do.....	650	10, 8, 6	500 to 80	+ 40	Several wells; water ferruginous.
Mankato and vicinity...	570-2,240	6-8	.....	.....	Several wells; in one the water rises to +28 feet.
Minneapolis Falls ¹	1,000	8-6	Many.	.....	Flow at 540 feet, and salty water at 940 feet; granite at 940 feet.
Carver County:					
New Germany.....	410	3	.....	.....	Water at 100 feet only.
Chisago County:					
Wyoming.....	505	8-6	Many.	— 12	
Clay County:					
Moorhead ²	1,901	.....	.....	.....	Water at 120, 135, and 370 feet.
Do. ³	1,425	.....	.....	.....	Water at 120 and 1,425 feet.
Do.....	1,820	.....	.....	+ 4	
Cottonwood County:					
Westbrook.....	600	.....	.....	.....
Crow Wing County:					
Brainerd.....	647	.....	.....	.....
Dakota County:					
Hastings ⁴	1,160	.....	100	+ 14	Water slightly salty.
Lakeville.....	1,085	.....	.....	.....
Mendota ⁵	857	4	10	+ 10	
Dodge County:					
Dodge Center.....	504	8	80	— 88	Railroad well.
Hayfield.....	530	.....	None.	.....
Do.....	545	10	.....	.....
Faribault County:					
Blue Earth.....	1,300	.....	Many.	— 30	First flow at 420 feet; second flow at 425 feet.
Do.....	1,240	.....	.....	— 30	
			5	< 200	
Fillmore County:					
Fountain.....	579	6	20	—225	
Freeborn County:					
Albert Lea.....	+660	.....	.....	.....	Unsuccessful.
Freeborn.....	950	.....	.....	.....
Goodhue County:					
Red Wing ⁶	500	6	100	+ 75	Flows from 190-450 feet.
Do.....	1,018	.....	.....	.....
Hennepin County:					
East Minneapolis ⁷	1,421	.....	.....	.....	Several wells unsuccessful.
Minneapolis.....	1,431	.....	.....	.....
Minneapolis (Lakewood Cemetery). ⁸	2,150	.....	.....	.....
Minneapolis (West Hotel). ⁹	622	.....	300	— 24	Water at 168 feet.
Minneapolis (C., M. and S. P. R. R. shops).	.....	.....	.....	.....
Minneapolis (Soldiers' Home).	.....	.....	.....	.....	Abandoned.
Minneapolis (Winslow House).	1,421	.....	.....	No flow.	
Minneapolis.....	900	.....	.....	.....
Do.....	622-2,118	.....	Many.	—15 to —50	
Houston County:					
Brownsville ¹⁰	590	.....	1,000	+ 13	
Isanti County:					
Dalbo.....	558	.....	200	.....
Kandiyohi County:					
Atwater.....	453	8-6	100	.....	Water-bearing strata at 45, 100, and 310 feet.
Kandiyohi.....	450	.....	.....	.....

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, 1893, pp. 72-74.

³ Record, Rept. Spec. Comm. U. S. Senate on Irrigation and Reclamation of Arid Lands, vol. 4, 1890, p. 48; Minn. Geol. Surv. Bull. 5, Gas in Minnesota, pp. 27-31.

⁴ Record, Minn. Geol. Surv., 13th Rept., 1884, pp. 56-57; analysis and record, Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, pp. 137-141.

⁵ Record, Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, p. 141; Minn. Geol. Surv., 13th Rept., 1884, pp. 55, 56.

⁶ Ibid., p. 142; Minn. Geol. Surv., 13th Rept., 1884, pp. 57-58.

⁷ Record, Minn. Geol. Surv. Rept., vol. 5, 1876, pp. 154-156.

⁸ Record, Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, pp. 137-138; Minn. Geol. Surv., 13th Rept., 1884, pp. 50, 54.

⁹ Analysis, *ibid.*, p. 137; record, Minn. Geol. Surv., 14th Rept., 1885, p. 11.

¹⁰ Record, Minn. Geol. Surv., 13th Rept., 1884, p. 59; Rept. Spec. Comm. U. S. Senate on Irrigation and Reclamation of Arid Lands, 1890, vol. 4, p. 48; Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, p. 142.

MINNESOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Kittson County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Humboldt ¹	644	.....	.....	.....	Salty water at 170-180 feet.
Do.....	(?) 1,500	.....	.....	.....
St. Vincent (2 miles northwest). ²	1,037	.....	.....	.....
Lincoln County:					
Tyler.....	+400	.....	.....	.....
Do.....	+600	.....	.....	.....
Lyon County:					
Cottonwood.....	465	.....	.....	.....	8 wells.
Gheut.....	525	.....	.....	.....
Heckman (S. W.).....	506	2	2	Flows.	
Marshall.....	400-440	1½-2	3-10	Flow.	
Tracy ³	724	.....	.....	— 37	
Do.....	597	.....	.....	— 148	
Do.....	668	.....	.....	.....
McLeod County:					
Glencoe.....	1,640	8-6	50	— 85	
Do.....	1,000	.....	50	.....
Marshall County:					
Stephen.....	800	.....	.....	.....	No success.
Meeker County:					
Grove City.....	700	.....	.....	— 57	
Mower County:					
Austin.....	750	10-8	220	— 6	Fine water from 600 feet.
Do.....	550	.....	150	— 9	
Do.....	580	.....	150	— 9	
Nicollet County:					
St. Peter.....	498	.....	± 200	.....
Do.....	450	.....	250	.....
Nobles County:					
Worthington.....	600	.....	.....	.....	Unsuccessful.
Do.....	530	.....	.....	.....
Olmsted County:					
Rochester.....	+960	.....	.....	.....
Pine County:					
Pine City.....	700	12-4½	75	— 70	
Pipestone County:					
Pipestone.....	537	.....	.....	.....
Ramsey County:					
Gladstone.....	615	.....	.....	— 30	
Mendota.....	857	.....	.....	Flows.	
St. Paul (G. N. R. R.).....	834	.....	.....	— 38	
St. Paul (Elevator Co.) ⁴	850	.....	.....	— 35	
St. Paul (St. P. & D. R. R.).....	750	.....	.....	.....
St. Paul Transfer Railroad.....	575	.....	.....	.....
St. Paul (West. M. and N. W. R. R.).....	1,080	.....	.....	— 24	
St. Paul city well.....	1,065	.....	.....	.....
St. Paul (harvester works). ⁵	871½	.....	.....	.....
St. Paul, Wilgus well.....	625	.....	.....	.....
St. Paul Fair Grounds.....	500	.....	.....	.....
St. Paul, Lake Vaduaia.....	726½	.....	.....	— 11	
St. Paul, White Bear Lake.....	777	.....	.....	— 18	
St. Paul (Vaduaia Lake).....	925	10-8	.....	— 6	
St. Paul.....	575, 840	8	.....	— 38 to — 40	
South St. Paul.....	487	.....	.....	— 5	
Do.....	3,000	.....	.....	.....	For gas.
White Bear Lake.....	777	.....	.....	— 15	
Red Lake County:					
Redlake Falls.....	407	.....	.....	.....
Redwood County:					
Lamberton.....	400	.....	.....	.....
Do.....	+500	.....	.....	.....
Walnutgrove.....	400	.....	.....	.....
Renville County:					
Olivia.....	+450	.....	None.	.....
Rice County:					
Faribault.....	520	.....	.....	.....	Signs of gas.
Northfield.....	647	8	1,000	+ 25	Hard water. Supply is from 800 feet.
St. Louis County:					
Duluth (12 miles west). ⁶	1,507½	8-5½	.....	— 40	Mineral water at 1,225 feet.
Fond du Lac.....	1,508	.....	.....	— 10±	Salty water; bored for gas.
Tower (2 miles east).....	400	1½	Many.	.....	Diagonal drill hole in gneiss.

¹ Record and analysis, Minn. Geol. Surv., 13th Rept., 1884, pp. 42-47.² Record, *ibid.*, 14th Rept., 1885, p. 15.³ *Ibid.*, pp. 351-352.⁴ *Ibid.*, 13th Rept., 1884, p. 63; Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, p. 140.⁵ Record, Minn. Geol. Surv., 13th Rept., 1884, pp. 59-63; Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, p. 140.⁶ *Ibid.*, Bull. 5, Gas in Minnesota, pp. 31-35.

MINNESOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Scott County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Belleplaine	710				
Jordan	(?) 650				
Merriam Junction	661			+ 6	
Sherburne County:					
Elk River	513		Many.	+ 4	Several wells in vicinity; only flow is at 308 feet.
Sibley County:					
Bismark	407		1		
Henderson	750				
Do	707	10-8	400	+ 70	Temp., 50°.
Winthrop	413				
Steele County:					
Owatonna	640	8	250	- 8	
Stevens County:					
Scott	+400				No water.
Swift County:					
Benson	478				
Do	650				
Traverse County:					
Brown Valley ¹	465				
Do	425, 485				
Wheaton	438				
Wabasha County:					
Lake City ²	820				
Plainview	690	12	100		
Waseca County:					
Waseca	1,157	10-8	200	-120	
Washington County:					
Stillwater ³	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.
Watsonwan County:					
St. James	501	10-8	300	- 27	Hard water
Do	541	8		- 28	
Wilkin County:					
Campbell	451				
Rothsay	560				
Winona County:					
St. Charles	944			- 60	
Winona	478	6	500	+ 10	Temp., 54°; cased 175 feet.
Do	515		180		
Do	+485				
Wright County:					
Monticello	500			- 18	Good water.

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

² Ibid., 13th Rept., 1884, p. 58; Minn. Acad. Natural Sciences Bull., vol. 3, No. 1, p. 142.

³ Ibid., Bull. 5, Gas in Minnesota, pp. 25-27; Am. Geol., vol. 3, p. 343.

PUBLICATIONS RELATING TO DEEP BORINGS IN MINNESOTA.

Minnesota Geological Survey, Thirteenth Annual Report, for 1884, by N. H. Winchell, 196 pages, plates, St. Paul, 1884.

Minnesota Geological Survey, Fourteenth Annual Report, for 1885, part 1, by N. H. Winchell, 165 pages, St. Paul, 1886.

Minnesota Academy of Natural Sciences Bulletin, vol. 3, No. 1, Proceedings and Accompanying Papers, 1883-1886, by C. W. Hall, 160 pages, plates, Minneapolis, 1889.

Natural gas in Minnesota, by N. H. Winchell: Minnesota Geological Survey Bulletin No. 5, 39 pages, St. Paul, 1889.

Report of the Special Committee of the United States Senate on the Irrigation and Reclamation of Arid Lands, vol. 4, 386 pages, Washington, 1890.

MISSISSIPPI.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks
Adams County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Natchez	430-517	6	50	-160 and -8	2 wells.
Bolivar County:					Do
Cleveland	1,000	3, 4	75-100	Flow.	
O'Reilly	1,002	4	100	Flows.	
Carroll County:					
Carrollton	1,250	4			
Do	400	4	62	Flows.	
Chickasaw County:					
Houston	1,500	3	Few.	-50	
Okolona	550	6	138	-80	
Do	600			-65	
Clarke County:					
Barnett	600	6			
Enterprise	410	3			
Shubuta	400-422	2-6	20-40	+15-30	Several wells.
Clay County:					
West Point	560	3		+ 1	
Coahoma County:					
Eaglesnest	825	1½	8	Flows.	
Jonestown	800	2	8	Flows.	
Lyon	975	4	22	+35	
Copiah County:					
Wesson	1,300				Unsuccessful.
Do	1,400				
Hancock County:					
Bay St. Louis	400-760	4½-2	100-5	Flow.	Many wells; temperature of deeper wells 78°.
Do	420-750	2-3	100-5	+17 to +42	Several wells.
Do	897	3	225	Flows.	Water at 690 feet flowed 50 gallons a minute; principal flow at 818 feet.
Logtown	620	2½	60	+25	
Pickayune	500	2	27	+25	
Waveland	432-461	2½-3	25-30	+15-28	
Do	775	3	165	Flows.	Water at 350 and 700 feet.
Harrison County:					
Biloxi	870				
Do	414-920	2-4½	35-450	+20 to +80	Many wells.
Gulfport	540-960	3-5	60-175	+25 to +80	Several wells.
Do	700	4½-2	80	+25	Temp., 71°±.
Handsboro	500-700	2½-3	60-175	+15-20	3 wells.
Howison	1,500	2			
Longbeach	580, 600	2½	60, 70	+25 to +35	2 wells.
Mississippi City	514-860	2-4½	50-450	+0 to +80	
Do, 1	925		200	Flows.	60-gallon flow at 600 feet.
Do, 1	850	3	80	Flows.	
Pass Christian	420-1,020	2-3	25-250	+25 to +89	Many wells.
Pass Christian (3 miles east)	747	3	225	Flows.	Water stratum from 628 to 747 feet.
Saucier	720	3			
Ship Island (quarantine), 1	730			Flows.	
Ship Island (light-house), 1	750			Flows.	
Wortham	836	4	75	+15	
Do	590	3	100	Flows.	Water at 110 and 500 feet.
Hinds County:					
Jackson	1,200		Many.		
Do	604		Many.		
Holmes County:					
Tchula	800			Flows.	2 wells.
Do	456	2		+16	
Do	470			Flows.	
Do	770	3-2	200		
Do	1,125	4-2	130	+85	
Jackson County:					
Fontainebleau	625, 720	2½	60, 70	+40 to +50	2 wells.
Mosspoint	560-1,550	2½-4	25-400	+20-50	3 wells.
Do	790	3	135		
Ocean Springs	520-1,200	2½-4	26-250	+0-80	
Scranton	774	6	700	+45	Temp., 74°.
Do	750	3		Flows.	
Do	780	6			
Do	727	2			
Do	720	2½-6	60, 150	+30 to +43	2 wells.
Jones County:					
Ellisville	1,160	3			No water below 650 feet.
Do	1,300	6		-20	
Lafayette County:					
Oxford	400				

¹ La. Geol. Surv. Rept., 1902, p. 220.

MISSISSIPPI—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Lauderdale County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Meridian	680, 905	2-3	.....	-20 to -25	2 wells.
Lee County:					
Verona	400	6	.....	-60	
Leflore County:					
Greenwood	400	.....	.....	+40	3 wells.
Do.	506	6	400	-45	
Do.	400	.....	.....	+40	20 wells in adjoining region.
Do.	490-650	4	250, 275	+0 to +40	3 wells.
Do.	700	.....	.....	Flows.	
Ittabena	450-597	2-3	60-150	+0 to +35	3 wells.
Lowndes County:					
Artesia (44½ miles south) ..	700	4-3	10	-90	
Columbus	400	.....	Each 80	Flow.	2 wells; temp., 70°.
Do.	682	4	.....	+6	
Madison County:					
Canton	1, 021	8-3	90	+10	Temp., 74°.
Do.	1, 020	4	170	+19	
Do.	850	6	88	+16	
Ford	450	6	.....	-40	
Revive	720	.....	.....	-20	
Marion County:					
Columbia	500	3	25	Flows.	
Monroe County:					
Gatman	623	6	15	+27	
Montgomery County:					
Winona	400	10-6	100	-75	
Noxubee County:					
Bigbee Valley	±500	.....	.....	Flow.	
Brookville	±80	.....	10	-75	
Cliftonville	±500	.....	.....	Flow.	3 wells.
Cooksville	500	6	.....	-30	
Macon	763	.....	.....	Flows.	2 wells.
Do.	750, 800	3-4	5	-14 to +8	3 wells.
Prairie Rock	±600	.....	.....	Flows.	Several wells.
Rayne	700	.....	10	-25	
Shuqualak	950	6	.....	-25	
Oktibbeha County:					
Longview	986	10	25	-5	
Starkville	900, 908	8	145	-12½	} 2 wells.
				-130	
Perry County:					
Bonhomie	650	.....	.....	-30	
Quitman County:					
Belen	724-860	2-3	20-60	+0 to +50	
Riverside	636	2	60	+40	
Scott County:					
Forest	520	.....	.....	-90	Water at 220 feet, court-house well.
Sunflower County:					
Doddsville	700	.....	.....	Flows.	
Indianola	800	.....	.....	.....	Unsuccessful.
Do.	1, 250	.....	.....	Flows.	
Moorhead	950	3	.....	+50	
Do.	700-800	.....	.....	Flow.	
Ruleville	700-800	.....	.....	Flow.	
Tippah County:					
Ripley	600	10-8	.....	-25	
Warren County:					
Vicksburg	1, 060	.....	Few.	Flows.	
Do.	1, 100	10	.....	.....	Small flows; slightly trackish; temp., 70°.
Do.	900	.....	.....	.....	Abandoned.
Washington County:					
Greenville	500	6	300	-5	4 wells.
Wayne County:					
Waynesboro	+415	.....	.....	.....
Do.	520-525	4	20-40	+10	3 wells.
Yazoo County:					
Mechanicsburg	620	.....	.....	-40	
Satartia	588	3	15	+12	
Yazoo City	635	.....	.....	+20	
Do.	500	3	.....	-140	
Do.	475	4	40	+5	2 wells.
Do.	740	.....	.....	Flows.	
Do.	800	.....	.....	Flows.	
Do.	1, 254	.....	.....	Flows.	
Yazoo City (18 miles southeast) ..	588	.....	.....	-130	
Yazoo City (25 miles southwest) ..	588	2	14	+12	Temp., 70°.
Yazoo City (4 miles west) ..	696	2	.....	+9	

MISSOURI.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Adair County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Kirksville	1,300				
Atchison County:					
Rockport	678	8-6		- 16	Prospect hole for coal; water at 143 feet.
Andrain County:					
Mexico	588	8	10	-100	
Do.	1,125	8	70		
Do.	1,100	5½		- 80	
Do.	±1,800				For oil or gas, unsuccessful. Salt water.
Barry County:					
Monett	415			-155	
Barton County:					
Lamar	1,000	6	Many.	-150	Good water; abandoned.
Do.	+2,000				
Buchanan County:					
St. Joseph	1,000	6			Prospect for coal.
Do.	1,300	6			Do.
Do.	1,805	6			Temp., 82°; water mineral.
St. Joseph (5 miles east) ..	500	6	Few.		
Butler County:					
Poplarbluff	600	8-6		- 10	
Caldwell County:					
Braymer	457				
Do.	+1,350				
Do.	?500		Many.	- 30	
Do.	1,100				
Callaway County:					
Cedar City	1,282	10	Many.	Flows.	
Fulton	750	8	30	- 70	
Cape Girardeau County:					
Appleton	1,295				
Jackson	531	4½	Many.	- 3	Sulphur water; not in use.
Carroll County:					
Ludlow	495				
Tina	675				
Cass County:					
Lonetree	1,000				
Cedar County:					
Eldorado Springs	1,400	8		- 28	Sulphur water.
Chariton County:					
Brunswick ¹	1,505	6-4	7	Flows.	Mineral water.
Clay County:					
Excelsior Springs	1,370-1,460				
Cole County:					
Jefferson City	1,365				
Cooper County:					
Booneville	403	6		- 78	Water strongly mineral; abandoned.
Crawford County:					
Sullivan (5 miles south) ..	1,200			To surface.	Water also at 20, 240, and 800 feet.
Dunklin County:					
Campbell	910	4	7	+ 10	
Greene County:					
Springfield	755	6	750		Water at 610-620 feet.
Grundy County:					
Trenton	740		Many.		
Harrison County:					
Bethany	654	3½	5	Flows.	Temp., 47°.
Henry County:					
Clinton	650	8	200	+ 20	
Do.	850	8	175	+ 20	
Do.	900	10	400	+ 20	
Do.	900	6	125	+ 20	
Do. ²	800	8-5½	400	+ 10	Water also at 310 and 425 feet.
Do. ³	913		2,700		Temp., 64°.
Howard County:					
Boonslick ⁴	1,008	3	Many.		
Fayette	900		10		
Howell County:					
Mountainview	645	6		-509	
Westplains	575	10	100	- 40	
Iron County:					
Annapolis (near)	663-400				Several prospect holes.

¹ Analysis, Mo. Geol. Surv. Rept., vol. 3, pp. 96-97² Ibid., pp. 85-87, 118-119.³ Ibid., pp. 120-121.⁴ Ibid., p. 71.

MISSOURI—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Jackson County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Kansas City ¹	1,000-425	.....	.....	— 30	Several test borings for gas; water from 380-390 feet, 590 feet, and 995 feet; brackish and sulphur water.
Do.	1,000-1,622	.....	.....	.....
Do.	908	.....	.....	.....	Temp., 65°; principal water supply at 815 feet; water also at 86 and 900 feet.
Kansas City (Swift & Co.) .....	.....	.....	.....	—119	
Lisle	405	.....	.....	.....	No water.
Jasper County:					
Cartersville	643	.....	Many.	— 70	
Do.	800	6	10	—140	
Do.	799	5½	15	—115	
Carthage ²	2,005	.....	.....	.....	To granite.
Do.	1,800	8	.....	.....
Joplin	1,375	6	30	— 80	Ferruginous water.
Do.	1,400	6	80	— 80	
Do.	908	6½	170	—120	
Prosperity	998	10-6	50	—115	
Webb City	500	7½	.....	— 20	Several water horizons.
Do.	827	10	+8	— 75	
Do.	854	6	+60	—100	
Laclede County:					
Lebanon ³	1,002	8	1	—200	Water at 135 and 750 feet.
Do.	453	6¼	35	.....	Water at 380 and 420 feet.
Do.	1,000	6	Many.	—360	
Lafayette County:					
Concordia	+200	.....	.....	.....
Higginsville	1,512	12-5	30	— 80	
Lewis County:					
Lagrange ⁴	840	.....	60	.....	Brackish.
Do.	850	8	Several.	Flows.	
Linn County:					
Brookfield	451	.....	30	—200	
Do.	570	.....	Many.	.....
Livingston County:					
Avalon	406	.....	Few.	— 60	
Avalon (northeast of)	700	.....	Few.	.....
Cavendish	400	.....	None.	.....
Chillicothe	700	.....	.....	.....	No water.
Do.	529	.....	Many.	— 90	
Do.	481	.....	2	Flows.	
Do.	1,101	.....	.....	— 70	
Do.	515	.....	.....	.....	Very little water.
Do.	+700	.....	Many.	— 8	
Do.	469	.....	Many.	— 90	
Dawn	+423	.....	Many.	— 65	
Dawn (near)	421	.....	Few.	Flows.	
Springhill (near)	414	.....	.....	— 70	
Utica	422	6-1½	Several.	+ 10	
McDonald County:					
Galbraith Spring ⁵	804	.....	Many.	.....
Lanahan	1,428	6	50	Flows.	Sulphur water.
Madison County:					
Mine La Motte	670	2	4	Flows.	
Maries County:					
Steen Prairie .....	.....	.....	.....	.....
Marion County:					
Philadelphia	470, 558	.....	300	— 6	2 wells; much water, little oil.
Hannibal	1,340	.....	.....	.....
Mercer County:					
Halfrock	537	.....	None.	.....
Princeton	501	.....	None.	.....
Topsy	+ 400	.....	.....	.....
Miller County:					
Eldon	595	.....	.....	— 80	
Montgomery County:					
Montgomery City	1,500	10-5½	.....	— 30	
Do.	600	6	70	.....	Temp., 58°.
Newton County:					
Diamond .....	.....	.....	.....	.....
Granby (sec. 6)	876	8	600	— 40	
Racine (4 miles north) ..	1,244	9	.....	— 80	

¹ Analysis, U. S. Geol. Surv., 17th Ann. Rept., part 2, 1895-96, p. 827.² Record, Mo. Geol. Surv. Rept., vol 7, p. 405.³ Record, Geol. Mo., by Broadhead, part 2, p. 86.⁴ Analysis, Mo. Geol. Surv. Rept., vol. 3, pp. 141-143.⁵ Ibid., pp. 117-118.

MISSOURI—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Pemiscot County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Caruthersville.....	428	5	350	— 10	
Pettis County:					
Sedalia (2 miles south)...	1,500	9-6	.....	.....	Prospect hole; full of water.
Pike County:					
Louisiana ¹	1,275	.....	Many.	Flows.	Temp., 64.2°.
Do.....	1,350	.....	.....	+ 40	
Putnam County:					
Unionville.....	700	.....	.....	.....	Some water at 215 feet; abandoned.
Randolph County:					
Jackson.....	460	.....	.....	.....
Moberly.....	510	8	300	— 200?	2 wells.
Do.....	2,100	.....	.....	— 70	Largest flow at 632 feet; salt water at 870 feet; magnesium at 1,180 feet, and very salt water at 1,215 feet.
Randolph Springs ²	969	4	120	Flows.	Temp., 58°; mineral water.
Reynolds County:					
Munger.....	449	.....	.....	.....
St. Charles County:					
St. Charles.....	1,276	6	40	— 40	
St. Charles (2 miles west).....	1,365	.....	.....	.....
St. Clair County:					
Appleton City.....	1,295	.....	.....	.....
Osceola.....	500	7½	.....	— 20	Several water horizons.
Do.....	500	8	Many.	— 75	
Ste. Genevieve County:					
Ste. Genevieve.....	700-800	.....	.....	.....	For oil or gas; unsuccessful.
St. Francois County:					
Farmington (near).....	442 } 650 }	2½	.....	.....	Prospect borings for lead.
St. Louis County:					
Clayton.....	1,060	.....	.....	.....
St. Louis.....	400-700	.....	30	— 200	Many wells.
St. Louis (asylum).....	3,843½	.....	Few.	.....	Temp., 105°; salty water.
St. Louis (Belcher) ³	2,176	.....	1	.....	3 per cent salt at 1,231 feet; temp., 66°.
Do. ⁴	2,199	9-3½	75	Flows.	Temp., 73.4°; water from 1,515 feet.
Do. ⁵	+1,590	6-3½	.....	.....	Gas at 466 feet; salt water at 520 feet; temp., 69° at 1,351 feet.
St. Louis (power house)...	1,474	.....	.....	— 70	
Near Chain of Rocks.....	735	6	70	— 45	Waters slightly sulphurous.
St. Louis.....	1,000	.....	.....	.....	2 wells.
Do.....	485	6	175	— 60	
Do.....	518	5½-4½	15	.....	Water.
Do.....	650	8-5½	.....	.....	Dry hole.
Shannon County:					
Bartlett.....	+400	.....	.....	.....
Do.....	740	6	70	— 340	
Birchtree.....	+400	.....	.....	.....
Winona.....	700	8, 4-3	Many.	— 400	2 wells.
Shelby County:					
Bethel (4 miles north)...	450	6	1	— 90	
Epworth.....	410	.....	1	— 80	
Oakdale.....	+400	.....	.....	.....
Sullivan County:					
Galt station.....	426	.....	.....	— 100	
Vernon County:					
Nevada ⁶	800	.....	165	Flows.	
Nevada.....	860	10	560	— 80	
Do.....	1,001	8	700	— 80	Flows to +9 feet when not pumped.
Do.....	900	.....	Many.	Flows.	
Warren County:					
Truesdall.....	+400	.....	.....	.....
Warrenton.....	150	6-4	1	150	3 wells.
Do.....	400	6	.....	— 150	
Wright City.....	406	6	.....	— 70	Fine water.
Washington County:					
Baryties.....	495	.....	.....	.....	Abandoned.
Potosi.....	522-585	2	.....	— 66	3 wells.
Do.....	414	.....	.....	— 2	

¹ Record and analysis, Geol. Mo., by Broadhead, part 2, p. 86.² Analysis, Mo. Geol. Surv. Rept., vol. 3, pp. 73-74.³ Ibid., pp. 79-81.⁴ Analysis and record, St. Louis Acad. Sci. Trans., vol. 1, pp. 80-86, pl. 5.⁵ Record, Am. Jour. Sci., 2d ser., vol. 15, pp. 460-461.⁶ Analysis, Mo. Geol. Surv. Rept., vol. 3, pp. 121-122.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN MISSOURI.

Report on the mineral waters of Missouri, by Paul Schweitzer: Missouri Geological Survey, 1890-1892, vol. 3, 256 pages, Jefferson City, 1892.

MONTANA.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Carbon County: Bridger (near)	1,500	14-4½			In progress; brackish water at 450 feet that came to top of well; flows at 1,000 and 1,500 feet, which come to top of well; water at 1,500 feet; strongly charged with sulphuretted hydrogen gas.
Cascade County: Great Falls	+500				In progress; gas at 300 feet; indications of oil farther down.
Chouteau County: Chinook ¹	956			-50	Water also at 112, 220, 540, and 620 feet.
Fort Assiniboine	1,950				Small flow of gas; no water below 65 feet; all clay.
Fort Benton	502				Small flow of gas at 300 feet; indications of oil at 502 feet.
Custer County: Fort Keogh	811		15	Flows.	
Miles City	472	4-2½		Flows.	
Do.	481	4-2½		Flows.	
Do.	456	4-2½		Flows.	
Miles City (court-house) ..	509	4-2½		Flows.	
Miles City ²	456		5	+16	Temp., 57°.
Do.	535	4	2		
Miles City (35 miles west) ..	420	4-2½		Flows.	
Miles City	452-514			Flow.	5 wells.
Do.	479	9-2½		Flow.	
Miles City (10 miles east) ..	553			Flows.	
Miles City (Reform School) ..	507			Flows.	
Rosebud	485-502	4-2½		Flows.	3 wells.
Dawson County: Glendive (court-house) ..	500				Unsuccessful.
Flathead County: Kintla Lake (near)	1,405				Strong flow of water and gas necessitated discontinuance of drilling until heavier tools could be procured.
Gallatin County: Bozeman	600				Bored for oil; unsuccessful.
Lewis and Clarke County: Helena	1,002				
Do.	1,023				Good flow, abandoned.
Do.	900			-100	
Teton County: Chief Mountain Lake ...	1,200				Lubricating oil well, 30 barrels a day; just north of United States boundary line.
Yellowstone County: Billings	1,000				All in shale
Junction	500			Flows.	Small flow also at 144 feet.

¹ Report on Irrigation, 52d Cong., 1st sess., Senate Ex. Doc. 41, part 2, 1893, pp. 72-73.

² Record, *ibid.*, pp. 73, 96.

NEBRASKA.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Adams County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Hastings ¹	1,145	.....	.....	— 40	Salt water at 940 feet.
Banner County:					
Harrisburg.....	470-790	.....	.....	.....	Several unsuccessful borings.
Boone County:					
Albion.....	827	6	.....	— 9	Water at 125 feet; drill stuck in soapstone at 825 feet; boring discontinued.
Do.....	1,700	.....	.....	.....	For coal; unsuccessful.
Boyd County:					
Lynch.....	797	4½	465	Flows.	Strong pressure; power used for flour mill.
Do.....	923	8	3,100	Flows.	New well; strong pressure.
Tp. 34, R. 8, sec. —.....	760	3	100	Flows.	Boyd.
Buffalo County:					
Kearney.....	2,600	.....	.....	.....	Unsuccessful.
Cass County:					
T. 10, R. 13, sec. 34.....	480	3	.....	.....	Water at 30 feet.
Do.....	500	4	.....	.....	Salt water at 470 feet.
Cedar County:					
T. 32, R. 1 E.....	535	3	2	.....	For watering cattle.
T. 32, R. 2 E.....	400-500	2	2-60	Flows.	Temp., 60°.
Do.....	500-600	2	Few.	Flows.	Temp., about 60°.
T. 32, R. 3 E.....	400-600	2	1½-31½	Flow.	Temp., 58° to 60°; 600-foot well ceased flowing.
T. 33, R. 1 E.....	400-630	1½-2	5-25	Flows.	Pressure variable; temp., about 60°.
T. 33, R. 1 W.....	400-618	1½-3½	7-44	+ 19-+ 35	Temp., 58° to 60°.
St. Helena ²	466	.....	Many.	Flows.	Water at 400 feet.
Chase County:					
T.....	500	2	.....	.....	Water at 22 feet.
T. 6, R. 39, sec. 21.....	.....	.....	.....	.....	.....
Cherry County:					
Southwestern portion.....	475	2	12	+ 11	Abbott well.
.....	480	1½	.....	+ 10	Plumer well.
.....	500	1½	12	+ 12	Do.
.....	500	1½	15	+12to+ 15	Gentry well.
Custer County:					
Cliff.....	400-485	3½-1½	Many.	.....	Several wells; no flows.
Dawes County:					
Marsland (one-fourth mile east).....	927	5	.....	— 50	Town well.
Chadron.....	400	.....	.....	.....	.....
.....	1,100	.....	.....	.....	3 wells; unsuccessful.
.....	1,800	.....	.....	.....	.....
Chadron (12 miles north-east).....	1,000	.....	.....	.....	Failed to reach Dakota sandstone.
Dixon County:					
Ponca.....	498	.....	.....	.....	.....
T. 31, R. 6, sec. 20.....	484	3	Few.	— 3	Flowed 3 weeks.
T. 32, R. 5, sec. 32.....	400	2	3	+ 31	Flowed 50 gallons originally.
Douglas County:					
Omaha—					
Clark and Sixteenth streets.....	664	.....	125	+ 52	Temp., 58°.
Grant smelter.....	1,044	10-6	800	+ 65	Flows at 650 and 800 feet; temp., 55°.
Thirty-second and O streets.....	1,800	.....	Many.	— 70	.....
Elmwood Park.....	1,845	.....	.....	— 50	.....
Hanscom Park.....	1,120	.....	Many.	—138	.....
Riverview Park.....	1,065	.....	600	.....	Temp., 62°.
Willow Spring.....	1,700	.....	Many.	+100	.....
Exposition grounds.....	1,115	.....	Many.	Flows.	First water at 700 feet; temp., 60°.
A. Booth & Co.....	1,094	.....	.....	.....	.....
Seymour Park.....	1,303	.....	500	+ 35	.....
Pickards.....	1,383	.....	70	Flows.	Temp., 62°; abandoned.
Krug brewery.....	1,310	.....	Many.	—142	.....
Power house, Nineteenth street.....	840	.....	.....	.....	.....
Cortland Beach.....	998	6-5	.....	+ 40?	.....
T. 15, R. 12 (7 miles west of Omaha).....	1,430	10	Many.	+ 35	Said to flow over a million gallons a day.
Furnas County:					
Arapahoe.....	700	.....	.....	No flow.	.....
Gage County:					
Beatrice.....	1,200	.....	Few.	Flows.	.....
Beatrice (near).....	1,260	6	.....	Flows.	.....
Do.....	1,240	6	.....	Flows.	Water at 50 feet.

¹ Record, U. S. Geol. Surv. Water-Sup. and Irr. Paper No. 12, pp. 37-38.² Record, Am. Assoc. Adv. Sci. Proc., vol. 35, 1886, pp. 217-219.

NEBRASKA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Grant County:					
Hyaunis.....	400				2 wells.
Holt County:					
O'Neill.....	1,300				Unsuccessful.
Hooker County:					
Farm of E. Demerit.....	1,200			Flows.	
Howard County:					
Dannebrog ¹	1,011				Unsuccessful.
Jefferson County:					
T. 2, R. 2, sec. 4.....	500	4		+ $\frac{1}{2}$	Seven borings for coal; strong salt water at 225 to 238 feet; temp., 70°.
Johnson County:					
Tecumseh.....	520				Boring made for coal, unsuccessful; no water reported.
Keith County:					
T. 12, R. 37, sec. 8.....					Water at 176 and 305 feet; 137 feet of water in well.
T. 13, R. 35, sec. 5.....	525	6	500		Water at 7 feet.
T. 14, R. 40, sec. 18 ²	421	3			Unsuccessful on account of sand.
T. 14, R. 41, sec. 2.....	407	3 $\frac{1}{2}$	2		Water at 385 feet.
Do ²	402	2			Bad workmanship rendered well useless; water medium hard.
Kimball County:					
T. 9, R. 8, sec. 29.....	460		Many.		No flow.
Knox County:					
T. 31, R. 6, sec. 29.....	770	2	14	+ 78	Pressure greatly diminished.
T. 32, R. 2.....	420		50		
T. 32, R. 6, sec. 12.....	548	2	240	+188	Largest flow at 520 feet.
Niobrara Mill.....	656	8	1,900	+218	Pressure 120 pounds in 1896.
T. 32, R. 6, sec. 16.....	656	8	2,500		2 wells; water at 575 and 600 feet.
Do.....	656	8	Many.		Water at 625 feet.
Packing house.....	600	2	280	+246	Pressure diminished, owing to leak.
T. 32, R. 7, sec. 21.....	500	2			In progress; no flows expected.
T. 33, R. 2, sec. 13.....	700	2	Many.		No flow; 200 feet above Missouri River.
T. 33, R. 2, sec. 15.....	405, 425	2	9	+ 32	2 wells; considerable leakage.
T. 33, R. 2, sec. 16.....	400	2	9	+ 25	
T. 33, R. 2, sec. 17.....	400	2	3	+ 57	Leaks.
T. 33, R. 2, sec. 19.....	550	2	10		
T. 33, R. 2, sec. 20.....	650	4 $\frac{1}{2}$	30	+137	Leaks; present pressure low.
T. 33, R. 3, sec. 13.....	504	2	2	Flows.	Or high land.
T. 33, R. 3, sec. 15.....	400	2		Flows.	
T. 33, R. 3, sec. 16.....	400	2	8	Flows.	Leaks.
Santee Agency.....	±600	6		Flows.	Do.
Santee Agency Mission ³	603	2 $\frac{1}{2}$	20		
Santee Agency School.....	604	3		Flows.	143 feet above Missouri River.
Do.....	740	8	1,699	+126	105 feet above Missouri River; pressure and yield diminished.
T. 33, R. 8, sec. 18.....	700	2	420	+172	3 flows; pressure greatly diminished, owing to leakage.
Do.....	760	3	420	Flows.	
Lancaster County:					
Lincoln ⁴	985			-100	Salt water at 244 and 544 feet.
Sanitarium ⁵	570			+ 34	
Public square.....	1,050		Many.	Flows.	Salt water at 560 and 1,050 feet.
Burlington Beach.....	2,463		Many.	Flows.	Salt water at 828 feet.
Madison County:					
Norfolk.....	472			-100	
T. 23, R. 4.....	335	6	Many.	-275	
Tilden.....	+400	4		- 90	
Merrick County:					
Silver Creek.....	1,700			- 19	

¹ Record, U. S. Geol. Surv. Water-Sup. and Irr. Paper No. 12, p. 47.² U. S. Geol. Surv. Bull. No. 131, 1895, p. 96.³ Record, 51st Cong., 1st session, Senate Ex. Doc. No. 222, pl. op. p. 55.⁴ Record, Am. Assoc. Adv. Sci. Proc., vol. 35, p. 218.⁵ Descriptions, records, etc., U. S. Geol. Surv. Water-Sup. and Irr. Paper No. 12, pp. 28-30; Am. Assoc. Adv. Sci. Proc., vol. 35, p. 218; Physical Geog. and Geol. Nebr. (Aughey), 1880.

NEBRASKA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Nemaha County:	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Brownville ¹	1,001				Test boring for coal; flow of salty water at 242 feet.
Nuckolls County:					
Mount Clare.....	535			No flow.	
Otoe County:					
Nebraska City.....	448	4	$\frac{1}{2}$	+ 6	Mineral water.
Do.....	1,000—1,200				Several deep wells in progress.
Do.....	570				Salt water.
Pawnee County:					
Duboise.....	562	6			Unsuccessful.
Platte County:					
Monroe.....	580	4			Unsuccessful.
Redwillow County:					
McCook.....	405	6			Some water at 375 feet.
Richardson County:					
Falls City.....	1,300				
Rulo (2 miles west).....	1,370				Coal prospect.
Sarpy County:					
Deerfield.....	1,450	10		-760	Pressure, 15 pounds.
Saunders County:					
Malmo (northwest of).....	451				
Scotts Bluff County:					
Gering.....	300				Vigorous flow for short time, but soon choked up.
Seward County:					
Seward ²	610				No flow; abandoned.
Sheridan County:					
Central-eastern portion.....	300	1 $\frac{1}{2}$	10	+ 10	Richard's well.
Gordon.....	582				Failure; water at 180 to 182 feet.
Thayer County:					
Hubbell.....	725				Some water; no flow.
Webster County:					
Rosemont.....	409				Iron ore at 375 feet; oil at 379 feet.
Wheeler County:					
Erricson.....	905				Failure.
York County:					
York (just south of) ³	590	4		+ 16	Russian mill well; abandoned.

¹ Am. Assoc. Adv. Sci. Proc., vol. 35, pp. 217-219.² Record, U. S. Geol. Survey Water-Sup. and Irr. Paper No. 12, p. 31.³ Ibid., pp. 33-34.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN NEBRASKA.

Underground waters of a portion of southeastern Nebraska, by N. H. Darton: United States Geological Survey, Water-Supply and Irrigation Paper No. 12, 56 pages, maps, plates, Washington, 1898.

A preliminary report on the geology and water resources of Nebraska west of the one hundred and third meridian, by N. H. Darton: United States Geological Survey, Eighteenth Annual Report, 1896-1897, part 4, pages 719-785, Washington, 1899.

Nebraska Geological Survey, Report State Geologist E. H. Barbour, vol. 1, Lincoln, 1903.

United States Geological Survey Bulletin No. 131, page 96, Washington, 1895.

Preliminary report on the geology and underground water resources of the central Great Plains, by N. H. Darton: United States Geological Survey Professional Paper No. 32, Washington, 1905.

NEVADA.

Location.	Depth.	Diam-eter.	Yield per minute.	Height of water.	Remarks.
Lander County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Battle Mountain ¹	800	6	.....	.....	Strong flow.
Do. ²	650	.....	58	.....	Several flows at less depths.
Lincoln County:					
Dalamar	800	.....	.....	.....	Unsuccessful.
Ormsby County:					
.....	400	6-7	5	.....	Several wells.
White Pine County:					
Ely	600	.....	Several	.....
Churchill County:					
Vall Ranch	400	.....	.....	No flow	
Sierra Valley ² (?)	1,132	3	30	.....	Hot Water.

NEW HAMPSHIRE.

Grafton County:					
Warren	492	6	3	.....
Hillsboro County:					
Greenville	410	6	20	—90	
Manchester	630	8	Few.	No flow.	
Merrimac County:					
Concord	1,325	6	Few.	—16	Well abandoned; water at 935 feet
Strafford County:					
Dover	400	6	100	No flow.	
Sullivan County:					
Plainfield	1,104	6	.....	— 6	

NEW JERSEY.

Atlantic County:					
Atlantic City ³	578	8	.....	Flows.	Water at intervals from 328 to 554 feet.
Do	2,306	.....	.....	Flows.	But little water below 780 to 860 feet.
Do	809	6	.....	Flows.	
Do. ⁴	830-850	6	.....	Flow.	5 wells.
Do	1,150	8-6	.....	+ 5	No water 960 to 1,120 feet.
Do	960	6-4½	.....	Flows.	Pumps 200 gallons.
Do	554	8	50	Flows.	
Do	735	6-4½	.....	Flows.	Pumps 200 gallons.
Do	720	6	.....	Flows.	Pumps 250 gallons.
Do	780	6-4½	150	Flows.	
Do	763	8	Many.	Flows.	
Do	1,398	10-4½	.....	.....	No water at this depth; several flows above.
Do	805	8-4½	40	Flows.	Pumps 125 gallons.
Do	843	6	100	Flows.	
Do	813	6	105	Flows.	Pumps 400 gallons; temp., 60°.
Do	805	8	.....	Flows.	Pumps 200 gallons per minute.
Do. ⁵	1,400	10-4	.....	.....	No water at this depth; several flows above.
Do	816	6	250	.....	Pumped.
Do. ⁶	826	6	100	.....	Do.
Brigantine ⁷	798	6	100	Flows.	
Longport ⁸	803	6	180	Flows.	Temp., 66°
Smiths Landing ⁹	715	6	100	—17	
South Atlantic City	810	8	40	Flows.	
Ventnor ¹⁰	813	6	.....	Flows.	
Bergen County:					
Fort Lee	1,000	.....	.....	.....	Through trap into shale; no water.
Burlington County:					
Burlington	675	.....	.....	.....
Columbus ¹¹	715	.....	.....	.....
Jobstown ¹²	715	.....	.....	.....

¹ Report Surveyor-General and State Land Register, 1891-92, p. 72.

² Ibid., 1889-90, p. 82.

³ Records, etc., of many wells at Atlantic City: N. J. Geol. Surv. Repts. for 1887, 1888, 1889, 1892, 1893, 1894, 1895, 1896, 1897, 1898, and 1899.

⁴ N. J. Geol. Surv. Rept., 1900, pp. 115-118.

⁵ Record, N. J. Geol. Surv. Rept., 1890, p. 90.

⁶ N. J. Geol. Surv. Rept., 1903, p. 85.

⁷ Record, *ibid.*, 1895, pp. 77-79.

⁸ Ibid., pp. 83-85.

⁹ Ibid., 1889, pp. 104-106.

¹⁰ Ibid., 1898, pp. 76-78.

¹¹ Ibid., 1892, pp. 305-306.

¹² Ibid., 1897, pp. 247-248.

NEW JERSEY—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks
Burlington County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Moorestown ¹	457				Small supply.
Mount Holly ²	562				
Seven Islands ³	408	6-3	70	Flows.	
Camden County:					
Asyla ⁴	457	8-6	200	— 25	Pumped.
Cape May County:					
Avalon ⁵	925	10-4½	75	8	Large supply, 90 to 130, 285 to 300, and 585 to 600 feet; no water below 600 feet.
Cape May ⁶	1,313	10-2½		— 4	
Cape May Point ⁷	700				
Ocean City ⁸	800		140	Flows.	Pumped.
Do. ⁹	821	8	Many.	Flows.	
Do. ¹⁰	760		Many.	Flows.	
Do.	830	8-6	Many.	Flows.	Pumped.
Do.	816	6	250		
Do. ¹¹	812	4½	150		
Sea Isle City ¹²	464			Flows.	Temp., 63°. Temp., 67°; water at 625, 750, 843, and 1,185 feet.
Do. ¹³	854	6	160	+ 14	
Wildwood	655		300	Flows.	
Do. ¹⁴	1,244		10	Flows.	Large supply. No water found. No water below 212 feet.
Cumberland County:					
Bridgeton ¹⁵	990	8		— 2	
Greenwich ¹⁶	690	4-2½			In soft shale.
Millville ¹⁷	685				
Essex County:					
Brookdale ¹⁸	712	4½	174		Soft water.
Caldwell	875				
Franklin ¹⁹	400	8	125		
Harrison	400		100		Soft water.
Milburn	800	8	100		
Montclair (Mount Prospect).	510	7½	45		
Newark (Balentine's)	529		150		No flow?
Do. ²⁰	450	8	200		
Newark (Celluloid Co.)	827	10	200		
Newark (Citizens' Gas Co.)	600		50		Good supply. Water also at 72, 381, and 395 feet.
Newark	615	8	556		
Newark (smelter) ²¹	500	8	500		
Gloucester County:					
Glassboro ²²	511				Good supply. Water also at 72, 381, and 395 feet.
Harrisonville ²³	402				
Pitman ²⁴	507			—140	
Sewell	420	3			Water brackish. Bored in 1828; rock at 40 feet.
Hudson County:					
Bayonne	600		Few.		
Ellis Island	1,400	8			Salt water.
Hoboken ²⁵	400				
Jersey City (Limbeck's brewery). ²⁶	776½	8	33		
Jersey City (Malone & Co.).	500		50		Rock 35 to 1,500 feet.
Jersey City (stock yards) ²⁷	455	8-6½			
Jersey City (Communi-paw).	500				
Jersey City (sugar refinery). ²⁸	1,000	8-4	50		No water.
Jersey City (Cox's brewery). ²⁹	400	5	Few.		
Jersey City (Dixon Co.).	1,205		22		
Jersey City (Colgate & Co.).	1,500		15		No water.
Jersey City (Hudson Canal Co.).	650		Few.		
Jersey City (Traction Co.).	2,200				

¹ Record, N. J. Geol. Surv. Rept., 1893, pp. 413-414.² Ibid., 1900, pp. 144-147.³ Ibid., 1885, p. 135; 1891, pp. 230-231⁴ Ibid., 1902, pp. 70-72.⁵ Ibid., 1898, pp. 78-82.⁶ Ibid., 1902, pp. 84-93.⁷ Ibid., 1900, pp. 129-131.⁸ Ibid., 1893, pp. 398-399.⁹ Ibid., 1896, pp. 171-173.¹⁰ Ibid., 1892, pp. 279-281.¹¹ Ibid., 1902, p. 94.¹² Ibid., 1890, p. 268.¹³ Ibid., 1896, pp. 175-177; 1886, p. 211; 1899, p. 109.¹⁴ Ibid., 1897, pp. 247-248.¹⁵ N. J. Geol. Surv. Rept., 1903, p. 86.¹⁶ Record, *ibid.*, 1885, p. 131; 1894, pp. 190-193.¹⁷ Ibid., 1901, pp. 64-65; 1902, p. 80.¹⁸ Ibid., 1897, pp. 227-229.¹⁹ Ibid., 1894, p. 127; 1885, p. 133.²⁰ Ibid., 1879, p. 126; 1882, p. 142; 1885, p. 115.²¹ Ibid., 1879, p. 126; 1882, p. 142; 1885, p. 114.²² Ibid., 1894, pp. 407-409.²³ Ibid., 1896, pp. 126-127.²⁴ Ibid., 1901, pp. 85-86.²⁵ Ibid., 1879, p. 132; 1882, p. 139; 1885, p. 111.²⁶ Ibid., 1879, pp. 130-132; 1882, pp. 138-140; 1885, p. 118.²⁷ Ibid., 1880, p. 172; 1882, p. 139; 1885, p. 111.

NEW JERSEY—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Hudson County—Continued.					
Jersey City (Mehl & Co.) ¹	1,007		150		
Jersey City (coal dock) ²	450				Brackish water.
Jersey City (John Mehl & Co.)	1,020	8	125	-110	Soft water; temperature of flow, 54°.
Secaucus ³	600	6	8	No flow.	Water from 200 to 250 feet.
Hunterdon County:					
Flemington	405		107	-161	
Mercer County:					
Hightstown ⁴	428-500		Many.		
Middlesex County:					
Jamesburg ⁵	481	8-6	52		
New Brunswick ⁶	455	14		10	Very bad water.
Do. ⁷	480		Few.		Very hard water.
Do.	976	8	7		Water at 300 to 350 feet.
Perth Amboy (Eagleswood).	470				Nowater; granite or gneiss 70 to 470 feet.
Sayreville ⁸	976	8	7		Some water at 300 feet.
Monmouth County:					
Allenhurst ⁹	530			Flows.	
Do.	545			Flows.	
Asbury Park ¹⁰	448	8	654	Flows.	Good water; temp., 60°.
Do.	800			Flows.	
Do.	1,130-1,045	6		Flow.	2 wells.
Do. ¹¹	1,330			Flows.	
Atlantic Highlands	480	4½	250	Flows.	
Do.	450	4½	20	Flows.	Pumps 125 gallons a minute.
Avon Inn ¹²	430	3	52	Flows.	
Belmar ¹³	445-480			Flow.	4 wells.
Do.	640-660			Flow.	2 wells.
Deal Beach	500-525	6		Flow.	Do.
Farmingdale ¹⁴	730				Water from 530 feet.
Hazlet ¹⁵	577	8-4½			
Holmdel ¹⁶	601	8-4		Flows.	
Key East ¹⁷	430	3	52		
Lake Como ¹⁸	535			Flows.	
North Spring Lake	705	6	100	Flows.	
Oakhurst ¹⁹	497		150	- 12	
Ocean Beach ²⁰	485	3	25	+ 34	
Do. ²¹	480	3	50	Flows.	
Ocean Grove ²¹	420	6	40	Flows.	
Do. ²²	1,134			Flows.	
Poplar	520			- 30	
Seabright ²³	715	6-4½		- 5	Water 260 to 300, 350 to 390, 685 to 715 feet.
Seagirt ²⁴	755	3	50	Flows.	Temp., 65°; water also at 570 and 694 feet.
Do. ²⁵	750	6	28	Flows.	
Spring Lake	465-730			Flows.	
Do.	710				
Telegraph Hill ²⁶	575				
West Asbury Park ²⁷	508-558		150 each.		4 wells.
Morris County:					
Morristown (2 miles west).	438	6	2½	- 60	
Ocean County:					
Bayhead	710			Flows.	
Do. ²⁸	870	6-4½	100	Flows.	
Do.	885			Flows.	
Bayhead (1 mile north) ²⁹	813	4½-3	85	Flows.	
Barnegat Park ³⁰	670			Flows.	
Beach Haven ³¹	430	3	10	Flows.	
Do. ³²	575	8	125	Flows.	
Berkeley Arms ³²	475		60	To surface.	

¹ Record, N. J. Geol. Surv. Rept., 1898, p. 140.² Ibid., 1888, p. 77.³ Ibid., 1879, p. 129; 1880, p. 172.⁴ Ibid., 1894, pp. 200-201.⁵ Ibid., 1880, p. 165.⁶ Ibid., 1879, p. 133, 1882, p. 147; 1885, p. 113.⁷ Ibid., 1887, p. 27.⁸ Ibid., 1887, p. 27; 1888, p. 77.⁹ Ibid., 1893, pp. 413-414.¹⁰ Ibid., 1883, p. 20; 1884, p. 124; 1885, p. 129.¹¹ Ibid., 1895, pp. 72-74.¹² Ibid., 1885, p. 130.¹³ Ibid., 1896, p. 154.¹⁴ Ibid., 1898, pp. 98-100.¹⁵ Ibid., 1897, pp. 247-248.¹⁶ Ibid., 1895, pp. 147-148.¹⁷ Ibid., 1902, p. 68.¹⁸ Ibid., 1894, p. 75.¹⁹ Ibid., 1903, pp. 92-93.²⁰ Am. Jour. Sci., 3d ser., vol. 30, p. 162.²¹ Record, N. J. Geol. Surv. Rept., 1884, p. 124;

1885, pp. 129-131.

²² Ibid., 1894, pp. 74-75.²³ Ibid., 1899, pp. 76-77.²⁴ Ibid., 1895, pp. 75-76.²⁵ Ibid., 1902, p. 67.²⁶ Ibid., 1896, p. 153.²⁷ Ibid., 1899, pp. 74-76.²⁸ Ibid., 1902, p. 66.²⁹ Ibid., 1893, pp. 394-396; 1896, p. 152.³⁰ Ibid., 1896, p. 154.³¹ Ibid., 1890, p. 266; 1893, pp. 394-396.³² Ibid., 1884, p. 127, 1885, p. 133.

NEW JERSEY—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Ocean County—Continued.					
Harvey Cedars	500	4	100	Flows.	
Do. ¹	500	4½	120	+ 6	
Island Heights ²	1,145	10-4½	.....	+ 3	Water from 368 feet.
Lakewood ³	475	.....	3½	+ 17	
Do. ⁴	600-625	6	100	+200	Several wells.
Mantoloking	790	.....	25	+ 33	
Do. ⁵	922	.....	60	+ 42	
Point Pleasant ⁶	806	.....	45	Flows.	
Seaside Park ⁷	515	.....	16	Flows.	Temp., 58°.
South Beach Haven ⁸	425	8-6	10	+ 14	
Toms River ⁹	745	.....	.....	.....
Passaic County:					
Passaic	402	8	240	- 28	
Do.	558	8	112	- 28	Water at 400 feet.
Do.	1,000	.....	Few.	.....
Paterson ¹⁰	2,100	8-4	100	.....	Water at 900 feet only.
Do.	900	.....	100	.....
Salem County:					
Daretown ¹¹	405	.....	.....	-100	
Woodstown	776	.....	.....	.....
Somerset County:					
Bernardsville	621	.....	8	.....	In granite.
Union County:					
Kearney	600	.....	50	.....
Plainfield	400	.....	300	.....	In red shale.
Union	500	.....	.....	Flow.	10 wells.
Waverly	450	.....	Few.	.....

¹ Record, N. J. Geol. Surv. Rept., 1896, pp. 166-168.² Ibid., 1901, pp. 66-68.³ Ibid., 1885, p. 131; 1884, p. 125; 1895, pp. 148-149; 1900, pp. 148-150.⁴ Ibid., 1898, pp. 96-98; 1899, pp. 73-74.⁵ Ibid., 1895, p. 77.⁶ Ibid., 1895, pp. 76-77.⁷ Ibid., 1898, pp. 101-102.⁸ Ibid., 1896, pp. 175-177; 1886, p. 211; 1899, p. 109.⁹ Ibid., 1893, pp. 399-400; 1894, pp. 159-180; 1898, pp. 102-103.¹⁰ Ibid., 1879, p. 128; 1882, p. 143; 1885, pp. 115, 117.¹¹ Ibid., 1897, pp. 250-253.

PUBLICATIONS RELATING TO DEEP BORINGS IN NEW JERSEY.

New Jersey Geological Survey, Reports of the State Geologist for 1868, 1879, 1882 to 1885, 1887 to 1889, 1890, 1892 to 1899, 1900, 1901-2, 1903.

Artesian well prospects in the Atlantic Coastal Plain region, by N. H. Darton: United States Geological Survey Bulletin No. 138, pp. 39-115, plates, Washington, 1896.

NEW MEXICO.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Chavez County:					
Dexter (2 miles north-west). ..	960	6½	804	Flows.	
Dexter (1 mile north) ...	1,000	7½	848	Flows.	Several water horizons; water sulphuretic.
Dexter (1 mile north-east). ..	400	6½	-350	Flows.	
Dexter (1 mile south) ...	960	6½	510	Flows.	Principal water-bearing horizons at 324 feet and 600 feet.
Dexter (2 miles north-east). ..	440	6½ and 5½	.....	Flow.	2 wells; several water horizons.
Dexter	460	7½	+599	Flow.	Do.
Dexter (5 miles east) ...	664	.....	25	Flows.	
Dexter (6 miles east) ...	620	.....	.....	.....
Dexter (4 miles east) ...	505	5½	310	Flows.	
Dexter (4 miles north-east). ..	454	.....	.....	Flows.	
Hagerman	600	.....	.....	.....
Hagerman (town well) ..	+ 535	7½	.....	.....	In progress.
Hagerman (4 miles southwest). ..	1,004	.....	1,500	Flows.	
Hagerman (2½ miles north-west). ..	.....	5½	.....	.....
Orchard Park (1 mile southeast). ..	840	6½	987	Flows.	Water sulphuretic.
Roswell (1 mile east)	405	5	660	Flows.	

NEW MEXICO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Chavez County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Roswell	440	4	40	Flows.	
Roswell (5 miles south) ..	917	6 $\frac{5}{8}$	+324	Flows.	
Roswell (4 miles east) ..	560	6 $\frac{5}{8}$	756	Flows.	
South Spring (3 miles northeast) ..	.....	8 $\frac{1}{2}$	.....	.....	Ir progress.
South Spring (6 miles northeast) ..	400	4 $\frac{1}{2}$	.....	Flows.	Small flow at 190 feet; large flow at 375 feet.
South Spring (10 miles northeast) ..	525	7 $\frac{1}{2}$	+517	Flows.	
Colfax County:					
Raton	1,878	6	Few.	—300	2 wells; abandoned.
Do.	1,872	6	.....	—300	
Do.	+2,600	.....	.....	.....	Oil at various levels; Raton Oil and Gas Co.'s well.
Donna Ana County:					
Lenark	950	10-3	Several.	.....	Water at 382 feet.
Eddy County:					
Artesia	+835	.....	.....	.....	Not completed.
Do.	580	.....	.....	.....	Drill twisted off in well.
Do.	823	.....	.....	.....	Ir progress.
Do.	830	.....	.....	.....
Do.	864	4 $\frac{1}{2}$	.....	.....
Do.	893	4 $\frac{1}{2}$	.....	.....
Artesia (2 $\frac{1}{2}$ miles southeast) ..	872	.....	562	Flows.	Several water horizons.
Artesia (7 miles northeast) ..	850	6	.....	Flows.	95 pounds pressure to square inch.
Artesia (2 $\frac{1}{2}$ miles southwest) ..	747	6 $\frac{1}{2}$	+1,725	Flows.	Several water horizons.
Artesia (1 mile southeast) ..	760	6	1,168	+ 2 $\frac{1}{2}$	Do.
Artesia (2 miles west) ..	450	6 $\frac{1}{2}$	.....	.....	Ir progress.
Artesia (6 miles south) ..	826	6	.....	Flows.	
Artesia (6 miles southwest) ..	813 $\frac{1}{2}$	6	320	Flows.	Several water horizons.
Artesia (10 miles southwest) ..	+500	6	.....	Flows.	
Eddy ¹	+600	.....	.....	No flow.	
Lake Arthur	+515	.....	.....	.....	Ir progress.
Grant County:					
Deming	960	6	Many.	— 18	Never used.
Leonard Wood County:					
Pastura	837	12	70	—603	
Lincoln County:					
Carizozo	895	12-7 $\frac{1}{2}$	50	— 90	
Galinas	414	10	70	—360	
Oscura	489	10-7 $\frac{1}{2}$	67	—125	
McKinley County:					
Gallup	600	10	Several.	—225	No water below 135 feet
Guam	600	10	.....	.....
Manuelito	610	10	Few.	.....	Unsatisfactory water.
San Miguel County:					
Chapelle	960	13-8	25	—310	Water-bearing beds at 120 and 380 feet.
Las Vegas	1,860	6	Several.	— 30	Strongly mineral water; abandoned.
Santa Fe County:					
Santa Fe	1,115	.....	.....	.....
Taos County:					
Servilletta ²	650	6	.....	.....	Dry hole.
Union County:					
Clayton	750	.....	.....	.....	Good water supply.
Mount Dora	738	.....	.....	.....	Do.
Valencia County:					
Duran	1,138	13 $\frac{1}{2}$ -8	70	—300	
La Pintada (?)	± 700	.....	.....	.....

¹ Record, Fifty-second Congress, 1st sess., Senate Ex. Doc. No. 41, part 2, p. 16, Washington, 1892.

² Record, U. S. Dept. of Agriculture, Artesian Wells upon the Great Plains, Report of the Geological Commission, p. 33, Washington, 1882.

PUBLICATIONS RELATING TO DEEP BORINGS IN NEW MEXICO.

Report on New Mexico, by L. G. Carpenter: Fifty-first Congress, first session, Senate Ex. Doc., No. 222, pp. 233-241, Washington, 1890.

Report of P. H. Van Diest, on the geological conditions of artesian basins in eastern Colorado and New Mexico: Fifty-first Congress, first session, Senate Ex. Doc., No. 222, pp. 233-241, Washington, 1890.

On the occurrence of artesian and other underground waters in Texas, eastern New Mexico, and Indian Territory west of the ninety-seventh meridian, by Robert T. Hill: Fifty-second Congress, first session, Senate Ex. Doc., No. 41, part 3, pp. 41-166, Washington, 1892.

Report on irrigation, etc., by R. J. Hinton: Fifty-second Congress, first session, Senate Ex. Doc. No. 41, part 1, pp. 5-459, Washington, 1892.

NEW YORK.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Albany County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Albany.....	.....	.....	.....	.....	City wells.
Amsdeff brewery.....	700	.....	.....	.....	.....
Knowersville ¹	3,012	.....	.....	.....	Gas at 497 feet only.
North 4½ miles ²	2,200	.....	.....	.....	For gas; unsuccessful.
Allegany County:					
Andover (oil and gas field). ³	680-1,419	.....	.....	.....	Several wells.
Belfast (near) ⁴	900-2,000	.....	.....	.....	Several wells; oil or gas.
Belmont (near) ⁵	1,300-2,800	.....	.....	.....	Do.
Birdsall ⁶	800	.....	.....	.....	Some gas.
Canaseraga ⁶	1,800	.....	.....	.....	Some gas at 700-800 feet.
Cuba and Friendship (between). ⁵	1,400	.....	.....	.....	4 test wells; all had show of gas but not paying.
Fillmore.....	1,300	6½	Many.	+20	.....
Friendship and Belvidere (between). ⁵	1,600	.....	.....	.....	Some oil; other deep wells near this one.
Hume ⁷	3,326	.....	.....	.....	.....
New Hudson (near) ⁴	3,030	.....	.....	.....	Pocket of gas, soon exhausted, at 900 feet.
New Hudson ⁸	1,203	.....	.....	.....	Some oil at 1,073 feet.
Petrolia ⁹	2,000	.....	.....	.....	Initial production of 25 barrels of oil a day.
.....	1,293	.....	.....	.....	.....
Scio (near).....	1,177	.....	.....	.....	.....
Scio ⁵	400	.....	.....	.....	8 wells; some oil.
Wellsville (4½ miles southwest). ¹⁰	1,777	.....	.....	.....	.....
Wellsville (vicinity of). ³	1,000-1,347	.....	.....	.....	Several wells.
..... ¹¹	839-1,800	.....	.....	.....	Important oil well field.
Bronx Borough:					
Fort Schuyler.....	537	10	.....	.....	.....
Brooklyn Borough:					
Barren Island ¹²	720	6	50	Flows.	.....
Do.....	715	6	.....	Flows.	Do.
Do. ¹³	740	.....	103	Flows.	Soft water.
Calvary Cemetery ¹⁴	582	.....	70	.....	Gas at 500 to 580 and 1,110 feet; oil at 710 and 1,060.
Ceres (McDonald farm).....	1,802	8-6½	.....	.....	Salt water.
Foot of 39th and 40th sts.	1,503	8-6	.....	.....	No water below 97 feet.
Foot of Jay street, Arbuckle Brothers.	800	.....	.....	.....	.....
Do.....	2,148	.....	.....	.....	No water below 93 feet.
Noble and West streets.....	610	8	.....	.....	Brackish water.
Broome County:					
Binghamton ¹⁵	3,117	.....	.....	.....	.....
Binghamton (north of).....	2,000	.....	.....	.....	.....
Doraville.....	500	5	.....	-50	.....
Marsh Creek.....	1,516	8	Several.	+6	.....
Whitneys Point (near).....	1,120	.....	.....	.....	Salt well
Cattaraugus County:					
Carrollton (near).....	1,500	.....	.....	.....	.....
Cattaraugus ¹⁶	2,160	.....	.....	.....	Abandoned.
Dayton ¹⁶	500	.....	.....	.....	Salt well.
Gowanda ¹⁷	1,700	.....	.....	.....	"Frank" well.
Do. ¹⁶	860	.....	.....	.....	Several wells, with strong gas pressure.
Do. ¹⁶.....	.....	.....	.....	.....	.....

¹ Record and analysis, Am. Inst. Mining Eng. Trans., vol. 16, pp. 951-952.

² Am. Inst. Mining Eng. Trans., vol. 16, pp. 953-954.

³ Record, N. Y. State Museum Rept., 1899, pp. r111-113.

⁴ Ibid., p. r109.

⁵ Ibid., p. r110.

⁶ Ibid., p. r107.

⁷ Ibid., p. r108.

⁸ Ibid., pp. r108-109.

⁹ Ibid., pp. r110-111.

¹⁰ Record, Pa. 2d Geol. Surv. Ann. Rept., 1886, part 2, pp. 774-775.

¹¹ Record, etc., Am. Inst. Mining Eng. Trans., vol. 16, pp. 930-934.

¹² Record, N. J. Geol. Surv. Rept., 1896, p. 155-156.

¹³ Ibid., pp. 156-157.

¹⁴ Record, U. S. Geol. Surv. Bull. 138, p. 34.

¹⁵ Record, Geol. Soc. Am. Bull., vol. 4, pp. 93-94.

¹⁶ N. Y. State Museum Rept., 1899, pp. r115-117.

¹⁷ Record, Rept. Supt. Onondaga Salt Springs, 1888, pl. 2.

NEW YORK—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Cattaraugus County—Cont'd.	<i>Fet.</i>	<i>Inchs.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Hinsdale (near) ¹	+1,200				Unsuccessful.
Limestone ²	1,500	4½			For gas or oil.
Olean ³	734-1,417				Several wells.
Do. ⁴	1,050				Small amount of oil.
Do. ⁴	1,230				Gas well.
Otto ⁵	2,750				
Rock City (near) ⁶	1,471-1,546				O'1 wells.
Versailles ¹	1,353				For gas; unsatisfactory.
	1,543				
Cayuga County:					
Auburn ⁷	3,570				Gas well.
Do.	3,400				
Aurora ⁸	1,068				Salty water.
Chautauqua County:					
Charlotte Center ⁸	2,332				For oil; unsuccessful.
Do. ⁹	2,262				Do.
Clymer (4 miles east) ¹⁰	1,975				Gas well.
Fredonia ¹¹	1,207				Much salty water; several gas wells in vicinity.
Jamestown ¹²	1,807				For oil; unsuccessful.
Mayville ¹³	1,200-1,800				Several wells; oil or gas.
Chemung County:					
Breesport	1,875	5		- 14	
Chenango County:					
Norwich	900				Small amounts of gas.
Do. ¹⁴	2,334				Do.
Columbia County:					
Burden	900				
Hudson	500	6	40	+ 2	
Do.	696	6	40	-110	
Do.	602	6	1	- 60	
Do.	500	6	35	+ 4	
Delaware County:					
Sidney Center	416				
Dutchess County:					
Barrytown	620	6	3	- 60	
Fishkill-on-the-Hudson	3,100	10	10	-125	
Poughkeepsie	940	6	50	+ 50	
Tivoli	425	6	2	- 30	
Erie County:					
Alden ¹⁵	1,308				Gas well.
Buffalo	490	6			Do.
Do. ¹⁶	1,305	5½			Do.
Do.	560				Do.
Collins ¹⁷	1,150				Gas at 1,106 feet.
Collins (½ miles north-east). ¹⁸	1,548				Gas well.
Depew	1,685-1,700				4 wells; small supply of gas.
East Aurora ¹⁹	1,465				Salt wells.
Do.	1,503				
East Aurora and Orchard Park (between). ²⁰	1,000-3,000				For gas; unsuccessful.
Eden Valley ²¹	1,750				Salt well.
Gardenville ²¹	800				Do.
McMillan well ²²	1,720				
New Oregon ²³	2,100				Unsuccessful.
North Collins ²⁴	1,250				Do.
Port Colborne ²⁵	770-1,500				Several small gas wells.
Springville ²⁶	2,300				2 gas wells.
Do.	2,300				Unsuccessful.
Williamsville	(Av.) 875	5½		No flow.	3 wells; 2 unsuccessful.

¹ N. Y. State Museum Rept., 1899, p. r118.² Record, Pa. 2d Geol. Surv. Rept., Vol. II, p. 272.³ N. Y. State Museum Rept., 1899, pp. r138-119, ⁴ Am. Inst. Mining Eng. Trans., vol. 16, pp. 939-940.⁵ N. Y. State Museum Rept., 1899, pp. r115-117.⁶ Record, Pa. 2d Geol. Surv. Rept., Vol. I, p. 100.⁷ Record, Am. Geol., vol. 25, pp. 156-160.⁸ Record, Pa. 2d Geol. Surv. Rept., Vol. I, p. 325.⁹ Ibid., pp. 325-326.¹⁰ Ibid., p. 228.¹¹ Analysis, Am. Inst. Mining Eng. Trans., vol. 16, pp. 918-923.¹² Record, Pa. 2d Geol. Surv. Rept., Vol. I, p. 126.¹³ Record, N. Y. State Museum Rept., 1899, p. r120.¹⁴ Record, Geol. Soc. Am. Bull., vol. 4, p. 95.¹⁵ N. Y. State Museum Rept., 1899, p. r121.¹⁶ Record, Am. Inst. Mining Eng. Trans., vol. 16, pp. 924-925.¹⁷ Record, N. Y. State Museum Rept., 1899, p. r122.¹⁸ Ibid., p. r123.¹⁹ Record, Rept. Supt. Onondaga Salt Springs, 1888, pl. 2: 1885, p. 15.²⁰ N. Y. State Museum Rept., 1899, p. r121.²¹ Record, Rept. Supt. Onondaga Salt Springs, 1888, pl. 2.²² Record, N. Y. State Museum Rept., 1899, p. r117.²³ N. Y. State Museum Rept., 1899, p. r116.²⁴ Ibid., p. r123.²⁵ Record, Am. Inst. Mining Eng. Trans., vol. 17, p. 401.²⁶ N. Y. State Museum Rept., 1899, p. r122.

NEW YORK—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Genesee County:	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Alexander.....	.....	.....	.....	.....	Salt well.
Batavia.....	.....	.....	.....	.....	.....
Corfu (2 miles west).....	1,208 1,248	8-6½	.....	-15 and -135	Several gas wel's.
Darien ¹	+1,300	.....	.....	.....	.....
Leroy ²	878-1,003	.....	.....	.....	Salt wells.
Greene County:	.....	.....	.....	.....	.....
Cairo (¾ miles south-west). ³	2,200	5½	.....	-310	For oil or gas; abandoned.
Herkimer County:	.....	.....	.....	.....	.....
Ilion ⁴	1,135	.....	.....	.....	Gas in small quantities at 800, 950, and 1,000 feet.
Mohawk.....	420	6	.....	- 30	Sulphurous water.
Jefferson County:	.....	.....	.....	.....	.....
Watertown ⁵	530	.....	.....	.....	Some gas at 253 feet.
Lewis County:	.....	.....	.....	.....	.....
Greig.....	700	.....	.....	.....	Bored for oil.
Livingston County:	.....	.....	.....	.....	.....
Caledonia.....	1,100	8-6½	.....	- 25	Salty, sulphurous water.
Do. ⁶	760	.....	.....	.....	Salt well.
Cuylerville ⁶	1,145	.....	.....	.....	Do.
Dansville.....	1,800	.....	.....	.....	.....
Dansville (near) ⁷	+508	.....	.....	.....	Gas at 295 and 508 feet.
Do.....	2,240	.....	.....	.....	No gas reported.
Greigsville ⁸	1,138-1,145	.....	.....	.....	Salt wells.
Do. ¹	1,800	.....	.....	.....	For gas; unsuccessful; black sulphur water at 1,315 feet.
Lakeville ⁸	1,053	.....	.....	.....	Salt well.
Leicester.....	1,165	.....	.....	.....	Do.
Livonia ⁹	1,432	Shaft.	.....	.....	Salt mine.
Do.....	1,100	.....	.....	.....	Salt well.
Mount Morris ⁸	1,130-1,422	.....	.....	.....	Several salt wells.
Nunda ⁸.....	.....	.....	.....	.....	Do.
Piffard ¹⁰	961-1,141	.....	.....	.....	.....
York ⁸	828	.....	.....	.....	Salt well.
Madison County:	.....	.....	.....	.....	.....
Canastota.....	648	.....	.....	.....	Bitter brines.
Chittenango ¹¹	3,026	.....	.....	.....	Gas well.
Eagleville.....	1,889	.....	.....	.....	.....
Eaton.....	400	5	20	- 3	.....
Morrisville ¹²	1,889	.....	.....	.....	Do.
Uniontown.....	.....	.....	.....	.....	Do.
Manhattan Borough:	.....	.....	.....	.....	.....
Governors Island.....	1,822	12-6	18	Flows.	Flow of 15 gallons at 1,715 feet was increased by torpedoing; salty.
Tenth and Washington streets.	500	6	600	No flow.	.....
Fifth Avenue Hotel.....	1,108	.....	.....	.....	No water.
Greenwich and 11th streets.	1,047	8	10	No flow.	.....
United States Hotel.....	629 (or 900)	.....	Several.	.....	.....
Twenty-eighth st., near Broadway.	500	8	100	No flow.	.....
Avenue D, foot of East Tenth street.	1,194	.....	Several.	.....	.....
Fourth avenue and 47th street.	600	8	100	No flow.	.....
Foot of 47th st.....	402	.....	.....	.....	.....
Eleventh avenue and 59th street.	700	8	100	No flow.	.....
Fourth avenue and 51st street.	1,194	.....	Few.	.....	.....
Eighth avenue and 72d street.	1,200	8	8	No flow.	.....
Fifth avenue and 59th street.	500	.....	80	No flow.	.....
Third avenue and 92d street.	685	9	300	No flow.	.....
Eighth avenue and 145th street.	605	10-8	.....	No flow.	.....

¹ N. Y. State Museum Rept., 1899, p. r124.² Record, Rept. Supt. Onondaga Salt Springs, 1888, pl. 2; 1884, pp. 19-20.³ Record, Am. Inst. Mining Eng. Trans., vol. 16, p. 956.⁴ Record, Am. Geol., vol. 25, pp. 132-135.⁵ Record, Geol. Soc. Am. Bull., vol. 4, p. 107.⁶ Record, Rept. Supt. Onondaga Salt Springs, 1888, pl. 2; 1885, p. 15.⁷ N. Y. State Museum Rept., 1899, p. r128.⁸ Record, Rept. Supt. Onondaga Salt Springs, 1888, pl. 2.⁹ Am. Geol., vol. 15, p. 379; N. Y. State Geol. Rept., 1893, vol. 1, p. 13.¹⁰ Record, Rept. Supt. Onondaga Salt Springs, 1884, pp. 20-21.¹¹ Record, Geol. Soc. Am. Bull., vol. 4, p. 101.¹² Ibid., pp. 96-97; Rept. Supt. Onondaga Salt Springs, 1888, pl. 2.

NEW YORK—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Manhattan Borough—Con.					
Washington Building ...	1,000	.....	.....	No flow.	
Manhattan insurance Building.	1,056	8	75	No flow.	
Liberty and Nassau streets.	720	.....	80	No flow.	
New York Life Insurance Building.	500	.....	.....	No flow.	
Fulton Market.	626	.....	.....	No flow.	
Broadway and Bleecker street.	448	7	80	No flow.	
Lafayette and Barnard streets.	700	8	80	No flow.	
Boulevard and 72d street	700	.....	25		Hard water
Eighth avenue and 146th street.	1,035	8	500	No flow.	
Eighth avenue and 55th street (Y. M. C. A. Building).	1,000	.....	.....
Ninety-ninth street.	609	8	.....	No flow.	Abandoned.
	1,505	8	11	No flow.	Do.
Sixty-seventh st., near Third ave.	1,504	8	.....	— 32	Do.
Near Second ave.	1,502	8	50	— 38	Do.
Morris and Greenwich streets.	625	8	40	No flow.	Do.
	700	8	.....	No flow.	Do.
Dunwoodie.	775	.....	.....		Good supply.
Monroe County:					
Brockport.	2,000	.....	.....		For gas; unsuccessful.
Honeoye Falls ¹	1,500	.....	.....		Gas well.
Nassau County:					
Brookville.	400	6	.....		Abandoned; quicksand.
Hewletts Point.	512	8	.....		Rock below 230; no water.
Lake Surprise.	755	8-4½	300	— 135	
Lawrence.	416	3	13	— 15	Salt water.
Lynbrook (one-half mile west).	504	8	30	+ 2	Flows at 76 and 500 feet.
Lynbrook (1 mile east Brooklyn Waterworks test well No. 25).	587	5	5	+ 2	Flows at 578 and 587 feet.
Oyster Bay.	465	6	.....	Flows.	Abandoned; pipe broke.
Valley Stream (Brooklyn Waterworks test well No. 21). ²	410	5	.....		At 290 feet slightly water bearing.
Wheatley Hills.	434	8	150	— 245	
Do.	400	10	35	— 230	
Niagara County:					
Barker.	2,175	.....	.....		Salt, oil, and gas.
Gasport.	2,007	.....	.....		Gas at 1,080 feet.
Getzville.	1,400	.....	.....		Several good gas wells.
Lockport.	.....	.....	.....		Salt well.
Oneida County:					
New York Mills ³ .	2,000	.....	.....		Gas at 500 feet.
Rome ⁴ .	1,632	.....	.....		Gas wells.
Do. ⁵	832	.....	.....		Gas well.
Utica ⁶ .	860	.....	.....		Do.
Do. ⁷	1,720	.....	.....
Utica (Bagg's Hotel).	460	.....	.....
Vernon ⁸ .	1,968	.....	.....		Do.
Onondaga County:					
Baldwinsville.	2,358	6½	.....		Do.
Baldwinsville (1 mile south). ⁹	2,250	.....	.....		Do.
Baldwinsville (1 mile north). ¹⁰	2,795	.....	.....		Do.
Cardiff ¹¹ .	844	.....	.....
Cedarville.	1,157	.....	.....		Do.
Greenpoint ¹² .	1,600	.....	.....

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. 15, p. 326.² Record, Ann. Rept. Dept. City Works, Brooklyn, 1896, p. 302.³ Am. Inst. Mining Eng. Trans., vol. 16, pp. 958-959.⁴ Record, Am. Geol., vol. 25, pp. 137-143.⁵ Ibid., p. 145.⁶ Am. Geol., vol. 25, p. 137.⁷ Record, Geol. Soc. Am. Bull., vol. 4, p. 100.⁸ Record, Am. Geol., vol. 25, pp. 145-149.⁹ Ibid., pp. 150-152.¹⁰ Ibid., p. 154.¹¹ Record, Rept. Supt. Onondaga Salt Springs, 1888, pl. 2; 1885, p. 15.¹² Ibid., 1884, pp. 12-15; 1888, pl. 2.

NEW YORK—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Onondaga County—Con.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Jamesville ¹	1,040	.....	.....	.....	Salt well.
Liverpool	600-1,969	.....	.....	.....	Salt wells.
Memphis ²	2,700	.....	.....	.....	Some gas.
Memphis and Jordan (between). ²	3,086-3,100	.....	.....	.....	3 gas wells.
Montfredys Mills	1,140	.....	.....	.....	Salt well.
Syracuse (near) ³	1,115-1,969	.....	.....	.....
Syracuse ⁴	3,600	.....	.....	.....	2 gas wells.
Tully ⁵	3,580	.....	.....	.....
Do	974-1,472	.....	.....	.....	Numerous salt wells.
Do	1,526	.....	.....	.....	Salt well.
Ontario County:					
Allens Hill ⁶	+1,300	.....	.....	.....	No gas; 60 feet of salt at 1,300 feet.
Bristol ⁷	+750	.....	.....	.....	Salt well.
Canandaigua .....	.....	.....	.....	.....	Several oil wells.
Do	1,200	6	.....	-100	
Clifton Springs ⁸	710	.....	.....	.....	Salt well.
Geneva	550	.....	.....	Flows.	
Honeoye	646	.....	.....	.....	Gas at 610 feet; several gas wells in vicinity.
Naples	1,650	.....	.....	.....	Salt well.
West Bloomfield ⁹	500	5	.....	.....	Gas well.
Do .....	.....	.....	.....	.....	Several gas wells.
Orange County:					
Goshen	419	6	.....	- 55	
Middletown	2,010	10-8	80	Flows.	
Do	600	6	.....	- 60	Two wells.
Middletown (State Homeopathic Hospital).	800	.....	.....	.....
Do	600	8	.....	.....
Port Jervis	1,400	.....	.....	.....	Unsuccessful.
Oswego County:					
Fulton ¹⁰	1,656-2,050	.....	.....	.....	Several gas wells.
Phoenix	2,600	.....	.....	.....	Gas well.
Richland .....	.....	.....	.....	.....	Numerous gas wells.
Sandy Creek	1,000-1,200	.....	.....	.....	Numerous oil wells.
Do ¹¹	1,145	.....	.....	.....	Gas at 675, 735, and 790.
Otsego County:					
Center Valley	610	3	Few.	+ 4	
Springfield ¹²	419	.....	2	No flow.	
Queens Borough:					
Astoria (Astoria Steel Co.).	608	10-8	.....	.....	Salt water at 352 and 608 feet; rock 28 to 608 feet.
Hollis (Brooklyn Water Works test well No. 6) ¹³	406	5	.....	.....
Long Island City (Greenpoint avenue and Newtown Creek).	490	6	10	.....
Do	450	6	125	-250	Amount of chlorine increased as long as used.
Morris Park (race course)	512	10	.....	.....
New Calvary Cemetery ¹⁴	582	.....	.....	.....
Springfield (Brooklyn Water Works test well No. 7). ¹²	419	5	2	- 7	
Springfield (one-half mile east, Brooklyn Water Works test well No. 12). ¹⁵	406	5	.....	.....	No water below 144 feet.
Springfield (1 mile east, Brooklyn Water Works test well No. 13). ¹⁶	422	5	.....	.....	No water below 80 feet.
Springfield (1 mile southeast, Forest Stream pumping station).	435	4	.....	.....	No water below 35 feet.
Willels Point	500	.....	.....	.....	Salt water.
Woodhaven ¹⁷	577	.....	.....	.....

¹ Record, Rept. Supt. Onondaga Salt Springs, 1888, pl. 2.² N. Y. State Museum Rept., 1899, p. 126.³ Record, Geol. Soc. Am. Bull., vol. 4, pp. 102-105; Am. Inst. Mining Eng. Trans., vol. 16, p. 944; Rept. Supt. Onondaga Salt Springs, 1888, pl. 2; 1884, pp. 15-18.⁴ N. Y. State Museum Rept., 1899, p. 125.⁵ Record, Geol. Soc. Am. Bull., vol. 4, p. 105; Rept. Supt. Onondaga Salt Springs, 1888, pl. 2.⁶ N. Y. State Museum Rept., 1899, p. 127.⁷ Record, Rept. Supt. Onondaga Salt Springs, 1884, pp. 12-15; 1888, pl. 2.⁸ Ibid., 1885, p. 15.⁹ Am. Inst. of Mining Eng. Trans., vol. 13, p. 542.¹⁰ Record, Geol. Soc. Am. Bull., vol. 4, pp. 105-106.¹¹ Ibid., p. 107.¹² Record, U. S. Geol. Surv. Bull. 13³ p. 29.¹³ Ibid., pp. 30-31.¹⁴ Ibid., p. 34.¹⁵ Ibid., p. 30.¹⁶ Record, Ann. Rept. Dept. City Works, Brooklyn, 1896, p. 294.¹⁷ Record, U. S. Geol. Surv. Bul. No. 138, pp. 31-32.

NEW YORK—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Rensselaer County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Shodack Landing	1,000?				Salt well.
Richmond County:					
New Dorp	600				No water.
Hoffmans Island	1,000	8		33	Salt water to 900 feet.
Saratoga County:					
Ballston	560			+60	Mineral water.
Do.	778	6		- 3	
Saratoga Springs	400	6	34		
Do.	1,006	2 $\frac{3}{4}$	2	+75	
Do.	600	6		Flows.	
Do.	440	6		+40	
Do.	520	6		+40	
Do.	425	6		-16	
Do.	478?			+40	Do.
Do.	422			-16	
Schuylerville	610	8	84	- 6	
Schenectady County:					
Niskayuna	400	6	75	-20	
Schuyler County:					
Glen Springs	1,500				For oil; unsuccessful.
Watkins	2,100±				Several salt wells.
Do ¹	1,100				Abandoned.
Do ¹	800				
Do ¹	1,715				Gas, at 1,350 feet.
Seneca County:					
Seneca Falls	3,560				Gas well.
Do.	400-500			Flow.	Several salt wells in vicinity.
Do ²	1,500				Gas well.
Steuben County:					
Addison and Corning (between). ³	1,148				
Bath (half mile south).	2,050				Gas well.
Bloods ⁴	1,495				Showing of gas.
Campbell Township ⁵	2,800				For gas; unsuccessful.
Campbell ⁶	2,250				For oil or gas.
Canisteo	2,000				Several unsuccessful.
Canisteo (and vicinity) ⁷	735-1,300				Several gas wells.
Corning ⁸	3,000				Salt water prevented farther drilling.
Cohocton (near)					For oil.
Howard (one-half mile west).	2,000				For oil or gas; unsuccessful.
Hornby Township (near south line). ⁵	1,528				Gas well.
Hornellsville ³	2,200				
Do.	1,500	6 $\frac{1}{2}$			Good veins of gas at 700, 1,250, and 1,560 feet.
Do.	1,522	6 $\frac{1}{2}$			Gas at 650, 940, and 1,200 feet, 3 wells of same depth.
Lavona ⁸	3,005				Gas well.
Prattsburg (1 $\frac{1}{4}$ miles southwest). ⁴	1,800				2 wells: little gas and oil in both.
Do. ⁸	1,200				
Rexville ⁵	1,635-1,181				Do.
Rheims ⁸	2,000				Showing of gas.
Spring Mills (near) ⁵	1,635				Small amount of gas.
Troupsburg ⁵	632				Gas well.
Urbana	2,000	6	8	-30	
Woodhull	3,000			+50	Unsuccessful oil well, flow of water at 300 feet.
Wyleysville ⁵	2,010				Gas well.
Suffolk County:					
Cold Spring Harbor (1 mile north).	410	6	10	+ 1	
Do.	400	8	75	No flow.	Water-bearing beds at 276 and 308 feet.
Fishers Island	485	6			Salt water.
Huntington (2 miles northwest).	498	3			Incomplete; no water below 88 feet.
Greenport	690	6			Salt water 225 to 555 feet; small flow of fresh water at 665 feet, bed rock at 670 feet.
Orient (Long Beach Point).	+406				Salt water.

¹ N. Y. State Museum Rept., 1899, p. r127.² Record, Am. Inst. Mining Eng. Trans., vol. 16, p. 949.³ Record, N. Y. State Museum Rept., 1899, p. r130.⁴ N. Y. State Museum Rept., 1899, p. r128.⁵ Ibid., p. r132.⁶ Record, Geol. Soc. Am. B' ill., vol. 4, pp. 97-100.⁷ Record, N. Y. State Museum Rept., 1899, p. r131.⁸ Ibid., p. r129.

NEW YORK—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Sullivan County:					
Never sink (near).....	1,400	.....	.....	.....	Gas boring; abandoned.
Tioga County:					
West Candor. ¹	1,200	.....	.....	.....	Barren.
Tompkins County:					
Ithaca.....	2,250	10-6½	.....	.....	} Two dry salt wells.
Ithaca (one-fourth mile south). ²	2,250	8-5½	.....	.....
Ithaca.....	3,185	8-5½	.....	.....	Gas well.
Ludlowville.....	1,821	8	.....	.....	Salt wells.
Wayne County:					
Alloway ³	2,365	.....	.....	.....	} No gas of value.
Clyde.....	450	6	.....	-12	
Do ⁴	1,792	.....	.....	.....
Lyons (2 miles south). ⁵	2,340	.....	.....	.....
Wolcott ⁶	2,383	.....	.....	.....	Gas well.
Westchester County:					
New Rochelle.....	1,155	10	.....	-10	} 2 wells.
Port Chester.....	500 and 639	.....	.....	.....
Do ⁷	417	.....	.....	.....
Purchase.....	600	.....	.....	.....
Rye.....	500	8	.....	.....	Satisfactory supply.
Wyoming County:					
Attica ⁸	1,960	.....	.....	.....	} Gas well.
Bliss ⁹	2,956	.....	.....	.....
Castile ¹⁰	2,525	.....	.....	.....	Salt well.
Pearl Creek.....	1,182-1,194	.....	.....	.....	Salt wells.
Pearl Creek (1 mile south). ¹¹	1,241	.....	.....	.....	Do.
Perry ¹²	2,108	.....	.....	.....	Heavy bed of salt.
Rock Glen ¹³	2,111	.....	.....	.....	Salt well.
Saltvale ¹⁴	1,436	.....	.....	.....	Do.
Silver Springs ¹⁵	2,254	.....	.....	.....	Do.
Warsaw ¹⁶	1,609-2,039	.....	.....	.....	Numerous salt wells.
Wyoming ¹⁷	1,321-1,530	.....	.....	.....	Salt well.
Yates County:					
Dundee.....	2,000	.....	.....	.....	} Rock salt at 1,800 feet.
Do.....	1,200	.....	.....	.....
Penn Yan ¹⁸.....	.....	.....	.....	.....	Small supply of gas for several weeks.
Do. ¹²	2,053	.....	.....	.....	Not enough gas to utilize.
Fort Greble ¹³	762	.....	.....	.....	Moderate supply of water of good quality.

¹ N. Y. State Museum Rept., 1899, p. r132.² Record and analysis, Am. Inst. Mining Eng. Trans., vol. 16, p. 941; Rept. Supt. Onondaga Salt Springs, 1888, pl. 2.³ Record, Am. Geol., vol. 25, 1900, pp. 353-355.⁴ Record, Am. Inst. Mining Eng. Trans., vol. 16, p. 942.⁵ Partial record, N. Y. State Museum Rept., 1899, p. r133.⁶ Am. Inst. Mining Eng. Trans., vol. 13, p. 943.⁷ N. J. Geol. Surv. Ann. Rept., 1900, p. 156.⁸ Record, Rept. Supt. Onondaga Salt Springs, 1888, pl. 2.⁹ Record, N. Y. State Museum Rept., 1899, p. r133.¹⁰ Record, Rept. Supt. Onondaga Salt Springs, 1888, pl. 2; Rept., 1885, p. 15.¹¹ Am. Inst. Mining Eng. Trans., vol. 16, pp. 939-940.¹² Partial record, N. Y. State Museum Rept., 1899, p. r134.¹³ N. J. Geol. Surv. Ann. Rept., 1900, pp. 155-156.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN NEW YORK.

Annual Report of Superintendent of Onondaga Salt Springs for 1888, 26 pages, plates, Albany, 1889.

Thickness of the Devonian and Silurian rocks of central New York, by G. S. Prosser: American Geological Society Bulletin, volume 4, pages 91-118, Rochester, 1893.

United States Geological Survey Bulletin No. 138, 232 pages, Washington, 1896.

Gas well sections in the upper Mohawk Valley and central New York, by C. S. Prosser: American Geologist, volume 25, pages 131-162, March, 1900.

Petroleum and natural gas in New York State, by C. A. Ashburner: American Institute of Mining Engineers Transactions, volume 16, pages 906-953.

Section of the Alloway (New York) well, by C. S. Prosser: American Geologist, volume 25, 1900.

Fifty-third Annual Report of the New York State Museum for 1899.

NORTH CAROLINA.

Location.	Depth.	Diam-eter.	Yield per minute.	Height of water.	Remarks.
Durham County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Durham	1,087	.....	18	No flow.	
Johnston County:					
Selma					2 deep wells.
Mecklenburg County:					
Charlotte	900	2			Dry.
Davidson	500				Dry below 80 feet.
Moore County:					
Sanford	515	6½	45	— 3	
New Hanover County:					
Hammocks	400		8		Water at 100 feet.
Wilmington	495			Flows.	Saline water.
Do. ¹	1,144	12-6	200		Flows of brackish water at 379, 496, 574, 608, 734, and 989 feet; 200-gallon flow at 518 feet; granite, 1,109 feet to bottom.
Rowan County:					
Goldhill	1,000			—20	Shaft sunk for gold.
Stokes County:					
Walnut Cove	1,050	2½			For coal; unsuccessful.
Walnut Cove (1 mile south).	500				Mineral water; good flow.
Union County:					
Monroe	720	6-5	28	To surface.	
Do.	1,050	8-6	28	Near surface.	
Wilkes County:					
Northwilkesboro	600	8	85		Uncompleted.

¹ Science, new ser., vol. 11, 1900, pp. 128-130.

PUBLICATIONS RELATING TO DEEP BORINGS IN NORTH CAROLINA.

Artesian well prospects in the Atlantic Coastal Plain region, by N. H. Darton: U. S. Geological Survey Bulletin No. 138, 232 pages, plates, Washington, 1896.
Science, new series, volume 11, 1900.

NORTH DAKOTA.

Location.	Depth.	Diam-eter.	Yield per minute.	Height of water.	Remarks.
Barnes County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Ashtabula (2½ miles west of)	1,340			— 11	Principal water horizon at 1,325 feet.
Wimbleton ¹	1,557		200	+184	
Billings County:					
Medora ¹	941	4	33	+ 34½	
Burleigh County:					
Bismarck ¹	1,315	8-4			No flow.
Cass County:					
Buffalo (6 miles north-east)	514		25	+115	Staple's well.
Tower City ¹	716	6-4½	20-25	+122	
Dickey County:					
Ellendale (12 miles northeast)	1,022	1	25	Flows.	
Ellendale (15 miles northeast)	1,036	2-1	18	Flows.	
Ellendale ¹	860			+138	
Ellendale (west of)	600				No water.
Ellendale (12 miles northwest)	1,015	1			
Ellendale ¹	1,087	4½-3½	700	+260	Water at 1,042 feet.
Glover (near)		1½	37		
Do.	1,000			+111	
Ludden (south of)	940	2			
Ludden (north of)	1,050	1½	10		
Do.	980	2		+65	
Oakes ¹	977				Water at 790, 845, 870, and 937 feet.

¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, pp. 59-63.

NORTH DAKOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Dickey County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Oakes (west of).....	1,050	2	.....	.....
Do.....	960	2	.....	+31	
Oakes.....	944	.....	.....	.....
Oakes (7 miles north-east).	906	1½	20	Flows.	
Lamoure County:					
Edgeley.....	1,354	6	500	+138	Water at 1,300 and 1,350 feet.
Morton County:					
Mandan ¹	2,000	10-4	3	.....	Water at 327 feet only.
Sims ¹	1,311	.....	.....	.....	No flow.
Pembina County:					
Hamilton ²	1,565	6	16½	+ 60	
Ramsey County:					
Devils Lake ³	1,520	8-3	82	+ 46	Flow at 1,470 feet.
Sargent County:					
Crete (near).....	960	1½	4, 33	.....	2 wells.
Do.....	.....	1½	.....	.....
Brampton (near).....	980	1½	30	.....
Glover (east of).....	960	1½	33	.....
Do.....	.....	1½	.....	.....
Havana.....	960	1½	35	+184	
Milnor.....	650	2	64	+160	
Oakes (east of).....	875	1½	35	+276	
Oella (near).....	980	1½	30	.....
Rutland ²	600	2	.....	.....
Do.....	685	.....	.....	.....
Straubville (near).....	1,075	2	30	.....
Verner (near).....	.....	2	136	.....
Verner (northeast of).....	960	2	4	.....
Stark County:					
Dickinson.....	1,325	.....	.....	.....	No flow.
Stutsman County:					
Jamestown (asylum) ²	1,524	8-3½	4	+161	
Jamestown ¹	1,476	6½-3½	460	+223	Water at 1,385 and 1,458 feet.
Traill County:					
Portland.....	560	.....	175	Flows.	
Walsh County:					
Grafton ³	912	8	700	.....
Wells County:					
Harvey (near).....	2,125	.....	2½	Flows.	Pressure 13 pounds.

¹ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 2, pp. 59-63.² 51st Cong., 1st sess., Senate Ex. Doc. No. 222, 1890, p. 322.³ Record, *ibid.*, 1890, pp. 107-108.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN NORTH DAKOTA.

Report of F. S. Underhill for North Dakota: Fifty-first Congress, first session, Senate Ex. Doc. No 222, pages 105-109, Washington, 1890.

Report on Irrigation, Fifty-second Congress, first session, Senate Ex. Doc. No. 41, part 2, pages 66-72, 87-94, Washington, 1893.

Preliminary report on artesian waters of a portion of the Dakotas, by N. H. Darton: United States Geological Survey, Seventeenth Annual Report, 1895-96, part 2, pages 609-694, Washington, 1896.

OHIO.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Allen County ¹					Many oil and gas wells, 83 per cent producers.
Amanda Township.....	1,200	10-5½		-75	Salt water at 20 feet.
Beaverdam ²	1,345				For oil; salt water found.
Bluffton ³	1,328				Unsuccessful.
Delphos ⁴	1,250				Do.
Delphos (Kill farm) ⁵	1,218				O'l well.
Lima ⁶	1,200-1,400				Numerous oil wells here and in county; much salt water found.
Spencerville (near) ⁷					Several wells; good flow of gas with some oil.
Westminster ⁸	1,400				For oil or gas; failure.
West Newton ⁸	1,440				
Ashtabula County:					
Ashtabula ⁹	500				Gas 250-500 feet; strong brine at 400 and 500 feet.
Cherry Township ¹⁰	2,775				
Conneaut ¹¹	850				Small gas supply.
Do.....	+1,942				Much strong brine.
Jefferson ¹⁰	2,140				Some oil.
Jefferson (2 miles northwest). ¹⁰	1,989				Considerable gas.
North Kingsville ¹²	1,200				
Geneva ¹³	850-1,375				2 wells; fair flow of gas; numerous other wells in the county.
Jefferson (near) ¹⁴	1,992				Gas and oil well.
Jefferson.....	2,021				Gas.
Do.....	2,110				Dry.
South Kingsville ¹⁵	1,200				Gas well; some oil.
Athens County:					
Athens (3 miles northeast of court-house). ¹⁶	1,250				Some oil and gas.
Athens.....	±1,209				Oil and gas wells.
Athens (1¼ miles west) ¹⁶	1,050				Some gas; abandoned.
Athens (near) ¹⁶	1,135				Salt water, oil and gas.
Do. ¹⁶	1,144				Considerable gas; no oil.
Berne Township ¹⁷	+1,300				2 wells; yielded much salt water and little oil; abandoned.
Canaan Township ¹⁶	+1,244				Abandoned on account of accident in shooting.
Marshfield (1 mile northwest). ¹⁸	2,718				
Mineral ¹⁸	1,060				
Do. ¹⁸	8,255				
Nelsonsonville ¹⁹	570-950				Many salt wells; one small gas well.
Trimble Township ²⁰					Several gas wells.
Auglaize County ²¹					Many oil and gas wells; 84 per cent producers.
Cridersville.....	1,227	8-5½		-40	Oil and salt water.
Duchouquet.....					2 wells of moderate flow.
Logan Township ²²					Oil well; started with production of 250 barrels a day; other wells near gave equal or better results.
St. Marys ²³	1,230				Salt water only.
Do. ²³	1,132-1,225				Several oil wells.
Do. ²³	1,092-1,138				Several gas wells; large flows.
Uniopolis.....					Very small flow of gas; abandoned.
Wapakoneta ²⁴	1,600				For oil or gas; salt water only.

¹ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 78-85.

² Ibid., p. 79. Abandoned at 1,309 feet in 1886; new casing inserted in 1899, and pumping caused well to produce 25 barrels of oil per day, but this rapidly decreased to a very small amount. Other productive wells near.

³ Ibid., Rept. 1888, vol. 6, p. 216.

⁴ Record, *ibid.*, p. 240.

⁵ Ibid., 1890, p. 217.

⁶ Ibid., 1888, vol. 6, pp. 165-168.

⁷ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 82.

⁸ Record, *ibid.*, Rept. 1888, vol. 6, p. 220.

⁹ Ibid., pp. 424-425.

¹⁰ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 303.

¹¹ Ibid., Rept. 1888, vol. 6, pp. 422-423.

¹² Ibid., Bull. No. 1, 4th ser., p. 302.

¹³ Record, *ibid.*, Rept. 1888, vol. 6, pp. 425-426.

¹⁴ Ibid., Bull. No. 1, 4th ser., 1903, p. 21.

¹⁵ Ibid., Rept. 1888, vol. 6, pp. 423-424.

¹⁶ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 269-270.

¹⁷ Ibid., p. 139.

¹⁸ Ibid., p. 271-272.

¹⁹ Ibid., Rept. 1888, vol. 6, p. 398.

²⁰ Ibid., Bull. No. 1, 4th ser., 1903, p. 263.

²¹ Ibid., pp. 85-89.

²² Ibid., p. 85.

²³ Ibid., Rept. 1888, vol. 6, pp. 255-258.

²⁴ Ibid., p. 254.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Belmont County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Barnesville ¹	2,700				Gas wells.
Bellaire ²	1,550				Small gas wells.
Flushing (1 mile north-east) ³	2,700				Salt water only.
Goshen.....	1,707				
Martins Ferry ⁴	2,300				
Mead.....	2,325				
Richland.....	1,237-1,900				Several wells.
Warren.....	1,812-1,858				
Washington.....	1,125				Gas.
Brown County:					
Mount Orab.....	800-1,200	5½			Gas wells.
Ripley.....					No product.
Butler County:					
Hamilton ⁵	550-700				Gas wells; small flow.
Middletown ⁶	1,060				Some gas and salt water.
Oxford ⁶	1,365				Shale gas and sulphur water only.
Sevenmile.....	1,220	8		— 6	Salt water and some gas.
Carroll County:					
Amsterdam (east of) ⁷	953-1,040				4 wells.
West of ⁷	1,135				
Northwest of ⁷	1,177				
Augusta Township ⁸	1,500				
Do.....	928				Dry hole.
Germano (north of) ⁷	1,032				Good show of oil.
London Township ⁹	1,130-1,240				4 wells; 3 produced oil.
Sherrodsville (west) ⁸	+900				Gas and salt water; well abandoned.
Union Township ⁹	1,500				Some oil.
Do.....	2,000				Large flow of salt water.
Champaign County:					
St. Paris ¹⁰	+1,000				Two unsuccessful borings.
Urbana ¹¹	1,307-1,350				Very small showing of gas
Clark County:					
New Carlisle ¹²	1,060				For gas; unsuccessful.
Pike Township ¹²	1,380				Do.
Springfield ¹³	1,140-1,200				Several wells; failures.
Clermont County:					
Felicity ¹³	400				Gaswell.
Williamsburg.....	660	6			Small flow of gas.
Do.....	660	6			Unsuccessful.
Clinton County:					
Sabina.....					
New Vienna ¹⁴	1,785				Salt water at 1,785 feet.
Columbiana County:					
Corning ¹⁵					Several gas wells.
Do. ¹⁶	1,008				
Corning (south of) ¹⁷	1,507				Much salt water; some oil, well closed.
East Liverpool ¹⁸	425-450				
On Dry Run ¹⁹	±3,000				Several gas wells.
Knowles well.....	2,954				Dry.
East Palestine (near) ²⁰	1,700				
East Rochester ²¹	+725				
Homeworth (near) ²⁰	+618				Oil well.
Island Run ²²	600				
Lisbon ²³	1,582				
Liverpool (Township) ²⁴	426				Brine.
Madison Township ²⁵	1,600-3,000				3 wells.
Monroe Township ²⁵	1,012				Oil well.
New Lisbon ²⁶	1,350-1,370				Gas wells.
(Township unknown).....	600				
Do.....	1,350-2,930				3 wells.

¹ Ohio Geol. Surv. Rept., 1890, p. 254.² Ibid., 1888, vol. 6, p. 406.³ Ibid., 1890, pp. 253-254.⁴ Ibid., 1888, vol. 6, pp. 404-406.⁵ Record, *ibid.*, p. 292-293.⁶ Ibid., p. 294-295.⁷ U. S. Geol. Surv. Bull. No. 198, 1902, pp. 25-33.⁸ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 293.⁹ Ibid., p. 294.¹⁰ Record, *ibid.*, Rept., 1888, vol. 6, pp. 276-277.¹¹ Ibid., p. 275.¹² Ibid., pp. 278-280.¹³ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 301.¹⁴ Ibid., pp. 296-297.¹⁵ Ibid., Bull. No. 1, 4th ser., 1903, pp. 263-264.¹⁶ Record, *ibid.*, pp. 261-262.¹⁷ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 258.¹⁸ Record, *ibid.*, Rept., 1888, vol. 6, pp. 331-334.¹⁹ Ibid., pp. 322-323.²⁰ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 256.²¹ Ibid., p. 257.²² Record, Pa. 2d Geol. Surv. Ann. Rept., 1886, part 2, pp. 784-785.²³ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 322.²⁴ Ibid., Bull. No. 1, 4th ser., 1903, p. 253.²⁵ Ibid., p. 259.²⁶ Record, *ibid.*, Rept. 1888, vol. 6, p. 404.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Columbiana County—Con.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Salem ¹	+800-810	.....	.....	.....	Two unsuccessful borings.
Do.....	2,930	.....	.....	.....	Unproductive.
Salineville ²	3,200	.....	.....	.....	Failure.
Wellsville (near) ³	2,600	.....	.....	.....	Gas well.
Do. ⁴	3,250	.....	.....	.....	Failure.
Do. ⁴.....	.....	.....	.....	.....	Oil wells.
Coshocton County:					
Adams Township ⁵	600-1,800	.....	.....	.....	3 wells.
Coshocton ⁶	2,108	.....	.....	.....	.....
Do. ⁷	1,280	.....	.....	.....	Unsuccessful.
Do. ⁸	3,100	.....	.....	.....	Do.
Lafayette Township ⁹.....	.....	.....	.....	.....	5 wells.
Crawford County:					
Bucyrus ⁹	840-2,264	.....	.....	.....	For gas or oil; salt-water flow at 750 feet.
Cuyahoga County:					
Berea (2½ miles north-east). ¹⁰	960-1,240	.....	.....	.....	Several gas wells.
Brooklyn village ¹¹	1,033	.....	.....	.....	Several gas wells near.
Cleveland ¹¹	400-1,500	.....	.....	.....	Several gas wells.
Gas company ¹¹	2,200	.....	.....	.....	No product.
Euclid and Case avenues. ¹²	1,125-1,735	.....	.....	.....	Small flow of gas.
Rolling Mill ¹³	3,000	.....	.....	.....	.....
Central avenue.....	535	.....	Many.	-100	Large supply of water.
Gordon Park ¹⁴	520	.....	.....	.....	Abandoned.
2 miles east ¹⁵	508	.....	.....	.....	For oil and coal; failure.
Independence ¹⁶	1,800	.....	.....	.....	Several borings for oil; no product.
Newburg ¹³	3,000	5½	.....	.....	Some gas; much salt water.
Rockport ¹⁷	527-1,335	.....	.....	.....	2 gas wells; small flows.
Darke County:					
Arcanum ¹⁸	+1,150	.....	.....	.....	Gas prospects; small product.
Greenville ¹⁹	1,200-1,700	.....	.....	.....	Several borings for gas; unsuccessful.
Defiance County:					
Defiance.....	1,687	.....	.....	.....	Salt water only.
Hicksville ²⁰	1,710	.....	.....	.....	Salt water; some oil.
Delaware County:					
Delaware ²¹	2,130	.....	.....	.....	Unsuccessful.
Sunbury ²²	2,530	.....	.....	.....	.....
Erie County:					
Birmingham ²³	2,250	.....	.....	.....	Salt water only.
Milan ²⁴	2,000	.....	.....	.....	For oil or gas; only salt water found.
Sandusky ²⁵	2,260	.....	.....	.....	Some oil, gas, and salt water.
Fairfield County:					
Berne Township ²⁶	2,236	.....	.....	.....	.....
Carroll ²⁷	2,300	.....	.....	.....	Unsuccessful.
Lancaster ²⁸	1,030	.....	.....	.....	.....
Do. ²⁹	1,940-2,020	4½-5½	.....	.....	Several gas wells.
Lancaster (4 miles below). ³⁰	2,088	.....	.....	.....	.....
Sugar Grove (near) ³¹	+2,236	.....	.....	.....	For oil or gas.
Do. ³¹	2,075	.....	.....	.....	Do.
Thurston ³².....	.....	.....	.....	.....	2 gas wells.

¹ Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 403-404, 462.

² Ibid., Bull. No. 1, 4th ser., 1903, p. 257.

³ Ibid., p. 22.

⁴ Ibid., pp. 251-252.

⁵ Ibid., p. 262.

⁶ Record, *ibid.*, Rept., 1888, vol. 6, p. 324.

⁷ Ibid., p. 368.

⁸ Ibid., p. 357, 1890, pp. 245-246.

⁹ Ibid., pp. 368-369.

¹⁰ Ibid., pp. 433-436.

¹¹ Ibid., pp. 429-431.

¹² Geol. Soc. Am. Bull., vol. 8, p. 10.

¹³ Record, Mich. Geol. Surv. Rept., 1881-1893, vol. 5, part 2, p. 73, Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 351-355.

¹⁴ Geol. Soc. Am. Bull., vol. 8, p. 10.

¹⁵ Economic Geol., Ill., vol. 3, pp. 195-196.

¹⁶ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 431.

¹⁷ Record, *ibid.*, pp. 432-434.

¹⁸ Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 272-273.

¹⁹ Ibid., pp. 271-272.

²⁰ Record, *ibid.*, pp. 250-251.

²¹ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 270.

²² Ibid., p. 283.

²³ Ibid., pp. 346-347.

²⁴ Ibid., p. 346.

²⁵ Record, Mich. Geol. Surv. Rept., 1881-1893, p. 83, Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 194-196.

²⁶ Partial record, Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 118.

²⁷ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 388.

²⁸ Record, *ibid.*, p. 318.

²⁹ Ibid., pp. 382-388, 783.

³⁰ Ibid., Bull. No. 1, 4th ser., 1903, pp. 117-118.

³¹ Partial record, *ibid.*, pp. 20-21.

³² Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 107-108.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Fayette County:					
Washington ¹	1,850				For gas or oil; found salt water only.
Franklin County:					
Columbus ²	2,020				No gas or oil.
Columbus (State House) ³	2,775	6-4		+5	Saline water below 175 feet; temp., 91°.
Groveport (near) ⁴	2,675				
Harrisburg ⁵	405	6	Many.	Flows.	
Westerville ⁶	+2,300				
Fulton County:					
Delta ⁷	2,150				Unsuccessful.
Wauseon ⁸	+2,158				Oil at 2,158 feet.
Gallia County:					
Adamsville	800				Considerable gas at 400 feet.
Gallipolis ⁹	2,910				For oil; unsuccessful.
Huntington Township ¹⁰	1,765				Failure.
Raccoon Township ¹¹	1,417				Much salt water; failure.
Township unknown	2,910				Dry well.
Geauga County:					
Hampden (near) ¹²	2,472				Only a showing of oil.
Munson Township ¹³	1,500				Some gas; well considered a failure.
Greene County:					
Jamestown	1,500				Salt water only.
Osborn	990				Unsuccessful.
Spring Valley ¹⁴	1,500				Do.
Xenia ¹⁵	1,200				For oil or gas; unsuccessful.
Guernsey County:					
Cambridge ¹⁶	1,090-2,000				Gas and oil well; yield small.
Center (Township)	690				Brine.
Kimbolton ¹⁷	1,087				Unsuccessful.
Do					Some gas.
Millers station ¹⁸	430				Salt well.
Quaker City ¹⁹	1,347				Gas well.
Do	1,352				
— ²⁰					A number of oil and gas wells reported.
Hamilton County:					
Cincinnati (vicinity)					Numerous oil or gas wells; unsuccessful.
Cincinnati	2,400	5	200	+30	2 wells.
Do	1,200				
North Bend	1,350				
Hancock County: ²¹					Good water.
Arcadia ²²	1,365				Many oil wells; 84 per cent producers.
Arcadia (near) ²³	+1,200				Gas at 1,180 feet.
Arlington ²⁴	1,304				Some oil and gas at 1,304 feet; abandoned.
Beaverdam (5 miles east). ²⁴	1,288-1,290				Gas wells.
Cannonsburg ²⁵	1,300				Several oil wells.
Cass Township ²³	+1,150				
Findlay ²⁶	1,116-1,334				Many gas wells; some oil in several wells.
Do. ²⁷	1,648				Gas well; oil at 1,092 feet; salt water at 1,581 feet.
Findlay (1 mile north-west). ²⁸	1,334				Unsuccessful.

¹ Record, Ohio Geol. Surv. Rept., 1888, vol. 6, p. 291.² Ibid., pp. 281-283.³ Ibid., pp. 106-108; Am. Jour. Sci., 2d ser., vol. 27, p. 276.⁴ Ibid., Bull. No. 1, 4th ser., 1903, p. 19.⁵ Analysis, U. S. Geol. Surv., 19th Ann. Rept., 1897-1898, part 4, p. 664.⁶ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 283.⁷ Ibid., pp. 241-245.⁸ Ibid., pp. 246-247.⁹ Ibid., Bull. No. 1, 4th ser., 1903, p. 279.¹⁰ Record, Pa. 2d Geol. Surv. Rept., Vol. 1⁵, p. 335.¹¹ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 281.¹² Record, ibid., pp. 279-280.¹³ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 304.¹⁴ Ibid., Rept. 1888, vol. 6, p. 291.¹⁵ Ibid., pp. 289-290.¹⁶ Ibid., pp. 320, 377-378.¹⁷ Ibid., pp. 380-381.¹⁸ Ibid., pp. 654-655.¹⁹ Record, ibid., pp. 324, 381-382.²⁰ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 221-223.²¹ Ibid., pp. 65-71.²² Ibid., Rept. 1888, vol. 6, p. 218.²³ Ibid., Bull. No. 1, 4th ser., 1903, p. 69.²⁴ Ibid., pp. 215-216.²⁵ Ibid., p. 217.²⁶ Ibid., Rept. 1888, vol. 6, pp. 122-133, 146; 1890; p. 125.²⁷ Ibid., pp. 111-117.²⁸ Ibid., pp. 131-132.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Hancock County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Findlay	1,158	6½			Water at 50 and 60 feet; brine at 540 feet; small amount of gas; well abandoned.
Marion Township ¹					Gas well.
McComb ²	1,455				Gas well with salt water.
Mount Blanchard ³					Moderate flow of oil and gas.
Portage Township ⁴	+1,201				
Do.	1,414				Smith farm well No. 8; oil.
Rawson ⁵	1,337				For gas or oil; found salt water only.
Stuartsville Township ⁶	450				Oil wells.
Vanburen (west of) ⁴	+1,232				Oil well.
Vanlue ⁷	1,294				Small flow of gas.
Hardin County:					
Ada ⁷	1,384-1,820				Several wells for gas; some successful; others yield only flows of salt water.
Dunkirk ⁸	1,865			-445	For gas; only salt water found.
Do. ⁹	1,370				Large flow of oil.
Forest ⁸	1,470				Unsuccessful.
Forest (3 miles southwest). ¹⁰	480		Many.	Flows.	White sulphur water.
Kenton ¹⁰	1,600				Unsuccessful.
Do.					Do.
Paterson (2 miles south) ¹¹	1,330				Gas at 835 feet; large flow of water.
Paterson (2 miles west) ¹²	1,300				Large flow of gas; also large flow of water.
Harrison County:					
Archer Township	1,308-1,418				Several wells; some gas.
Cadiz Township	1,400-1,567				Strong flow of brine; no oil.
Cadiz (1 mile north of court-house). ¹³	1,464				Small flow of oil, and considerable gas.
Cadiz (east of) ¹⁴	1,400				Dry hole; first well near Cadiz.
Cadiz (1 mile north) ¹⁵	1,151				3 wells; 2 produce gas.
Cadiz (one-half to 1 mile east). ¹⁵	1,036-1,072				Do.
Cadiz (1 to 2 miles south-east). ¹⁵	1,022-1,144				Do.
Cadiz (1½ to 2 miles east) ¹⁵	1,133-1,220				3 unproductive wells.
Cadiz (1½ to 2 miles northeast). ¹⁵	1,032-1,216				30 wells; some gas and oil.
Cadiz (1 mile northeast) ¹⁵	1,150				Dry.
Celeran Township	1,627				Gas.
Cross Creek Township	1,411				Do.
Fife (vicinity) ¹⁵	1,198				3 wells.
Do. ¹⁶					Many wells.
Fife (1 to 1½ miles west and northwest). ¹⁵	1,081-1,285				
Franklin Township	1,076				
Freeport Township	1,191				
German Township	1,306-1,419				
Germano (vicinity) ¹⁵	1,152				
Germano (1½ miles south). ¹⁵	1,118				
Germano (2 miles southwest). ¹⁵	1,041				
Green Township	1,353-1,680				Many wells; some gas.
Greenough (1 to 1½ miles south). ¹⁵	1,023-1,069				2 wells; unsuccessful.
Greenough (1 mile west). ¹⁵	1,096-1,195				3 dry wells.
Greenough (vicinity) ¹⁵	1,029-1,225				9 wells.
Greenough (½ to 1½ miles north). ¹⁵	1,075-1,230				19 wells; some oil.

¹ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 236.² Ibid., p. 219.³ Ibid., p. 218.⁴ Ibid., Bull. No. 1, 4th ser., 1903, p. 69.⁵ Ibid., Rept., 1888, vol. 6, p. 217.⁶ Ibid., 1890, pp. 219-220.⁷ Ibid., p. 219; 1890, pp. 184-186.⁸ Ibid., p. 223.⁹ Ibid., 1890, p. 186.¹⁰ Ibid., p. 220.¹¹ Record, ibid., Rept. 1888, vol. 6, pp. 221-222.¹² Ibid., p. 222.¹³ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 226.¹⁴ Ibid., pp. 227, 228.¹⁵ U. S. Geol. Surv. Bull. No. 198, 1902, pp. 25-33.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Harrison County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Greenough (1 mile east) ¹					
Greenough (1 or 1½ miles northeast) ¹					
Greenough (1 mile northwest) ¹					
Hopedale (1 mile south) ¹	1,190				
Hopedale (southwest of) ²	1,512				
Hurford (near) ¹	1,148				Dry.
Do.	1,110-1,152				2 wells: some oil.
Jewett (1 to 1½ miles southeast) ¹	1,030-1,212				12 wells.
Means (1 mile northeast) ¹	1,071				
Miller Station (1 mile north) ¹	1,025				
Monroe Township	1,038-1,250				Several wells.
North Township	1,100-1,540				Many gas and oil wells.
Nottingham Township	1,278				Gas.
Ohio Township	1,190				
Rumley Township	1,178-1,300				4 wells.
Scio (near) ³	1,190				Do.
Short Creek Township	1,435-1,580				
Unionvale (vicinity) ¹	1,086				
Unionvale (1½ miles southwest) ¹	1,107-1,213				Some oil with large quantities of salt water.
Unionvale (1 mile north)	1,011				
Washington Township	1,154				
Henry County:					
Deshler ⁴	1,600				Only small flow of gas.
Napoleon ⁵	1,889			+8	For gas; salt water at 1,889 feet.
Highland County:					
Hillsboro ⁶	1,750				Good water at 1,750 feet.
Hocking County:					
Bloomington ⁷	628				Small flow of oil.
Do.					Two borings.
Logan ⁸	625-689				Several wells; some oil, water, and gas.
Do.	1,002				Some oil.
Holmes County:					
Kilbuck (near) ⁹	626-1,000				Several wells.
Millersburg ¹⁰	2,100				
Millersburg (4 miles from).	900-1,000				Gas and oil well.
Millersburg ¹¹	2,100				Oil and gas; free from salt water.
Huron County:					
Bellevue ¹²	1,700				For gas; unsuccessful.
Chicago Junction ¹³	1,250				
Monroeville ¹⁴					Small flow of gas only.
New London ¹⁵	998-1,030				Three wells; nothing found except salt water.
Norwalk ¹⁶	2,304				
Do.	2,725	5½			For oil or gas; unsuccessful. For oil; found salt water only at 1,950 feet.
Wakeman	3,000				
Jackson County:					
Jackson ¹⁷	1,600				Small flow of gas.
Do. ¹⁸	1,636				Some gas; much salt water.
Liberty Township ¹⁸	2,155				Abandoned.
Wellston ¹⁸	800				Small show of oil and gas.
Jefferson County:					
Amsterdam (1 mile southeast) ¹	961				Salt water.
Amsterdam (1 to 1½ miles southwest) ¹	945-1,070				3 wells.
Amsterdam (vicinity) ¹	933				
Bloomfield station (vicinity) ¹	1,067				

¹ U. S. Geol. Surv. Bull. No. 198, 1902, pp. 25-33.² Record, Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 226.³ Ibid., p. 238.⁴ Ibid., Rept. 1888, vol. 6, p. 258.⁵ Ibid., pp. 262-263.⁶ Analysis, ibid., p. 297.⁷ Record, ibid., pp. 393-394.⁸ Ibid., pp. 318, 392-393.⁹ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 287-288.¹⁰ Ibid., Rept., 1888, vol. 6, pp. 367-368.¹¹ Record, ibid., Bull. No. 1, 4th ser., 1903, p. 288.¹² Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 214-215.¹³ Ibid., pp. 350-351.¹⁴ Ibid., pp. 439-440.¹⁵ Ibid., pp. 348-350, 440.¹⁶ Ibid., pp. 440-441.¹⁷ Ibid., pp. 319-394.¹⁸ Ibid., Bull. No. 1, 4th ser., 1903, p. 275.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Jefferson County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Bloomington (1 mile north). ¹	918-939	.....	.....	.....	2 wells; the deeper one is a gas well.
Bloomington (1 mile west). ¹	1,038	.....	.....	.....
Brush Creek Township.	800-1,189	.....	.....	.....	2 wells.
Cross Creek Township.	1,190-1,662	.....	.....	.....	Gas wells.
Fairplay (1 mile northeast). ¹	911	.....	.....	.....
Germano (2 miles northeast). ¹	1,052	.....	.....	.....
Island Creek Township. ²	1,241	.....	.....	.....
Do.	1,050-1,417	.....	.....	.....	4 wells.
Knox Township.	904-1,455	.....	.....	.....	3 wells.
Mount Pleasant Township.	1,620-1,726	.....	.....	.....	2 wells.
Piney Fork (1 mile west). ¹	979	.....	.....	.....
Piney Fork (1½ miles northwest). ¹	988-991	.....	.....	.....	2 wells; some oil.
Richmond (2 miles northeast). ¹	880	.....	.....	.....
Salem Township. ³	1,157	.....	.....	.....
Saline Township.	1,105	.....	.....	.....	Unproductive.
Smithfield Township. ⁴	1,607	.....	.....	.....
Do.	1,451-1,810	.....	.....	.....	5 wells.
Smithfield (1½ miles west). ¹	1,039	.....	.....	.....
Do.	1,033	.....	.....	.....
Smithfield (vicinity). ¹	.....	.....	.....	.....
Smithfield (1 to 1½ miles south). ¹	1,002-1,234	.....	.....	.....	6 wells.
Smithfield (1 mile southeast). ¹	1,073	.....	.....	.....
Smithfield (1½ miles northeast). ¹	918	.....	.....	.....
Smithfield Township.	1,417	.....	.....	.....
Steubenville. ⁵	1,290	.....	.....	.....	Transient gas supply.
Do. ⁶	2,519	.....	.....	.....
Toronto (4 miles west). ⁷	1,455	.....	.....	.....	For oil; unsuccessful.
Warren Township.	1,382-2,519	.....	.....	.....	3 wells.
Knox County:					
Buckeye (east of). ⁸	.....	.....	.....	.....	Gas wells.
Miller Township. ⁹	.....	.....	.....	.....	Several gas wells.
Mount Vernon. ¹⁰	1,370, 1,707, 2,600	.....	.....	.....	3 wells; unsuccessful.
Do. ¹¹	3,200	4½	.....	-100	Gas well; water at 1,725 and 1,765 feet. Unsuccessful.
Do.	2,135	.....	.....	.....
Lake County:					
Painesville. ¹²	700-1,390	.....	.....	.....	Several gas wells.
Willoughby. ¹³	.....	.....	.....	.....	Several small gas wells.
Lawrence County:					
Ironton. ¹⁴	3,600	.....	.....	.....	Unsuccessful.
Licking County:					
Homer. ¹⁵	.....	.....	.....	.....	Several gas wells.
Do. ¹⁶	2,345	.....	.....	.....
Newark. ¹⁷	1,449-2,385	.....	.....	.....	Several gas wells; small flows.
Utica (7 miles west).	2,133	6½	.....	.....	Gas well; water stratum at 215 feet.
Logan County:					
Belle Center. ¹⁸	+1,310	.....	.....	.....	Very small flow of gas.
Bellefontaine. ¹⁹	1,590	.....	.....	.....	Do.
De Graff. ²⁰	1,356	.....	.....	.....	Some oil and gas.
De Graff (1 mile west).	1,300	8-5½	.....	.....
Huntsville.	1,460	.....	.....	.....	Gas well.
Lorain County:					
Belden (near).	.....	.....	.....	.....	Many oil wells.
Brownhelm. ²¹	635	.....	.....	.....	Some oil.
Brownhelm. ²²	740	.....	.....	.....	A little gas and oil.

¹ U. S. Geol. Surv. Bull. No. 198, 1902, pp. 25-33.² Record, Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 245.³ Record, Pa. 2d Geol. Surv. Rept. II, p. 282.⁴ Record, Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 248-249.⁵ Ibid., Rept. 1888, vol. 6, pp. 336-337.⁶ Record, Pa. 2d Geol. Surv. Ann. Rept., 1886, part 2, p. 784.⁷ Pa. 2d Geol. Surv. Rept. I⁵, p. 236.⁸ Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 340-343.⁹ Ibid., Bull. No. 1, 4th ser., 1903, pp. 117, 284-285.¹⁰ Record, ibid., Rept. 1888, vol. 6, pp. 217, 266-267.¹¹ Ibid., 1890, pp. 244-245.¹² Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 427-428.¹³ Ibid., p. 428.¹⁴ Record, ibid., pp. 304-306, 319.¹⁵ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 109.¹⁶ Record, ibid., p. 120.¹⁷ Ibid., Rept. 1888, vol. 6, pp. 317, 370-372.¹⁸ Ibid., p. 267.¹⁹ Ibid., ibid., pp. 266-267.²⁰ Ibid., p. 268.²¹ Record, Pa. 2d Geol. Surv. Rept. II, p. 282.²² Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 437-438.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Lorain County—Continued.					
Brownhelm Township ..	635				Small gas supply and heavy flow of salt and sulphur water.
Elyria ¹	987				
Lorain ²	+600			—50	Mineral water; some gas. Bored for oil; some gas found; unsuccessful.
Sheffield ³	720				
Wellington ⁴	1,030-1,050				Several small gas wells.
Lucas County:					
Oregon Township ⁵					Several unsatisfactory oil wells.
South Toledo ⁶	+1,012				Unproductive.
Toledo ⁷	1,425				Several borings for gas and oil; unsuccessful.
Waterville ⁶	1,153				Small flow of gas.
Madison County:					
Lafayette ⁸					Unsuccessful.
London ⁹	1,585				Several wells for oil or gas.
Plain City ¹⁰	1,530-2,000	8		+13	Two wells; large flows of fine water from 350, 600, and 900 feet.
Mahoning County:					
Brier Hill ¹¹	500				Gas at 420 feet, but not in paying quantities.
Canfield (near) ¹²	600				Only a show of oil.
Lowellsville ¹²	1,800				Neither oil or gas.
West Austintown ¹²	400				Several wells; small quantities of heavy oil.
Youngstown ¹³	2,480				For gas or oil: unsuccessful.
Youngstown (3 miles southwest). ¹²	2,075				Neither oil or gas in commercial quantities.
Youngstown (1 mile west). ¹²	500				Unsuccessful.
Marion County:					
Marion ¹⁴	1,790				Abandoned.
Martel	474				
Prospect ¹⁵	1,650				No product.
Medina County:					
Lodi (near) ¹⁶	1,670				
Medina ¹⁷	917				Small flow of gas.
Meigs County:					
Middletown	950-1,250	3 and 4	Av. 25		Great number of salt-water wells in county.
Milan ¹⁸	1,500				Small amount of oil from 120 to 1,500 feet.
New Lima (near)	1,000				Several wells; all made showing of oil.
Olive Township ¹⁹	2,500				Showing of oil and gas; abandoned.
Pomeroy	1,550		20	-500	Salt well: some oil and gas.
Do	1,100				Several salt wells; flowed originally.
Do ²⁰	767				
Salisbury Township ²¹	1,780				Some gas, small show of oil; abandoned.
Rutland (1½ miles northwest). ²¹	830				Oil in very small quantities; not saved.
Rutland (near) ²¹	1,971				Unsuccessful.
Rutland Township	1,560		10-25	-600	Salt water only.
Mercer County ²²					Many oil and gas wells; 81 per cent are producers.
Celina ²³	1,147-1,168				Gas wells.
Celina (southwest of) ²⁴ ..					Oil well; produced 500 barrels of oil a day at first; one month later it yielded salt water only.

¹ Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 347-348.² Ibid., pp. 438-439.³ Record, *ibid.*, p. 437.⁴ Ibid., pp. 348-349.⁵ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 92-93.⁶ Record, Rept. 1888, vol. 6, p. 225.⁷ Record, *ibid.*, pp. 208-209; Mich. Geol. Surv., 1881-1893, p. 85.⁸ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 219.⁹ Ibid., pp. 280-281.¹⁰ Ibid., 1890, p. 246; U. S. Geol. Surv., 19th Ann. Rept., 1897-98, p. 663.¹¹ Ibid., Bull. No. 1, 4th ser., 1903, p. 299.¹² Ibid., p. 300.¹³ Ibid., Rept. 1888, vol. 6, pp. 321, 402-403.¹⁴ Record, *ibid.*, pp. 201-202.¹⁵ Analysis, *ibid.*, pp. 270-271.¹⁶ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 306.¹⁷ Ibid., Rept. 1888, vol. 6, p. 360.¹⁸ Ibid., Rept. 1888, vol. 6, p. 346.¹⁹ Ibid., Bull. No. 1, 4th ser., 1903, p. 283.²⁰ Ibid., Rept. 1888, vol. 6, p. 397.²¹ Ibid., p. 282.²² Ibid., Bull. No. 1, 4th ser., 1903, pp. 89-92.²³ Record, *ibid.*, Rept. 1888, vol. 6, p. 259-260.²⁴ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 90.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Mercer County—Continued.	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Center Township ¹					Initial production of 1,200 barrels of oil per day, which gradually decreased to a very small amount.
Coldwater (3½ miles east).....	1,100	8-5½		(?) 15	
Fort Recovery ²	1,052				Gas for several months.
St. Henry ³	1,160-1,183				Gas well.
Miami County:					
Covington ⁴					Small supply of gas.
Piqua ⁵	1,673				For gas; unsuccessful.
Tippecanoe ⁶	1,025				Small flow of gas.
Troy ⁶	1,170				Some gas at 510, 680, and 830 feet.
Montgomery County:					
Dayton ⁷	870				Some shale gas.
Do. ⁸	2,440			200	
Miamisburg ⁹	800-1,200				2 gas wells.
Monroe County:					
Barnesville (near) ¹⁰	2,700				Oil well; failure; others sunk later which were fairly successful.
Bethel Township ¹¹	1,810				
Graysville Pool ¹²	1,917				2 oil wells.
	2,025				
Griffith (near) ¹³	1,258				Do.
	2,031				
Lewisville (2 miles north-east of) ¹⁴	1,956				Oil well.
Martins Ferry ¹⁵	2,300				Oil well; failure.
Moose Ridge Pool ¹⁶	1,224				Oil well.
Newcastle (east of) ¹⁷	1,595				Do.
Sardis (southwest of) ¹⁸	1,815				Do.
Sisterville (opposite) ¹⁹	1,895				Do.
Temperanceville (north of) ²⁰	1,631				Oil wells.
	2,200				
Washington Township ²¹	2,234				
Wheeling Township ²²	1,546				Poor oil; wells abandoned.
	1,610				
York Township ²³	2,100-2,300				Several wells.
Morgan County:					
Eaglesport ²⁴	1,134				Salt water; abandoned.
Do. ²⁵	1,152	8-6			Oil rises to -40 feet.
Homer Township ²⁴	612				Gas well.
Do. ²⁵	1,300				
Joy ²⁶	1,240				2 wells; much salt water; only small flow of gas.
McConnellsville.....	3,000				For oil or gas; unsuccessful.
Do. ²⁷	1,330	7½-5½			Gas and salt water.
Do. ²⁷	3,186				For gas; unsuccessful.
Malta ²⁸					Large flow of gas from several wells, for oil or salt.
On Oliver Run ²⁹	413				
Shawnee Junction (near) ³⁰	+1,125				
	+1,175				
	+1,073				For oil or gas, unsuccessful.
Morrow County:					
Cardington ³¹	+2,300				Small flow of gas.
Muskingum County:					
Brush Creek Township ³²	1,010-1,155				Gas, oil, and salt water.
Cass Township.....	768				Oil and brine, well abandoned.

¹ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp 91-92.² Ibid., Rept., 1888, vol. 6, pp. 263-264.³ Ibid., pp. 260-262.⁴ Ibid., 1890, p. 274.⁵ Ibid., Rept., 1888, vol. 6, p. 273.⁶ Ibid., p. 274.⁷ Record, *ibid.*, p. 288.⁸ Ibid., p. 266.⁹ Ibid., pp. 288-289.¹⁰ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 214.¹¹ Record, *ibid.*, p. 208.¹² Ibid., p. 203.¹³ Ibid., p. 201.¹⁴ Ibid., pp. 212-213.¹⁵ Ibid., p. 219.¹⁶ Ibid., pp. 205-206.¹⁷ Ibid., p. 210.¹⁸ Record, W. Va. Geol. Surv. Rept., vol. 1, pp. 356-357.¹⁹ Record, Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 196.²⁰ Ibid., pp. 216-217.²¹ Ibid., p. 220.²² Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 221.²³ Ibid., Rept. 1888, vol. 6, p. 389-390.²⁴ Record, *ibid.*, Bull. No. 1, 4th ser., 1903, pp. 133-134.²⁵ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 139.²⁶ Ibid., Rept. 1888, vol. 6, p. 390.²⁷ Record, *ibid.*, Bull. No. 1, 4th ser., 1903, pp. 145-146.²⁸ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 389.²⁹ Record, *ibid.*, Bull. No. 1, 4th ser., 1903, p. 142.³⁰ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 147-148.³¹ Ibid., Rept., 1888, vol. 6, pp. 283-284.³² Ibid., Bull. No. 1, 4th ser., 1903, p. 267.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Muskingum County—Con'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Dresden ¹	2,525	.....	.....	.....	Unsuccessful.
Do. ²	1,000	.....	.....	.....	Some oil; well abandoned.
High Hill ³	1,700	.....	.....	.....	Salt water; show of gas.
Jackson Township ³	760	.....	.....	.....	Some gas and oil; well abandoned.
Newton Township ³	+ 887	.....	.....	.....	Some oil.
Rich Hill Township ³	1,350	.....	.....	.....	Showing of oil and gas; much salt water.
Salem Township ³	1,176-1,255	.....	.....	.....	Unsuccessful.
Salt Creek Township ³	1,085	.....	.....	.....	3 wells; some oil.
Zanesville ⁴	1,098-2,019	.....	.....	.....
Noble County:					
Belle Valley (near) ⁵.....	.....	.....	.....	.....	Several oil wells.
Dexter (near).....	.....	.....	.....	.....	Gas well.
Dudley (near) ⁵	+1,380	.....	.....	.....
Jackson Township ⁶	747½	.....	.....	.....	2 wells; one dry, other furnished large amount of gas.
Moundsville ⁵.....	.....	.....	.....	.....	Unproductive.
South Olive.....	.....	.....	.....	.....
Ottawa County:					
— ⁷.....	.....	.....	.....	.....	Several oil and gas wells.
Elmore ⁸	+1,250	.....	.....	.....	2 oil wells.
Genoa ⁹	1,308	.....	.....	.....	Small flow of oil and gas.
Lacarne ⁹	1,700	.....	.....	.....	Much water.
Oakharbor ¹⁰	+1,300	.....	.....	.....	Well made showing of oil and furnishes about 78,000 cubic feet of gas a day.
Do. ¹⁰.....	.....	.....	.....	.....	Yielded 200,000 cubic feet of gas a day.
Oberlin.....	700	.....	.....	.....	For oil or gas; unsuccessful.
Port Clinton ¹¹	+1,660	.....	.....	.....	No product.
Perry County:					
Junction City (near) ¹²	+3,100	.....	.....	.....
McCuneville ¹³	1,368	.....	.....	.....	Several wells; bored for salt water; some found.
Somerset ¹⁴	2,850	.....	.....	-400	Salt water at 2,850 feet.
Pickaway County:					
Circleville.....	.....	.....	.....	.....
Pike County:					
Piketon.....	.....	.....	.....	.....
Preble County:					
Camden ¹⁵	900	.....	.....	.....	Gas well.
Eaton ¹⁶	1,170-1,375	.....	.....	.....	Several wells; unsuccessful.
Putnam County:					
Columbus Grove ¹⁷	1,278	.....	.....	.....	Gas at 740 feet; some oil at bottom.
Fort Jennings.....	1,425	8	.....	- 25	Salt water.
Kahda (1 mile north) ¹⁸	1,316	.....	.....	.....	Bored for oil; salt water found.
Leipsic ¹⁹	1,456	.....	.....	.....	Some oil and gas and great volume of salt water.
Ottawa ²⁰	1,314-1,365	.....	.....	.....	Two oil and gas wells; small product; much salt water.
Richland County:					
Crestline ²¹	2,864	.....	.....	.....
Mansfield ²²	2,005-2,415	.....	.....	.....	2 borings for gas; unsuccessful.
Do. ²³	3,594	5-4	.....	.....	Unsuccessful.
Shelby ²⁴	1,480-1,796	.....	.....	.....	Small flow of gas; 2 wells.
Richmond County:					
Plymouth ²⁵	742	.....	.....	.....
Do. ²⁶	3,020	.....	.....	.....	Salt and sulphur water at 850 feet.

¹ Ohio Geol. Surv. Rept., 1890, vol. 6, p. 246.² Ibid., 1888, vol. 6, p. 376.³ Ibid., pp. 268-269.⁴ Ibid., pp. 372-375.⁵ Ibid., Bull. No. 1, 4th ser., 1903, p. 225.⁶ Record, *ibid.*, 1903, pp. 160-161.⁷ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 94-95.⁸ Ibid., Rept. 1888, vol. 6, pp. 211-212.⁹ Ibid., p. 213.¹⁰ Ibid., Bull. No. 1, 4th ser., 1903, p. 94, 1888, vol. 6, p. 210-211.¹¹ Ibid., Rept. 1888, vol. 6, p. 212.¹² Record, *ibid.*, Bull. No. 1, 4th ser., 1903, pp. 118-119.¹³ Ohio Geol. Surv. Rept. for 1888, vol. 6, pp. 388-389.¹⁴ Ibid., 1890, p. 247.¹⁵ Ibid., 1888, vol. 6, p. 285.¹⁶ Ibid., pp. 108, 284.¹⁷ Ibid., p. 242.¹⁸ Record, *ibid.*, p. 243.¹⁹ Ibid., p. 242.²⁰ Ibid., p. 241.²¹ Ibid., pp. 303-304.²² Ibid., pp. 318, 365-366.²³ Ibid., 1890, p. 245.²⁴ Ibid., 1888, vol. 6, pp. 316, 364-365.²⁵ Ibid., p. 315.²⁶ Ibid., pp. 302-303.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Sandusky County ¹					Many oil wells
Clyde ²	1,850				Unsuccessful.
Freemont and vicinity ³	1,300-1,500				Several gas wells.
Do. ⁴	568				Gas well.
Do. ⁵	+1,328				Do.
Gibsonburg ⁶	+1,237				Produced 50 barrels of oil per day.
Do. ⁶					Gas well; pressure of 300 pounds per square inch; other wells completed with similar results.
Lindsey ⁷	1,241-1,300	4			3 oil and gas wells; also flow; salt water in large quantities.
Madison township.					Produced 2,000 barrels of oil a day.
Rollersville (near) ⁸	+1,252				For oil or gas.
Roseville (near) ⁹	1,252				Gas well; original rock pressure exceeded 400 pounds.
Tinney (south of)	1,220	8-5½		-10	For oil or gas.
Washington Township ¹⁰					Gas well; original rock pressure exceeded 400 pounds.
Woodville ¹¹	1,460				For oil or gas; only salt water found.
Do. ¹²	+1,184				Oil in paying quantities.
Woodville (near) ¹³					Produced 2,500 barrels of oil a day.
Scioto County:					No product, but salt water at 1,000 feet.
Portsmouth ¹⁴	2,000				Water.
Rarden	1,710	10		-510	Unsuccessful.
Sciotoville.	800				Many oil and gas wells, 95 per cent producers.
Seneca County ¹⁵					For oil; unsuccessful.
Bloomville ¹⁶	2,150				Several gas wells.
Fostoria ¹⁷	1,136-1,775				Several wells; large flow of gas; some oil.
Tiffin ¹⁸	1,467-1,494				Several borings; all unsuccessful.
Tiffin (vicinity) ¹⁹	1,505-1,753				2 oil wells.
Shelby County:					Several gas wells; much salt water at 1,445 feet.
Kettlersville (near) ²⁰					Some produced oil and gas; all short lived.
Sidney ²¹	1,205-1,250				For oil, but only salt water found.
Stark County:					
Alliance (in and near) ²²	640 to +2,800				
Canton ²³	2,220				
Do.	+3,135				
Louisville ²⁴	825				Gas and salt water.
Louisville (northwest of) ²⁴	+ 690				Gas pressure of 210 and 175 pounds; 2 wells.
Massillon ²⁵	655-1,820				Nothing but salt water.
Do. ²⁶	671				Some oil; also salt water.
Do. ²⁶	2,547				Gas at 655 feet, shut out by salt water.
Myers (1 mile north) ²⁴	797				Slow of gas.
Robertsville (near) ²⁴	680				
Washington Township ²⁴	800				Dry.
	420				Much gas, but well was ruined by salt water.
Summit County:					
Akron ²⁷	2,250				
Do.	2,450				Some gas at 172 feet.
Barberton ²⁸	3,006				For salt.
Coventry Township	800				Cal.
Northfield Township ²⁹	800				

¹ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 71-76.² Record, *ibid.*, Rept. 1888, vol. 6, p. 214.³ *Ibid.*, pp. 183-189.⁴ *Ibid.*, p. 188.⁵ Record, *ibid.*, Bull. No. 1, 4th ser., 1903, p. 74.⁶ *Ibid.*, p. 72.⁷ Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 213, 788-789.⁸ Record, *ibid.*, Bull. No. 1, 4th ser., 1903, p. 74.⁹ *Ibid.*, p. 19.¹⁰ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 72.¹¹ *Ibid.*, Rept. 1888, vol. 6, pp. 213-214.¹² *Ibid.*, Bull. No. 1, 4th ser., 1903, pp. 71-72.¹³ *Ibid.*, p. 75.¹⁴ *Ibid.*, Rept. 1888, vol. 6, p. 395.¹⁵ *Ibid.*, Bull. No. 1, 4th ser., 1903, pp. 76-78.¹⁶ *Ibid.*, Rept. 1888, vol. 6, p. 201.¹⁷ *Ibid.*, pp. 192-193, 146, 234.¹⁸ Record, *ibid.*, pp. 197-201.¹⁹ *Ibid.*, 1890, pp. 784-785.²⁰ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 99.²¹ Record, *ibid.*, Rept. 1888, vol. 6, pp. 264-266.²² Ohio Geol. Surv. Bull. No. 1, 4th ser., p. 298.²³ Record, *ibid.*, Rept. 1888, vol. 6, pp. 359-360.²⁴ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 299.²⁵ *Ibid.*, Rept. 1888, vol. 6, pp. 320, 361.²⁶ *Ibid.*, p. 360.²⁷ Record, *ibid.*, p. 319.²⁸ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 296.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Trumbull County:					
Brookfield ¹	1,800				Dry.
Cortland.....	3,710				Little oil, gas, and salt water at 2,995 feet; top of salt at 3,239 feet.
Niles ²	780-900				2 borings for gas; unsuccessful.
West Mecca (near) ¹	1,100				3 wells; unsuccessful.
	1,300				
	2,300				
Tuscarawas County:					
Canal Dover Township.....	891				Coal and brine.
Canal Dover ³	2,760				Little gas and salt water.
Dennison (near) ⁴	1,400				Small show of gas.
Gilmore (near) ⁴	1,200				Several wells
Mill Township.....	460				
Salem Township ⁵	1,509				Some oil and gas.
Union County:					
Magnetic Springs ⁶	1,600				Salt well.
Marysville ⁷	1,743				For gas or oil: found only water at 300 feet.
Van Wert County:					
Vanwert.....					Several oil and gas wells. ⁸
Do. ⁹	1,240				Very small flow of gas.
Vinton County:					
Brown Township.....	1,000	10-5½			Oil, gas, and salt water.
Eagle Mills.....	600				Salt water.
Hamden.....	780				Nothing but salt water.
Lone Star.....	1,100				Salt water, some oil.
McArthur.....	900-1,000				Fresh and salt waters.
Madison Township.....	1,017	10-5½			Very little oil and salt water.
Sugar Grove (25 miles south). ¹⁰	2,860				
Jackson Township ¹¹	2,449				
Radcliff.....	700 or 800				Water and gas.
Richland Township ¹²	2,340				Gas well.
Swan Township ¹³	2,900				2 wells.
	2,811				
Vinton Township ¹⁴	490-1,057	10-5½			Gas, oil, and salt water.
Do. ¹⁵	1,052				Salt water and gas.
Warren County:					
Lebanon ¹⁶	700-1,300				Small flow of gas; much salt water.
Washington County:					
Aurelius Township.....	1,114				
Belpre ¹⁷	+1,740				
Browns Mills (3 miles southwest). ¹⁸	473				2 wells.
	447				
Cow Run ¹⁹	+1,375				For oil or gas; unsuccessful.
Do. ²⁰	594				Oil well (schoolhouse).
Do. ²¹	+ 423				Oil well.
Elk Run Pool ²²	2,138				Do.
Flint's Mills Pool ²³	1,400				
	1,823				
Lawrence Township ²⁴	1,650-1,800				3 wells, produced small amount of oil.
Do.....	1,017				
Macksburg ²⁵	400-1,700				Large oil field about here.
Do. ²⁶	2,100				Numerous successful wells; gas found also.
Do. ²⁷	2,500				Oil and gas.
Macksburg (near) ²⁸	702				For gas or oil
Do. ²⁹	905				Do.

¹ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 302.² Ohio Geol. Surv. Rept., 1888, vol. 6, p. 401.³ Ibid., Bull. No. 1, 4th ser., 1903, pp. 320, 369-370.⁴ Ibid., p. 289.⁵ Ibid., p. 290.⁶ Record, Ibid., Rept. 1888, vol. 6, p. 269.⁷ Ibid., pp. 269-270.⁸ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 96-99.⁹ Record, Ibid., Rept. 1888, vol. 6, pp. 239-240.¹⁰ Skeleton record, Ibid., Bull. No. 1, 4th ser., 1903, p. 120.¹¹ Record, Ibid., p. 287.¹² Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 277.¹³ Ibid., pp. 278-279.¹⁴ Ibid., Rept. 1888, vol. 6, p. 394.¹⁵ Record, Ibid., Bull. No. 1, 4th ser., 1903, pp. 276-277.¹⁶ Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 295-296.¹⁷ Ibid., p. 218.¹⁸ Record, Ibid., Bull. No. 1, 4th ser., 1903, pp. 135-136.¹⁹ Ibid., pp. 168-169.²⁰ Ibid., pp. 165-166.²¹ Ibid., p. 27.²² Skeleton record, Ibid., p. 186.²³ Record, Ibid., p. 190.²⁴ Ibid., pp. 170-171.²⁵ Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 450-464.²⁶ Ibid., p. 453.²⁷ Record, Pa. Geol. Surv. Rept., Vol. I, pp. 333-334.²⁸ Ibid., p. 28.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Washington County—Cont'd.	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Macksburg (near) ¹	1,695				Many oil wells
Do. ²	1,740-2,940				Oil wells.
Marietta ³	1,440				Gas well.
Marietta (4 miles below). ⁴					
Marietta (near) ⁵	3,015				Much salt water at 1,790 feet.
Do. ⁶	+ 546				For oil or gas.
Marietta ⁷	2,003				Do.
Moores Junction ⁸	2,740				
Newport Township	1,440				Oil well.
Wingett ⁹	601				
Township unknown	+1,687				Gas well.
	1,576				
	2,500				2 oil wells.
Wayne County:					
Orville	604	4½			Brine at 237 and 588 feet.
Wooster ¹⁰	1,805-2,000				3 borings for oil or gas; unsuccessful.
Sterling ¹¹	+ 400				Gas-well boring.
Williams County:					
Bryan ¹²	1,974-2,037				Gas and oil wells; yield small; salt water at 2,037 feet.
Stryker	860				Mineral water at 230 feet.
Wood County ¹³					Many oil wells; 88 per cent producers.
Bairdstown	1,058				Gas wells.
Bairdstown (1½ miles north). ¹⁴	1,154				Gas well.
Bairdstown (near) ¹⁵	1,154				For gas; abandoned.
Bloomdale ¹⁶	1,115				Large flow of gas.
Bowling Green ¹⁷	±1,300				Gas well.
Do. ¹⁸	1,152				Large volume of gas.
Do. ¹⁹	1,648				Oil well.
Bradner ²⁰	1,244				Small flow of oil.
Hammansburg ²¹	1,194				Do.
Haskins					Oil well.
Henry Township ²²	1,125-1,150				Gas wells; some oil.
Do. ²³	1,212-1,295				Oil.
Jerry City ²⁴	1,155				2 wells; one with fair supply of oil.
Liberty Township ²⁵					Produced 10,000 barrels of oil per day.
North Baltimore ²⁶	1,104½-1,295				2 gas and oil wells.
Do. ²⁷	1,190				
Pemberville					Unsuccessful.
Perrysburg ²⁸	+1,600				Several gas wells.
Portage (vicinity) ²⁹	1,177				
Do. ³⁰	1,134				Unsuccessful.
Portage (near)	1,262	8½-6½			Large flow of gas.
Risingsun					Produces 5 barrels of oil a day.
Tontogany (2½ miles southeast).	1,425	8-5½		- 30	Only small flow of oil.
Weston ³¹	1,575				Some salt water, oil, and gas.
Wyandot County ³²					Oil, gas, and sulphur water.
Carey and vicinity ³³	1,326-1,500	5½			Several oil and gas wells.
Little Sandusky	1,450	8-5½		- 40	Several gas wells, some yield large supply.
					Salt water at 25 feet

¹ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 149-160.

² Record, *ibid.*, pp. 161-162

³ Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 368-410.

⁴ Record, W. Va. Geol. Surv. Rept., vol. 1, p. 288.

⁵ *Ibid.*, pp. 286-287

⁶ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, p. 28.

⁷ Record, *ibid.*, pp. 176-178.

⁸ *Ibid.*, p. 175.

⁹ *Ibid.*, p. 190.

¹⁰ *Ibid.*, Rept. 1888, vol. 6, pp. 361-363.

¹¹ U. S. Geol. Surv. Monograph No. 41, p. 558.

¹² Record, Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 247-249, 786.

¹³ Ohio Geol. Surv. Bull. No. 1, 4th ser., 1903, pp. 55-56.

¹⁴ *Ibid.*, Rept. 1888, vol. 6, pp. 229-232.

¹⁵ *Ibid.*, pp. 232-233.

¹⁶ *Ibid.*, pp. 233-234.

¹⁷ *Ibid.*, pp. 156-159, pl., p. 112.

¹⁸ *Ibid.*, p. 160.

¹⁹ Record, *ibid.*, Bull. No. 1, 4th ser., 1903, p. 59.

²⁰ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 207.

²¹ Record, *ibid.*, p. 237.

²² *Ibid.*, pp. 237-238.

²³ Record, Pa. 2d Geol. Surv. Ann. Rept., 1886,

part 2, p. 786.

²⁴ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 233.

²⁵ *Ibid.*, Bull. No. 1, 4th ser., 1903, pp. 61-62.

²⁶ *Ibid.*, Rept. 1888, vol. 6, pp. 228-229; Pa. 2d

Geol. Surv. Rept., 1886, p. 786.

²⁷ Record, *ibid.*, p. 228.

²⁸ *Ibid.*, pp. 225, 788.

²⁹ Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 164-165,

228

³⁰ *Ibid.*, pp. 223-224.

³¹ *Ibid.*, Bull. No. 1, 4th ser., 1903, pp. 95-96.

³² *Ibid.*, Rept. 1888, vol. 6, pp. 203-207; *ibid.*, Bull.

No. 1, 4th ser., 1903, p. 96.

OHIO—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Wyandot County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Nevada ¹	2,000	.....	.....	.....	Nothing but salt water.
Salem Township ²	1,323	.....	.....	.....	Small flow of oil.
Upper Sandusky ³	1,340-1,347½	.....	.....	.....	Two borings for oil or gas; unsuccessful.
Miscellaneous:					3 gas wells.
Oakharbor ⁴	1,326-1,335	.....	.....	.....	For oil or gas; unsuccessful.
Whartonsburg ¹	1,427	.....	.....	.....
Wilmington ⁵.....	.....	.....	.....	.....

¹ Ohio Geol. Surv. Rept. 1888, vol. 6, p. 203.³ Ohio Geol. Surv. Rept., 1888, vol. 6, p. 202.² Record, Pa. 2d Geol. Surv. Ann. Rept., 1886, part 2, pp. 785-786.⁴ Ibid., pp. 210-211.⁵ Ibid., pp. 296-297.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN OHIO.

Report of the Geological Survey of Ohio, volume 6, Economic Geology, 831 pages, plates, Columbus, 1888.

First Annual Report of the Geological Survey of Ohio (third organization), by Edward Orton, State geologist, 323 pages, plates, Columbus, 1890.

Water resources of Indiana and Ohio, by Frank Leverett: U. S. Geological Survey, Eighteenth Annual Report, 1896-97, part 4, pp. 423-559, plates, Washington, 1897.

Rock waters of Ohio, by Edward Orton: U. S. Geological Survey, Nineteenth Annual Report, 1897-98, part 4, pp. 633-717, plates, Washington, 1899.

Oil and gas, by Bownocker: Ohio Geological Survey, Bulletin 1, 4th series, 1903.

Berea grit oil sand in Cadiz quadrangle, Ohio, by W. T. Griswold: U. S. Geological Survey Bulletin No. 198, pages 25-33, 1902.

Glacial formations of Erie and Ohio basins, by Frank Leverett: U. S. Geological Survey Monograph, No. 41, Washington, 1902.

OKLAHOMA.

Location.	Depths.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Beaver County:					
Optima.....	498	.....	.....	.....	No water.
Canadian County:					
Fort Reno.....	1,200	.....	.....	.....
Do.....	1,370	.....	.....	.....	Fresh water at 441 feet.
Do.....	1,445	12-7	.....	No flow.	Alkaline and salty.
Comanche County:					
Lawton (T. 2, R. 11, sec. 22).	600	10-8	.....	.....	No water; natural gas at 350 and 575 feet.
Lawton (T. 2, R. 11, sec. 23).	1,415	.....	.....	.....	Not completed; water sand at 638 and 950 feet; no flow; gas at 600 feet; water at 950 feet would rise about 500 feet; top water soft and fresh, lower is brackish; temperature at mouth, about 60°.
Cleveland County:					
Cleveland.....	504, 520	.....	.....	.....	Bored for oil.
Garfield County:					
Garber (T. 23, R. 3, sec. 18).	600	10	.....	.....	Not completed; no water; excellent samples of oil passed through.
Greer County:					
Granite (T. 5, R. 21, sec. 33).	900	10-6	.....	No flow.	Water found in sand; principal supplies at 15 and 750 feet.
Mangum.....	500	.....	.....	.....	For oil, unsuccessful.
Do.....	400	.....	.....	.....	Abandoned.
Kay County:					
Black well (one-half mile east from post-office).	1,630	4½	.....	- 10	Water salty; vein of salt water at 1,630 feet producing 30 per cent of dry salt of remarkable purity.

OKLAHOMA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Kay County—Continued.					
Blackwell (50 rods northwest).					Gas at 500 and 860 feet.
Newkirk	1,115				Some oil, but not in paying quantities; salt water at various depths.
Kingfisher County:					Large supply of strong salt water.
Kingfisher	600			— 8	
Oklahoma County:					For oil or gas; unsuccessful.
Oklahoma	780				
Osage County:					Oil well.
Pawhuska	1,700				
Pawnee County:					
Cleveland	520			— 40	For oil or gas; salt water at 226 feet.
Pottawatomie County:					For oil or gas.
Shawnee	672				
Woods County:					Hard water, useless for boiler purposes (at depot).
Alva	491				At 280 feet is an 8-foot layer of sand, producing 1 to 3 barrels of oil daily; soft water at 180 feet.
Jet	975				

OREGON.

Baker County:					
Baker City	400		Many.		
Clatsop County:					
Fort Stevens	400				Unsuccessful.
Do	800				Do.
Gilliam County:					Do.
Blalock	400				
Harney County:					
Burns	750	8			Abandoned; only a very small flow at 300 feet.
Morrow County:					
Hepburn	650				
Multnomah County:					
Portland	1,850				
Wasco County:					
The Dalles	1,020	4½-1½			Bored for oil; no water below 350 feet.
A. M. Kelsay's farm	+1,002				Not completed.
Bliss water station	418	4-3½	42	+10	Water tepid.
Cleft water station	425	3	+28	+10	Do.

PENNSYLVANIA.

Adams County—Continued.					
Littlestown	500				
Allegheny County:					
Allegheny	1,760				Salt well.
Do (?)	555-561				2 wells.
Bridgeville (vicinity) ¹	2,250				
Brushton Station	1,615				Unsuccessful.
Carnegie (near)	2,305				Gas well.
Collier Township ²	2,019-2,400				3 wells; 2 gas wells.
Crescent Township ³	2,106				For oil or gas; unproductive.
Dana Township	1,300				Gas.
Demmler	1,600				For oil or gas; abandoned.
Dixmont ⁴	1,802				Oil and gas well.
East Deer Township	1,610-2,334				11 wells, some gas and oil.
Do. ⁵	1,194-1,243				Several gas wells; one abandoned.
Elrod	±1,500				For oil or gas, abandoned.
Do. ⁶	1,486			Flows.	For oil or gas; unsuccessful.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁶, p. 272.² Ibid., pp. 261-262.³ Ibid., pp. 264-265.⁴ Ibid., pp. 257-258.⁵ Ibid., pp. 237-238.⁶ Ibid., 1886, pt. 2, pp. 667-668.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Allegheny County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Elrod (1 mile north) . . .	1,510	.....	.....	.....	For gas; abandoned.
Fawn Township	1,639-1,975	.....	.....	.....	19 wells; some gas and oil.
Do.	2,000-3,118	.....	.....	.....	6 wells; some gas and oil.
Franklin Township ¹ . . .	1,905-2,150	.....	.....	.....	Several oil or gas wells.
Do. ²	1,492 to ±1,500	.....	.....	.....	For oil or gas.
Forward Township (southern part).	2,030-2,385	.....	.....	.....	Many wells; for oil or gas.
Forward Township (near headwaters of Sunfish Run). ³	2,960	.....	.....	.....	Gas well.
Gerties Run ⁴	±1,600	.....	.....	.....	For oil or gas; abandoned.
Gibsonia (one-half mile west). ⁵	2,017	.....	.....	.....	For oil or gas.
Hampton Township	1,300-2,106	.....	.....	.....	6 gas wells.
Harmar Township	1,852-2,300	.....	.....	.....	5 gas and oil wells
Harrison Township ⁶ . . .	1,109-1,200	.....	.....	.....	Several gas wells.
Do.	1,205-2,300	.....	.....	.....	4 wells; some gas.
Homestead (vicinity) ⁷ . .	1,744	.....	.....	.....	For oil or gas.
Hulton Station (near) . . .	.....	.....	.....	.....	For gas; unsuccessful.
Indiana Township	1,541-1,991	.....	.....	.....	20 gas and oil wells.
Do.	2,002-2,418	.....	.....	.....	12 gas and oil wells.
Jacks Run ⁸	1,724	.....	Many.	Flows.	Fresh water at 1,600 feet.
Jefferson Township ⁹ . . .	2,014	.....	.....	.....	Gas well.
Lower Burrell Township . .	1,914	.....	.....	.....	Do.
Lower St. Clair Township . .	1,403	.....	.....	.....	Do.
McCandless Township ¹⁰ . .	2,110	.....	.....	.....	For oil or gas.
McDonald Oil Field ¹¹ . . .	2,342	.....	.....	.....	Gas well.
McKeesport Borough	1,640	.....	.....	.....	.....
Marshall Township ¹² . . .	1,830	.....	.....	.....	.....
Mifflin Township	2,471	.....	.....	.....	Unproductive.
Millvale ¹³	1,655	.....	.....	.....	For oil or gas; unsuccessful.
Monroeville (1 mile southeast). ¹⁴	1,798	.....	Many.	Flows.	Fresh water.
Moon Township ¹⁵	1,800-2,337	.....	.....	.....	Several oil and gas wells.
Neville Island ¹⁶	1,686-1,837	.....	.....	.....	Do.
North Versailles (town- ship). ¹⁷	1,850	.....	.....	.....	.....
Oakdale Station (3 miles north). ¹⁷	2,164	.....	.....	.....	For oil or gas.
O'Harra Township	1,686-1,950	.....	.....	.....	Gas and oil.
Do.	2,182	.....	.....	.....	.....
Do. ¹⁸	1,950-2,060	.....	.....	.....	For oil or gas; unproductive.
Ohio Township ¹⁹	1,715-2,240	.....	.....	.....	Numerous gas and oil wells.
Patton Township	1,798	.....	.....	.....	.....
Penn Township ²⁰	1,750	.....	.....	.....	For oil or gas; unproductive.
Pine Township ²¹	2,010	.....	.....	.....	2 gas and oil wells
Pittsburg (12 miles south- east). ²²	5,575	6½	.....	.....	No water below 1,100 feet; deepest well in the United States.
Pittsburg (Lang avenue and Grazier street). ²³ . .	4,700?	.....	.....	.....	For oil or gas; abandoned.
Pittsburg (Twenty-first Ward).	1,616	.....	.....	.....	Gas well.
Do.	1,620	.....	.....	.....	For oil or gas; abandoned.
Pittsburg (Twenty-fifth Ward). ²⁴	3,000	5½-5½	.....	.....	Large gas well.
Pittsburg (Twenty- fourth Ward). ²⁵	1,826	.....	.....	.....	Gas well.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. I³, pp. 251-254.

² Ibid., Vol. I³, p. 144.

³ Record, U. S. Geol. Surv. Folio No. 94, 1903.

⁴ Record, Pa. 2d Geol. Surv. Ann. Rept., 1886, pt. 2, pp. 742-744.

⁵ Ibid., Vol. I³, p. 242.

⁶ Ibid., pp. 684-686.

⁷ Ibid., pp. 744-746.

⁸ Ibid., pp. 748-749.

⁹ Ibid., pp. 752-753.

¹⁰ Ibid., Vol. I³, p. 254.

¹¹ Record, W. Va. Geol. Surv. Rept., vol. 1, 1899,

pp. 214-226; vol. 1 (a), 1904, pp. 112-114.

¹² Record, Pa. 2d Geol. Surv. Ann. Rept., 1886,

part 2, pp. 242-243.

¹³ Ibid., pp. 741-742.

¹⁴ Ibid., pp. 746-747.

¹⁵ Ibid., Vol. I³, pp. 263-268.

¹⁶ Ibid., pp. 258-260.

¹⁷ Ibid., pp. 262-263.

¹⁸ Ibid., pp. 239-241.

¹⁹ Ibid., pp. 244-251; W. Va. Geol. Surv. Rept.,

vol. 1 (a), 1904, pp. 97-98.

²⁰ Ibid., 1886, part 2, pp. 749-750.

²¹ Ibid., Vol. I³, pp. 243-244.

²² Record, W. Va. Geol. Surv. Rept., vol. 1 (a),

1904, pp. 103-107.

²³ Record, Pa. 2d Geol. Surv. Rept., Vol. I³, pp.

276-277.

²⁴ Ibid., 1886, part 2, pp. 730-732; W. Va. Geol.

Surv. Rept., vol. 1 (a), 1904, pp. 99-101.

²⁵ Ibid., pp. 733-736

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Allegheny County—Cont'd.	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Pittsburg (Fourteenth Ward). ¹	2,007	5½			Dry hole.
Pittsburg (near steel works). ²	2,360				For oil or gas.
Pittsburg (just outside of city).	1,901				Gas well.
Do.	1,600				Small flow of gas.
Pittsburg (Thirty-fourth Ward). ³	2,014	5½			For gas; unsuccessful, owing to salt water.
Pittsburg (Twenty-first Ward). ⁴	1,635				
Pittsburg (Twenty-third Ward).	1,600				For gas; flooded with salt water.
Pittsburg (Thirty-third Ward). ⁵	1,577				For oil or gas; abandoned on account of salt water.
Pittsburg (Fifteenth Ward). ⁶	1,576				For oil or gas; abandoned.
Pittsburg (Twenty-first Ward).	1,575				For gas; flooded with water.
Pittsburg (Twenty-sixth Ward).	1,535				For oil or gas; abandoned on account of salt water.
Pittsburg	2,518				
Richland Township	1,597-1,866				5 gas wells.
Do.	2,014-2,085				3 wells; 2 gas.
Robinson Township ⁷	1,770-2,427				2 oil and gas wells.
Ross Township ⁸	1,915-2,037				3 wells; some gas.
Sewickley Township ⁹	2,008-2,133				Gas and oil wells.
Shaler Township ¹⁰	1,393				For gas; abandoned.
Do.	1,391				Gas.
Do.	1,655-1,949				6 wells; gas and oil.
Do.	2,050-2,250				2 gas wells.
Sharpsburg (near)	2,010				For oil or gas; abandoned.
Snowden Township ¹²	2,348				Gas well.
Sodom (near) ¹³	2,275-2,502				Several gas wells.
South Fayette Township. ¹⁴	2,140				Oil well.
South Versailles Township.	1,500-1,724				3 wells.
Do.	1,550				Gas well.
Do. ¹⁵	1,510-1,624				For oil or gas; abandoned on account of salt water.
Spence Run ¹⁶	1,990				For oil or gas.
Springdale Station (near).	900				For gas; unsuccessful.
Tarentum	+1,160				For gas or oil; abandoned.
Tarentum (vicinity) ¹⁷	482-1,705				Several gas and oil wells; small production.
Tarentum (¾ miles northeast). ¹⁸	2,010				For oil or gas; unproductive.
Toby Township	1,400				
Upper St. Clair Township. ¹⁹	2,442				Gas well.
Do.	2,250-2,502				3 wells; some gas.
Wall Station (near)	1,850		Many.	Flows.	Water charged with soda; temp., 65°-70°; also gas well.
West Deer Township	1,425-1,971				26 wells; principally gas and oil.
Do. ²⁰	2,004-2,243				8 wells; some gas and oil.
Do. ²¹	2,243				For oil or gas, unproductive.
Township unknown	482				
Do.	1,520-1,897				12 wells; some gas.
Do.	2,007-2,425				5 wells; some gas; 3 unproductive.
Do.	3,000-4,618				2 wells; 1 gas, 1 unproductive.
Armstrong County:					
Bethel Township.	1,082-1,168				3 wells; 1 gas.
Do.	1,678-1,940				7 wells; 3 gas.
Do.	2,223-2,273				2 wells; 1 unproductive, 1 gas.

¹ Record, Pa. 2d Geol. Surv. Ann. Rept., 1886, pt. 2, pp. 736-737.² Ibid., Vol. III, pp. 398-400.³ Ibid., 1886, part 2, pp. 739-741; W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 101-103.⁴ Ibid., Vol. I, pp. 275-276.⁵ Ibid., 1886, part 2, p. 738.⁶ Ibid., p. 741.⁷ Ibid., Vol. I, pp. 268-269.⁸ Ibid., pp. 255-257.⁹ Ibid., p. 243.¹⁰ Ibid., 1886, pt. 2, pp. 752-753.¹¹ Ibid., Vol. I, pp. 138-139.¹² Ibid., Vol. I, pp. 273-274.¹³ Ibid., pp. 269-273.¹⁴ Ibid., p. 273.¹⁵ Ibid., 1886, pt. 2, pp. 751-752.¹⁶ Ibid., p. 744.¹⁷ Ibid., Vol. I, pp. 405-408.¹⁸ Ibid., Vol. I, pp. 238-239.¹⁹ Ibid., pp. 271-272.²⁰ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 96-97.²¹ Record, Pa. 2d Geol. Surv. Rept., Vol. I, p. 241.

PENNSYLVANIA—Continued.

Location.	Depth.	Dia- meter.	Yield per minute.	Height of water.	Remarks.
<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Armstrong County—Cont'd.					
Boggs (?) Township	898				6 wells; 3 gas.
Boggs township	772-907				25 wells; 17 gas.
Do.	1,025-1,460				3 wells.
Do.	1,560-1,771				6 wells; 5 gas, 1 unproduc-
Do.	2,270-2,804				tive.
Bradys Bend	+1,089				Oil and gas we'll.
Bradys Bend Township	1,100-1,260				For oil.
Do.	1,456-3,500				9 wells; some oil and gas.
Burrell Township	900				Gas.
Do.	1,172-1,478				29 wells; principally gas.
Do.	1,500-1,980				26 wells; 18 gas.
Do.	2,006-2,819				4 wells; 3 gas, 1 unproduc-
					tive.
Cowanshannock Town-	1,120-1,480				40 wells; 33 gas
ship.					
Do.	1,500-2,040				20 wells; mainly gas.
Criswell (vicinity) ²	1,394-1,618				Oil and gas we'lls.
East Franklin Township.	861-971				5 gas wells.
Do.	1,100-1,470				10 wells; 5 gas.
Do.	1,504-1,892				7 wells; 3 gas, 3 unproduc-
					tive.
Do.	2,266				Gas well.
Farrentown ³	1,140-1,166				Several oil and gas wells.
Fawn Township.	1,147-1,550				Several good gas wells.
Foxburg ⁴	805-944				Small oil wells.
Gilpin Township (?)	1,775				Unproductive.
Do.	1,600-3,211				7 wells; 6 gas, 1 unproduc-
					tive.
Kiskimintus Township.	1,314-2,031				15 wells; some gas and oil.
Kittanning Township.	1,126-1,498				15 gas wells.
Do.	1,511-1,975				23 wells; 22 gas
Do.	2,002-2,195				7 wells; 6 gas, 1 unproduc-
					tive.
Lawrenceburg (south of) ⁵	1,017				10 wells; 7 gas.
Limestone Township (?)	895-1,730				Gas well.
Madison Township	872				18 wells; principally gas.
Do.	1,027-2,505				3 wells.
Mahoning Township	1,725-2,719				25 wells; some gas.
Manor Township	1,175-2,036				38 wells; some gas.
North Buffalo Township.	1,017-2,910				2 wells.
Park Township.	2,000-2,097				Oil well.
Parker City ⁶	850				For gas or oil, 7 wells.
Perry Township ⁷	801-950				Oil and gas well.
Do. ⁸	791				8 wells; some oil.
Do.	1,017-1,621				2 wells.
Pine Township	915-975				11 wells.
Do.	1,000-2,625				Oil and gas wells.
Do. ⁹	1,410-1,693				54 wells; principally gas.
Plum Creek Township.	1,100-2,965				3 wells; 2 gas.
Rayburn Township.	1,228-1,901				10 wells; some gas.
Redbank Township	1,100-2,231				2 wells; 1 gas, 1 unproduc-
South Bend Township.	632, 947				tive.
Do.	1,100-2,078				22 wells; principally gas.
South Buffalo.	1,094-2,890				47 wells; principally gas.
Sugar Creek Township.	1,079-2,525				27 wells; some gas.
Valley Township.	850-900				2 gas wells.
Do.	1,093-1,605				28 wells; principally gas.
Washington Township.	895-900				2 gas wells.
Do.	1,175-2,316				6 wells; 5 gas.
Wayne Township.	775-998				15 wells; 11 gas
Do.	1,004-2,681				39 wells; principally gas.
West Franklin.	908				
Do.	1,149-2,003				15 wells; principally gas.
Do. ¹⁰	2,581-3,517				5 wells.
Beaver County:					
Baden (1 mile north) ¹¹	1,366				For oil or gas.
Beaver Falls ¹²	2,330				For oil or gas; unsuccessful.
Beaver Falls (2 miles above). ¹³	982				Gas well.
Bridgewater (near)					For gas; no supply.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. II, pp.

258-259.

² Ibid., pp. 253-258.³ Ibid., pp. 242-243.⁴ Ibid., pp. 237-238.⁵ Ibid., p. 243.⁶ Ibid., p. 242.⁷ Ibid., pp. 240-241.⁸ Ibid., Vol. III, pp. 416-417.⁹ Ibid., pp. 409-410; Vol. II, p. 277.¹⁰ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 108-112.¹¹ Record, Pa. 2d Geol. Surv. Rept., Vol. I, p. 232.¹² Ibid., Vol. III, pp. 401-404.¹³ Ibid., Vol. I, pp. 142-143.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Beaver County—Continued.					
Darlington ¹	2,444				For oil or gas; unproductive.
Fairoaks ²	1,645				Small oil well.
Fairoaks (vicinity) ³	1,606				Gas well.
Georgetown ³	1,430				For oil or gas; abandoned.
Hanover Township ⁴	1,644				
Homewood station	1,500(?)				For oil or gas.
Homewood station (vicinity). ⁵	925				Do.
Hopewell Township ⁶	1,490-1,572				
Independence Township. ⁷	+1,223				For oil or gas; unproductive.
Moon Township ⁸	1,257-1,680				Several oil or gas wells.
New Sewickley Township. ⁹	1,820				For oil or gas; unproductive.
Rochester ¹⁰	965				For gas and oil.
Smiths Ferry ¹¹	500				For oil or gas; unproductive.
Bedford County:					
Osterburg (2 miles northwest).	800			+3	
Blair County:					
Altoona	2,006				Abandoned.
Bradford County:					
Hollenback	600				
Bucks County:					
Doylestown	750				
Revere ¹²	2,084				Dry.
Butler County:					
Adams Township	1,900				Unproductive.
Do.	1,285-1,831				56 wells; oil and gas.
Allegheny Township ¹³	1,055-1,408				Oil and gas wells.
Brady Township ¹⁴	1,458-1,596				For oil.
Brewster Field	1,640				
Buffalo Township	1,480-2,818				33 wells; mostly gas and oil.
Do.	3,055				Unproductive.
Butler ¹⁵	3,055				For oil or gas; abandoned.
Do.	1,500-1,950				Several oil and gas wells.
Butler (3 miles south).	3,008	5			
Do. ¹⁶	1,500-1,795				Gas and oil wells.
Butler Township ¹⁷	1,524-1,637				For oil.
Do.	1,420-1,498				9 wells; 6 oil.
Do.	1,893-3,008				Many wells; mostly gas and oil.
Center Township	1,640				
Clearfield Township ¹⁸	1,558-1,925				Several oil and gas wells; one unsuccessful.
Do.	400				Oil.
Do.	2,612				Gas.
Clinton Township	1,140-2,709				34 wells, oil and gas; some unproductive.
Concord Township	1,120-1,676				8 wells.
Counoquenessing Township.	1,072-1,857				129 wells; gas and oil; some unproductive.
Cranberry Township	1,124-1,746				18 wells; oil and gas.
Donegal Township	685				
Do.	1,362-1,491				18 wells; 6 oil.
Do. ¹⁹	1,565-1,740				Many oil and gas wells.
Euclid Township					
Fairview Township	460-900				2 wells.
Do. ²⁰	1,421-1,694				Numerous oil and gas wells.
Do.	1,341-2,460				58 wells; 26 oil.
Do. ²¹	2,257				Well No. 1 on M. G. Black farm.
Forward Township ²²	1,553-1,683				Oil and gas wells.
Do.	1,096-1,499				159 wells; 1 gas, 119 oil, 13 oil and gas.

¹ Record, Pa. 2d Geol. Surv. Ann. Rept., 1886, part 2, pp. 780-781.² Ibid., Vol. I⁵, pp. 232-233.³ Ibid., p. 233.⁴ Ibid., pp. 235-236.⁵ Ibid., Vol. QQ, pp. 250-251.⁶ Ibid., Vol. I⁵, pp. 234-235.⁷ Ibid., 1886, part 2, pp. 779-780.⁸ Ibid., pp. 688-689.⁹ Ibid., Vol. I⁵, pp. 231-232.¹⁰ Ibid., Vol. II, pp. 279-280.¹¹ Ibid., pp. 281-282.¹² Record, Ann. Phil. Soc. Trans., vol. 29, pp. 21-24.¹³ Record, Pa. 2d Geol. Surv. Rept., Vol. II, pp. 238-240.¹⁴ Ibid., Vol. G4, pp. 150-151; Vol. III, pp. 418-419.¹⁵ Ibid., Vol. I⁵, pp. 193-194.¹⁶ Ibid., pp. 209-210.¹⁷ Ibid., 1886, part 2, pp. 711-718.¹⁸ Ibid., p. 178; Vol. II, pp. 266-268.¹⁹ Ibid., Vol. I⁵, pp. 199-203; Vol. II, pp. 263-265.²⁰ Ibid., Vol. II, pp. 246-262.²¹ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 94.²² Record, Pa. 2d Geol. Surv. Rept., Vol. I⁵, p. 208.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Butler County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Forward Township.....	1,500-1,809	.....	.....	.....	88 wells; 2 gas 51 oil, 4 oil and gas.
Do.....	2,625	.....	.....	.....	Oil and gas.
Great Belt City (vicinity). ¹	1,875	.....	.....	.....
Greece City (3 miles west). ²	1,500	.....	.....	.....	For oil or gas; unproductive.
Greece City (vicinity). ³	1,423-1,530	.....	.....	.....	Several oil and gas wells.
Harrisville (vicinity). ⁴	880-1,367	.....	.....	.....	For gas or oil.
Herman. ⁵	1,784-1,901	.....	.....	.....	Several oil and gas wells.
Jackson Township.....	1,088-1,756	.....	.....	.....	80 wells; principally gas and oil.
Jefferson Center. ⁶	1,732	.....	.....	.....	Oil well.
Jefferson Township.....	1,494-1,959	.....	.....	.....	59 wells; gas and oil.
Karns City (one-half mile south). ⁷	1,454	.....	.....	.....
Lardens Mills. ⁸	1,140	.....	.....	.....	Gas well.
(?) Lower Burrell Township.	1,779	.....	.....	.....
Marion Township. ⁹	765	.....	.....	.....
Mars station (near). ¹⁰	1,900	.....	.....	.....	For oil or gas; unproductive.
Mercer Township.....	880-948	.....	.....	.....	3 wells.
Do.....	1,367	.....	.....	.....
Middlesex Township. ¹¹	1,785-1,930	.....	.....	.....	Several oil and gas wells.
Oakland Township.....	1,248-2,027	.....	.....	.....	17 wells; gas and oil.
Oneida station (1½ miles east). ¹²	2,135	.....	.....	.....	Gas well.
Parker Township. ¹³	1,183-1,418	.....	.....	.....	For oil; 3 wells.
Do.....	2,073-2,356	.....	.....	.....	2 wells.
Penn Township.....	1,164-1,482	.....	.....	.....	13 wells; principally oil.
Do. ¹⁴	1,528-1,825	.....	.....	.....	Numerous oil and gas wells; some good producers.
Petrolia (vicinity). ¹⁵	1,400-1,631	.....	.....	.....	Numerous gas and oil wells.
Reibold. ¹⁶	1,707-1,711	.....	.....	.....	2 oil wells.
Reibold (north of).....	1,738	.....	.....	.....
Renfrew (near).....	1,780	8½-6½	.....	.....	Produces 11 barrels of oil a day; water-bearing strata at 170 and 600 feet.
Rough Run District.	1,380	.....	.....	.....
St. Joe (vicinity). ¹⁷	1,445-1,577	.....	.....	.....	Gas wells.
Sarvers station. ¹⁸	3,055	.....	.....	.....	For oil or gas; abandoned
Do. ¹⁹	1,930	.....	.....	.....
Saxon station. ²⁰	1,857	.....	.....	.....	Gas well.
Saxonburg (2 miles west). ²¹	1,825	.....	.....	.....	For oil or gas.
Slippery Rock Township. ²²	1,411	.....	.....	.....	Do.
Do. ²³	1,400-1,436	.....	.....	.....	For oil; unproductive.
Do.....	2,135	.....	.....	.....
Summit. ²⁴	1,822	.....	.....	.....	Gas well.
Summit Township. ²⁵	1,735	.....	.....	.....	Oil well.
Do.....	1,080-2,527	.....	.....	.....	Many wells; oil and gas mostly.
Wicks station. ⁹	912	.....	.....	.....
Winfield (south of).....	1,956	.....	.....	.....	Gas well.
Winfield Township.....	400	.....	.....	.....
Do. ²⁶	1,685	.....	.....	.....	For oil or gas; unsuccessful.
Do.....	1,030-2,680	.....	.....	.....	61 wells; principally gas; very little oil.
Cambria County:					
Cambria Township.....	1,000	.....	.....	.....
Cambria Mill. ²⁷	653 ⁷	.....	.....	.....	Gas well.
Cherry Tree Borough. ²⁸	653	.....	.....	.....	Do.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. I, p. 138.² Ibid., p. 141.³ Ibid., Vol. II, pp. 247-248.⁴ Ibid., 1886, part 2, pp. 718-719.⁵ Ibid., Vol. I, pp. 195-197.⁶ Ibid., 1886, part 2, pp. 716-717.⁷ Ibid., Vol. II, pp. 262-263.⁸ Ibid., pp. 270-271.⁹ Ibid., 1886, part 2, p. 720.¹⁰ Ibid., Vol. I, p. 210.¹¹ Ibid., Vol. II, p. 271; Vol. I, pp. 197-198; Vol. III, pp. 404-405.¹² Ibid., 1886, part 2, pp. 717-718.¹³ Ibid., Vol. II, pp. 243-246.¹⁴ Ibid., 1886, part 2, pp. 713-716; Vol. I, pp. 203-208; W. Va. Geol. Surv. Rept., vol. I (a), 1904, pp. 95-96.¹⁵ Ibid., Vol. II, pp. 260-261, 283-296; W. Va. Geol. Surv. Rept., vol. I (a), 1904, pp. 89-93.¹⁶ Ibid., Vol. I, pp. 194-195.¹⁷ Ibid., 1886, part 2, pp. 713-714; Vol. I, p. 138.¹⁸ Ibid., Vol. I, pp. 193-194.¹⁹ Ibid., p. 194.²⁰ Ibid., Vol. II, p. 269.²¹ Ibid., p. 270.²² Ibid., Vol. II, p. 154.²³ Ibid., Vol. I, pp. 143-144; Vol. I, 417-418.²⁴ Ibid., Vol. I, p. 404.²⁵ Ibid., Vol. II, pp. 268-269.²⁶ Ibid., p. 716.²⁷ Ibid., Vol. II, pp. 176-180.²⁸ Ibid., Vol. I, p. 146.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Cambria County—Cont'd.					
Cresson ¹	677				For oil.
Ebensburg.....	1,000	5½	Many.	No flow.	
Johnstown ²	2,856				For oil or gas; unproductive.
Johnstown (4 miles west) ³	2,500				Do.
Taylor Township.....	2,500				Unproductive.
Cameron County:					
Cameron station (one-half mile northeast). ⁴	971				For oil.
Emporium ⁵	1,410				Do.
Do.....	+400				
Emporium (4 miles northwest). ⁶	1,607				For oil or gas; unproductive.
Chester County:					
Parkesburg ⁷	522				
Clarion County:					
Ashland Township ⁸	1,128				Do.
Beaver Township ⁹	1,001-1,200				For oil or gas.
Brush Run ¹⁰	1,047-1,636				Oil and gas wells.
Clarion ¹¹	1,238-1,367				Several oil wells; one unproductive.
Clarion (near).....	1,311				
Cooksburg (vicinity) ¹²	843-2,050				For oil or gas; one unproductive.
Crown Township.....	1,082				
Edenburg ¹³	1,268				Good oil well.
Edenburg (1 mile southeast). ¹⁴	1,046				
Elk Township ¹⁵	977-1,450				Several oil or gas wells; some unproductive.
Do.....	2,025				
Farmington Township.....	2,050				
Knox Township.....	1,207				
Madison Township.....	1,052-3,513				6 wells; some gas.
Mill Creek Township ¹⁶	2,323				For oil or gas; unproductive.
Do.....	1,367				
Millville ¹⁷	2,280				Oil and gas well.
Piney Township.....	992				Oil.
Richland Township ¹⁸	1,040-1,700				Several oil wells.
Salem Township ¹⁹	1,198-1,300				Oil and gas wells.
Scotts Hill (near).....	2,378				
Shippensburg (1½ miles south). ²⁰	2,025				For oil or gas; unproductive.
Sligo ²¹	1,151				Oil well.
Snydersburg ²²	1,207				Do.
Toby Township ²³	1,400	8			Do.
Turkey City (near) ²⁴	1,150				For oil or gas.
Township unknown.....	944				
Do.....	1,046-1,427				3 wells.
Do.....	1,636				
Do.....	2,130-2,280				2 wells.
Do.....	2,712				
Clearfield County:					
Clearfield (2 miles southwest). ²⁵	2,900				For oil or gas; unproductive.
Dubois Station ²⁶	3,020				Do.
Dubois.....	3,006				For oil; unsuccessful.
Jordan Township.....	454-617				2 wells.
Clinton County:					
Crawford Township.....	458				Coal prospect; unsuccessful.
Gallagher Township.....	3,525				
Hammersley Fork.....	-1,800				For oil.
Humes station (near) ²⁷	1,821				For oil or gas; unproductive.
Lockhaven.....	3,525	6½			For oil or gas; unsuccessful.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. HH, p. 30.² Ibid., Vol. I⁵, pp. 169-170.³ Ibid., pp. 170-171.⁴ Ibid., Vol. RR, part 2, p. 23; Vol. G⁴, p. 138.⁵ Ibid., Vol. G⁴, p. 140.⁶ Ibid., p. 141.⁷ Record, Am. Phil. Soc., Proc., vol. 29, pp. 45-46.⁸ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁵, p. 230.⁹ Ibid., Vol. II, pp. 228-229.¹⁰ Ibid., Vol. I⁵, pp. 235-236.¹¹ Ibid., pp. 157-159; Vol. III, pp. 413-414.¹² Ibid., Vol. I⁴, pp. 140-141.¹³ Ibid., pp. 139-140.¹⁴ Ibid., Vol. II, p. 229.¹⁵ Ibid., pp. 230-232; Vol. III, pp. 415-416.¹⁶ Ibid., Vol. II, pp. 232-234.¹⁷ Ibid., Vol. III, pp. 411-412.¹⁸ Ibid., Vol. II, pp. 226-227.¹⁹ Ibid., pp. 227-229.²⁰ Ibid., Vol. I³, pp. 414-415.²¹ Ibid., Vol. G⁴, pp. 149-150; Vol. II, pp. 234-235.²² Ibid., Vol. G⁴, p. 149; Vol. I⁴, p. 140.²³ Ibid., Vol. I³, pp. 412-413.²⁴ Ibid., Vol. II, p. 227.²⁵ Ibid., Vol. I⁵, pp. 166-167.²⁶ Ibid., pp. 165-166.²⁷ Ibid., p. 197.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Clinton County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Renovo.....	4,000	.....	.....	—600	For oil; unsuccessful.
Do.....	3,460	.....	.....	.....	Gas well.
Do.....	450-1,350	.....	.....	.....	For oil or gas.
Columbia County:					
Montana.....	717-722	2	.....	.....	.....
Crawford County:					
Black Ash ¹	777	.....	.....	.....	For oil or gas; abandoned.
Bloomfield Township ²	590-1,000	.....	.....	.....	Several oil wells
Do.....	975	.....	.....	.....	.....
Church Run ³	415-700	.....	.....	.....	Do.
Do.....	698-814	.....	.....	.....	3 wells.
Concord Township ⁴	845	.....	.....	.....	Oil and gas well.
Conneautville (1 mile below). ⁵	750	.....	.....	.....	For oil or gas.
Dicksonburg.....	680?	.....	.....	.....	Oil well.
Meadville ⁶	900	.....	.....	.....	Several oil wells in this vicinity.
Meadville (near) ⁷	+475	.....	.....	.....	.....
Oil Creek Township.....	3,500	.....	.....	.....	For oil.
Do.....	550-971	.....	.....	.....	3 wells.
Randolph (vicinity) ⁸	565-950	.....	.....	.....	Several oil wells
Reeds Corners ⁹	500	.....	.....	.....	For oil or gas; abandoned.
Richmond Township.....	900	.....	.....	.....	Oil and gas well.
South Shenango Township. ¹⁰	1,065	.....	.....	.....	Oil well.
Sparta Township ¹¹	465-1,507	.....	.....	.....	Several oil and gas wells; some productive.
Spartansburg (2½ miles southeast). ¹²	745	.....	.....	.....	Gas well.
Spring Township.....	512	.....	.....	.....	Do.
Titusville.....	600	10	.....	.....	.....
Titusville (near) ¹³	3,553	.....	.....	.....	For oil or gas.
Titusville (vicinity) ¹⁴	400-806	.....	.....	.....	Numerous oil and gas wells.
Troy Township.....	500-1,700	.....	.....	.....	Several oil and gas wells; some unproductive.
Tryonville (vicinity).....	600-1,000	.....	.....	.....	Oil and gas wells.
Wayne Township ¹⁵	600-1,100	.....	.....	.....	Several oil and gas wells.
Woodcock Township.....	+600	.....	.....	.....	For oil; unsuccessful.
Cumberland County:					
Carlisle (1½ miles southeast).....	864	5-4½	.....	.....	.....
Carlisle (5 miles west).....	420	5-4½	.....	.....	.....
Riverton (?).....	485	5	.....	.....	.....
Dauphin County:					
Fort Hunter.....	2,675	6	.....	.....	Abandoned.
Harrisburg.....	2,800	6	.....	.....	For gas; abandoned.
Do.....	+400	.....	.....	.....	2 wells.
Middletown ¹⁶	2,440	.....	.....	.....	Gas accompanied by strong flow of water.
Delaware County:					
Eagle Station.....	1,700	.....	Few.	.....	.....
Radnor Station.....	500	12	.....	.....	Abandoned.
Do.....	975	12-8	40-50	Pumped.	Probably surface water.
Elk County:					
Benezette ¹⁷	721	3	.....	.....	For oil or gas; abandoned.
Dennis Run.....	424-632	.....	.....	.....	13 wells.
Highland Township ¹⁸	2,095-2,448	.....	.....	.....	Many oil and gas wells; some abandoned.
Johnsonburg Station ¹⁹	2,510	.....	.....	.....	Large gas well.
Jones Township ²⁰	1,335-1,756	.....	.....	.....	2 oil wells; 1 abandoned.
Maxwell Run.....	2,445	.....	.....	.....	.....
Millstone Township.....	1,805-2,326	.....	.....	.....	3 wells; some gas.
Ridgway ²¹	1,820	.....	.....	.....	Small gas well.
Do. ²²	772	.....	.....	.....	.....
Ridgway Township ²³	1,678	.....	.....	.....	For oil; unsuccessful.
Do.....	2,510	.....	.....	.....	Gas well.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. I³, p. 186.² Ibid., Vol. Q, pp. 224-226; Vol. II, pp. 273-274.Vol. I⁴, p. 119.³ Ibid., Vol. II, pp. 66-69.⁴ Ibid., Vol. Q⁴, p. 212.⁵ Ibid., pp. 216, 234-236.⁶ Pa. 2d Geol. Surv., Reports, Vol. Q⁴, p. 175.⁷ Record, U. S. Geol. Surv. Monograph No. 41, pp. 457-458.⁸ Record, Pa. 2d Geol. Surv. Rept., Vol. Q⁴, pp. 178-179.⁹ Ibid., p. 212.¹⁰ Ibid., p. 153.¹¹ Ibid., Vol. I³, pp. 186-187; Vol. Q⁴, p. 227.¹² Ibid., Vol. II, p. 69; Am. Philos. Soc. Proc., vol. 16, p. 493.¹³ Ibid., Vol. Q⁴, p. 184; Vol. I³, p. 154; Vol. I⁴, p. 284.¹⁴ Ibid., Vol. I⁴, pp. 118-119; Am. Philos. Soc.

Proc., vol. 16, pp. 490-493.

¹⁵ Ibid., Vol. Q⁴, pp. 122-125.¹⁶ Record, U. S. Geol. Surv. Folio No. F².¹⁷ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁴, pp.

133-134; Vol. R.R., p. 248.

¹⁸ Ibid., 1886, part 2, pp. 707-709; Vol. I³, p. 155.¹⁹ Ibid., pp. 710-711.²⁰ Ibid., Vol. I⁴, pp. 127-128.²¹ Ibid., 1886, pt. 2, p. 711.²² Ibid., Vol. G⁴, pp. 142-143.²³ Ibid., pp. 129-131.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Elk County—Continued.					
St. Marys (west of) ¹	2,010				Gas well.
Spring Creek Township ²	880				For oil; unsuccessful.
Do.....	1,302				
Do.....	2,257				
Do.....	2,725				
Wilcox (4½ miles north) ³	1,850				Small oil well.
Erie County:					
Amity Township.....	500-630				Several oil and gas wells.
Corry ⁴	2,340				Gas and oil well.
Erie ⁵	4,460				For oil or gas; abandoned.
Do. ⁶	1,250-1,418				Gas wells.
Do.....	470-800				Numerous gas and oil wells.
Fairview Township ⁷	700-1,000				Several gas wells.
Girard Township ⁸	980				For oil; unsuccessful.
Greenfield.....	780				Large gas well.
Leboeuf.....	780				Oil and gas well.
Springfield Township.....	400				For oil; unsuccessful.
Summit Township.....	400				Gas well.
Wayne Township.....	600				Gas and oil well.
Union City ⁹	1,523				For oil or gas; unsuccessful.
Union Township.....	1,600				For oil; unsuccessful.
Waterford (2 miles west).....	650				Oil and gas wells.
Fayette County:					
Belle Vernon ¹⁰	2,005				Small gas well.
Brownsville ¹¹	+2,106				Gas well.
German Township ¹²	1,196				Do.
Do.....	2,525				
Do ¹³	2,907				
Haddenville ¹⁴	1,712				Gas well; only small amount of gas.
Layton station ¹⁵	2,100				For oil or gas; unproductive.
McClellandtown (1 mile southeast). ¹⁶	1,196				Gas well.
Masonstown ¹⁷	2,525				Do.
Do. ¹⁸	870-2,327				Many wells; gas, oil, and brine.
Menallen Township.....	1,712				
New Geneva (2½ miles southeast). ¹⁹	2,050				
Oldframe (1 mile west) ¹⁹	1,265				
Redstone Township.....	522				
Smithfield (1 mile north) ¹⁹	1,858				Show of gas at bottom of well.
South Union Township.....	744				
Tyrone Township.....	2,100				Unproductive.
Uniontown (3 miles northwest). ²⁰	2,001				Gas well.
Upper Middletown ²¹	2,440				For oil or gas; unproductive.
Washington Township.....	2,005				Gas well.
Township unknown.....	2,106				Do.
Forest County:					
Barnet Township ²²	2,428				For oil or gas, unsuccessful.
Do.....	1,778-2,725				3 wells.
Barnet Township (40 rods from Clarion River). ²³	2,726				
Brookston.....	2,200				For oil or gas; unsuccessful.
Cooksburg ²³	2,100-2,726				Do.
Delight (near) ²⁴	1,225	8-5½			Gas well; hard water at 80 feet.
Howe Township ²⁴	1,475-1,985				Several oil wells.
Do. (?) ²⁵	2,233				

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. 14, pp. 131-132.² Ibid., pp. 132-133.³ Ibid., Vol. G4, pp. 143-146.⁴ Ibid., Vol. 14, p. 228.⁵ Ibid., Vol. 15, pp. 187-192.⁶ Ibid., Vol. 14, pp. 122-290.⁷ Ibid., Vol. G4, pp. 262-263.⁸ Ibid., p. 259.⁹ Ibid., Vol. 14, p. 121.¹⁰ Ibid., 1886, part 2, pp. 778-779.¹¹ Ibid., Vol. 15, pp. 317-318.¹² Ibid., pp. 321-322.¹³ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 115-116.¹⁴ Record, U. S. Geol. Surv. Folio No. 82, p. 18.¹⁵ Record, Pa. 2d Geol. Surv. Rept., Vol. 14, pp. 318-319.¹⁶ Record, U. S. Geol. Surv. Folio No. 82, pp. 18-19.¹⁷ Record, Pa. 2d Geol. Surv. Rept., Vol. 14, pp. 322-323.¹⁸ U. S. Geol. Surv. Folio No. 82, 1902, p. 20.¹⁹ Record, ibid., p. 19.²⁰ Record, Pa. 2d Geol. Surv. Rept., Vol. 14, pp. 320-321.²¹ Ibid., p. 319.²² Ibid., p. 154.²³ Ibid., pp. 159-161.²⁴ Ibid., Vol. 14, pp. 79-81; 1886, part 2, p. 700.²⁵ Ibid., 1886, part 2, pp. 700-701.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Forest County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Jenks Township ¹	400-1,003	.....	.....	.....	Several gas or oil wells; unproductive.
Do. ²	1,310-2,505	.....	.....	.....	Several wells; mainly unproductive.
Do. ³	2,630	.....	.....	.....	For oil or gas; unproductive.
Kingsley Township ³	2,200	.....	.....	.....	For oil or gas; unproductive.
Marienville (near) ⁴	1,305	.....	.....	.....	Numerous oil and gas wells; some unproductive.
Neiltown (vicinity) ⁵	780-995	.....	.....	.....	Oil and gas well.
Tionesta (near) ⁶	437	.....	.....	.....	For oil or gas; unproductive.
Tionesta Township ⁷	554-2,177	.....	.....	.....	3 wells.
Do. ⁸	2,055-2,425	.....	.....	.....	Water at 420 feet.
Franklin County:					
Chambersburg.....	+400	.....	.....	.....
Chambersburg (2 miles west). ⁹	600	6	.....	-17	
Greene County:					
Aleppo Township ⁸	3,030-3,343	.....	.....	.....	6 wells; gas and oil.
Blacksville ⁹	500?	.....	.....	.....	For oil.
Carmichaels (vicinity) ¹⁰	2,432	.....	.....	.....	For oil or gas.
Center Township.....	805	.....	.....	.....	Gas well.
Do. ¹¹	2,980	.....	.....	.....	Oil well.
Do. ¹²	3,046-3,267	.....	.....	.....	2 gas wells.
Cumberland Township.....	2,432	.....	.....	.....
Deep Valley (near) ¹¹	3,398	.....	.....	.....	2 wells.
Dunkard Township.....	3,478	.....	.....	.....	Many oil and gas wells; some unproductive.
Do. ¹³	798-2,620	.....	.....	.....	8 wells; 5 gas, 2 unproductive.
Franklin Township.....	400-888	.....	.....	.....	50 wells; principally gas.
Do. ¹⁴	1,931-3,353	.....	.....	.....	Oil and gas well.
Greene Township.....	731	.....	.....	.....
Do. ¹⁵	2,165	.....	.....	.....	Oil well.
Greensboro ¹²	668	.....	.....	.....	Do.
Greensburg (4 miles southwest). ¹³	769	.....	.....	.....	For oil; unsuccessful.
Higbee (near).....	3,337	10-5	.....	.....	Pittsburg coal at 1,022 feet; brine at 1,862 feet.
Do. ¹⁶	3,076	13-5	.....	.....	For oil; Pittsburg coal at 927 feet.
Jackson Township.....	3,125-3,211	.....	.....	.....	3 wells; unproductive.
Jefferson ¹⁴	2,658	.....	.....	.....	Gas well.
Jefferson Township.....	2,050	.....	.....	.....	4 wells; 3 gas.
Do. ¹⁷	2,920-3,182	.....	.....	.....
Jollytown (2 miles northeast). ¹⁵	3,278	.....	.....	.....
Jollytown (3 miles west). ¹⁵	3,477	.....	.....	.....
Mount Morris (near) ¹⁶	1,772	.....	.....	.....	Oil well.
Do. ¹⁷	1,905	.....	.....	.....	For oil.
Morgan Township.....	750	.....	.....	.....	Gas well.
Do. ¹⁸	2,606-3,273	.....	.....	.....	11 wells; mostly gas.
Morris Township.....	825-980	.....	.....	.....	3 wells; 2 oil, 1 unproductive.
Do. ¹⁹	1,010-3,290	.....	.....	.....	22 wells; oil and gas, some unproductive.
Do. ²⁰	2,965	13-6	.....	.....	Gas well; Pittsburg coal at 935 feet, gas at 2,940 feet.
New Freeport (3½ miles southwest). ¹⁸	3,466	.....	.....	.....
Nineveh (vicinity) ¹⁹	2,970-3,221	.....	.....	.....	Several wells.
Perry Township.....	1,730-3,261	.....	.....	.....	6 wells; gas and oil.
Richhill Township.....	2,424-3,413	.....	.....	.....	9 wells; gas and oil, 1 unproductive.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. 14, pp. 81-83.² Ibid., pp. 83-86; 1886, part 2, pp. 702-705.³ Ibid., 1886, part 2, pp. 703-704.⁴ Ibid., Vol. G¹, pp. 146-147.⁵ Ibid., Vol. I⁴, pp. 69-77.⁶ Record, Am. Philos. Soc. Proc., vol. 16, p. 488.⁷ Pa. 2d Geol. Surv. Rept., Vol. I⁴, pp. 77-79; 1886,

part 2, p. 705-707.

⁸ Record, W. Va. Geol. Surv. Rept., vol. 1 (a),

1904, p. 129.

⁹ Record, Pa. 2d Geol. Surv. Rept., Vol. K, pp.

108-109.

¹⁰ Ibid., Vol. I⁵, pp. 315-316.¹¹ Record, W. Va. Geol. Surv. Rept., vol. 1 (a),

1904, p. 128-129.

¹² Record, Pa. 2d Geol. Surv. Ann. Rept., 1886, part 2, p. 774.¹³ Ibid., Vol. I⁴, p. 145.¹⁴ Ibid., Vol. I⁵, pp. 314-315.¹⁵ Record, W. Va. Geol. Surv. Rept., vol. 1 (a),

1904, p. 127.

¹⁶ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁵, pp.

316-317.

¹⁷ Record, Bull. Geol. Soc. Am., vol. 3, p. 189;

U. S. Geol. Surv. Folio No. 82, p. 19.

¹⁸ Record, W. Va. Geol. Surv. Rept., vol. 1 (a),

1904, pp. 129-130.

¹⁹ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁵, pp.

308-312; W. Va. Geol. Surv. Rept., vol. 1 (a), 1904,

pp. 130-131.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Greene County—Continued.					
Ryerson station (north of). ¹	2,716				For oil or gas.
Springfield Township...	3,146				Gas
Spring Hill Township...	3,434	10-5			Gas at 3,369 feet; pressure 900 pounds.
Do.....	3,234	10-5			Gas at 3,183 and 3,228 feet.
Washington Township...	962				Oil.
Do.....	2,871-3,441				7 wells; 1 oil, 3 gas, 3 unproductive.
Wayne Township.....	605-852				8 wells; 1 gas, 4 unproductive.
Do.....	2,020-3,780				18 wells; principally gas.
Waynesburg ²	2,745				Oil well; abandoned.
Waynesburg (2 miles northeast). ³	3,260				
Waynesburg (8 miles northeast). ³	3,004				
Waynesburg (4 miles southeast). ⁴	2,965	4			
Waynesburg (several miles southwest). ⁵	3,008				3 wells.
	3,780				
	3,298				
Waynesburg (vicinity). ⁶	2,675-2,900				2 oil and gas wells; 1 unproductive.
Whiteley Township.....	2,922				12 wells; mostly gas; 2 unproductive.
Willow Tree ⁷	3,399				For oil or gas; abandoned.
Township unknown.....	2,165				Oil well.
Do.....	835				
Do.....	2,585				5 wells; 1 gas, 3 unproductive.
Do.....	3,030-3,272				
Huntingdon County:					
Huntingdon.....	400				Several wells.
Hyner Station (near). ⁸	1,187				For oil.
Indiana County:					
Blacklick (vicinity). ⁹	1,728				For oil or gas; abandoned
Burrell Township.....	2,160-2,357				2 wells; 1 dry.
Center Township.....	2,125				
Conemaugh Township.....	1,545-1,734				2 gas wells.
Indiana Township.....	2,054				Gas well.
North Mahoning Township.	2,615?				Do.
Punxsutawney (vicinity). ¹⁰	2,745				Gas well.
Saltsburg (near). ¹¹	2,014				For oil or gas; unproductive.
Saltsburg district.....	2,216				Gas well.
Washington Township...	1,100-1,620				8 wells; 7 gas, 1 unproductive.
West Mahoning Township.	1,605				Gas
White Township.....	433				Coal.
Do.....	3,246				
Township unknown.....	3,220				
Do.....	414				Do.
Do.....	1,190-1,200				3 wells; 1 gas.
Do.....	1,839-1,930				2 wells; 1 unproductive.
Jefferson County:					
Barnett Township.....	1,845				Brine.
Do.....	2,170				
Beaver Township.....	2,705-2,716				2 wells.
Brookville. ¹²	3,100				For oil or gas; unproductive.
Do. ¹³	1,700				Gas well.
Brookville Borough. ¹⁴	2,430				Do.
Eldred Township.....	2,850				
Falls Creek station (near). ¹⁵	3,040				Do.
Heath Township.....	1,870-2,955				2 wells.
Horatio.....	543			-10	
Knox Township. ¹⁶	1,608-2,000				Moderate gas wells.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. I^o, pp. 312-313² Ibid., 1886, part 2, pp. 772-773.³ Record W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 121.⁴ Ibid., p. 122.⁵ Ibid., pp. 122-126.⁶ Record, Pa. 2d Geol. Surv. Rept., Vol. I^o, p. 312.⁷ Ibid., p. 316, U. S. Geol. Surv. Folio No. 82, p. 20.⁸ Ibid., Vol. G⁴, pp. 131-134.⁹ Ibid., Vol. I^o, p. 168.¹⁰ Ibid., 1886, part 2, pp. 776-777.¹¹ Ibid., Vol. I^o, pp. 167-168.¹² Ibid., pp. 163-164.¹³ Ibid., Vol. I⁴, p. 139.¹⁴ Ibid., 1886, part 2, p. 778.¹⁵ Ibid., Vol. I^o, p. 164.¹⁶ Ibid., pp. 162-163.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Jefferson County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Oliver Township.....	1,734-2,720	.....	.....	.....	3 wells; 1 gas.
Polk Township.....	2,205	.....	.....	.....
Rose Township.....	1,951	.....	.....	.....
Saline Township.....	1,105	.....	.....	.....	Unproductive.
Union Township.....	2,359	.....	.....	.....
Washington Township.....	3,040	.....	.....	.....	Gas.
Township unknown.....	1,734	.....	.....	.....	Dry (?).
Do.....	2,015	.....	.....	.....
Do.....	2,985	.....	.....	.....	Gas.
Do.....	3,100-3,200	.....	.....	.....	2 wells; 1 dry.
Lackawanna County:					
Jermyn.....	780	6	25	.....
Scranton (1 mile south-east).	2,050	6	.....	.....	Abandoned.
Scranton (2 miles north-west).	+700	6	30	Flows.	
Scranton (3 miles west) ..	±1,000	6	40	.....
Scranton (6 miles north-east).	2,200	8-6	.....	.....
Throop.....	2,380	.....	.....	.....	Water in small quantity.
Lawrence County:					
Newcastle ¹	2,700	5½	.....	.....	For oil or gas; unproductive.
Newcastle (vicinity)	1,912	.....	.....	.....	Gas and oil well.
Do.....	700-900	.....	.....	.....	Several wells.
Robinson crossing.....	3,830	8-6½	.....	.....	Oil and water at 240 feet; gas at 500, 575, and 825 feet; abandoned, with two sets of tools in well.
Wayne Township ²	790	.....	.....	.....	For oil; unsuccessful.
Luzerne County:					
Hazleton.....	482-690	2	.....	.....	Coal prospects
Hazleton (Diamond Water Co.).	800	8	.....	Flow.	2 wells.
Pittston.....	464-511	2	.....	.....	2 wells.
Wilkesbarre.....	536	2	.....	.....
Do.....	466	2	.....	.....	For water; unsuccessful.
McKean County:					
Bradford ³	1,085	.....	.....	.....	For oil.
Bradford (vicinity) ⁴	1,010-1,719	.....	.....	.....	Numerous oil and gas wells.
Corydon (1 mile from) ⁵ ..	1,532-1,601	.....	.....	.....	Gas wells.
Degolia (near) ⁶	1,404	.....	.....	.....	For oil or gas.
Hamilton Township ⁷	2,011	.....	.....	.....	Oil well.
Hamlin Township ⁸	2,315-2,400	.....	.....	.....	Several oil wells; some unproductive.
Do. ⁹	1,613-1,768	.....	.....	.....	Several oil wells; one abandoned.
Lafayette Township ¹⁰ ..	2,111-2,490	.....	.....	.....	Several oil and gas wells.
Limestone (3 miles south).	1,130	.....	.....	.....	Oil well.
Miam Hollow ¹¹	1,390	.....	.....	.....	For oil or gas; unproductive.
Olmstead (near).....	1,040	.....	.....	.....	Oil well.
Sergeant station ¹²	2,000	.....	.....	.....	For oil or gas; abandoned.
Sergeant station (near) ¹³ ..	2,263	.....	.....	.....	Dry hole.
Do. ¹⁴	2,000	.....	.....	.....
Sergeant Township ¹⁵	2,004	.....	.....	.....	For oil or gas.
Do. ¹⁶	1,850	.....	.....	.....	For oil and gas.
Do. ¹⁷	1,785	.....	.....	.....	For oil or gas; abandoned.
Do. ¹⁸	2,043	.....	.....	.....	Excellent gas well.
Do. ¹⁹	1,802	.....	.....	.....	Good gas well.
Do. ²⁰	2,000-2,380	.....	.....	.....	Several oil and gas wells.
Do.....	1,943	.....	.....	.....
Smethport (west of) ²¹ ..	2,004	.....	.....	.....	For oil; abandoned.
Smethport (vicinity) ²² ..	1,293-1,900	.....	.....	.....	Several oil and gas wells; small production.
Sugar Run ²³	970	.....	.....	.....	Oil well.
Tuna Valley ²⁴	1,035-1,919	.....	.....	.....	Several oil and gas wells.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. G⁴, pp. 151-152; Vol. II, pp. 275-276.² Ibid., Vol. QQ, p. 89.³ Ibid., Vol. I⁴, pp. 97-103.⁴ Ibid., p. 89; Vol. R, pp. 287-290.⁵ Ibid., pp. 259-261.⁶ Ibid., p. 90.⁷ Ibid., Vol. R, pp. 266-267.⁸ Ibid., Vol. I⁴, pp. 151-152.⁹ Ibid., Vol. R, pp. 179-182; Vol. I⁴, pp. 111-113.¹⁰ Ibid., Vol. I⁴, pp. 152-153.¹¹ Ibid., Vol. I⁴, p. 97.¹² Analysis, *ibid.*, Vol. R, p. 92.¹³ Ibid., pp. 243-245.¹⁴ Ibid., pp. 245-248.¹⁵ Record, *ibid.*, Vol. I⁴, pp. 106-108.¹⁶ Ibid., pp. 108-111.¹⁷ Ibid., pp. 104-106.¹⁸ Ibid., 1886, pt. 2, pp. 695-696.¹⁹ Ibid., p. 698.²⁰ Ibid., pp. 696-698, Vol. I⁴, p. 117.²¹ Ibid., Vol. R, pp. 271-272.²² Ibid., pp. 272-276.²³ Ibid., Vol. I⁴, p. 91.²⁴ Ibid., pp. 87-92.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Mercer County:					
Jamestown ¹	1,063				Oil and gas well.
Mercer (near) ²	1,702				Gas well.
Middlesex (near) ³	2,030				For oil or gas; unproductive.
Middlesex, West (1 mile south) ⁴	3,484				Do.
Sharon (1½ miles above) ⁵	1,600				For gas or oil.
Stoneboro (near) ⁶	950				Oil well.
Mifflin County:					
Newton Hamilton.....	800				Not in operation.
Montgomery County:					
Ambler.....	500	6	250		3 wells; pumped.
Bryn Mawr.....	751	8	83	-310	
Do.....	600	6	120		
Bryn Mawr (college).....	862				For oil; unsuccessful.
Bryn Mawr (hotel).....	404				
Fitzwatertown.....	560				
Lansdale.....	611		200	No flow.	
Pennsburg.....	1,000				Water strata at 90 feet and 500 feet.
Port Kennedy.....	581	8	130	No flow.	
Northampton County:					
Easton.....	500		105	-43	
Mount Carmel.....	900	2			
Philadelphia County:					
Frankford Junction.....	500	8			Pumped.
Philadelphia (Melrose).....	553	10-8	150	-6	
Ambler Works.....	500	6	250		
Morocco Works.....	500	6	500		
N. & G. N. Taylor.....	670	12	250		
League Island ⁷	906			-28	Greiss below 260 feet; water at 536 feet.
Hog Island.....	456				
Brown and 24th sts.....	495	6	60		
Mount Vernon and 13th streets.....	3,031	8	2,600		
Callow Hill and 7th street).....	452	8	150		
Crown and Willow street.....	1,000	10	100		
Market and 15th sts.....	500	8	100		
108 South Broad st.....	484	8	60		
Broad street below Locust.....	525	8	110		
Amholt & Schaefer Brewing Co.....	1,500		50		
Boiler Works.....	500				
Potter County:					
Abbot Township.....	2,100				Oil boring; unsuccessful.
Do. ⁸	2,029				Small gas well.
Coudersport ⁹	2,100				Small gas well.
Harrison Township ¹⁰	1,995				
Hebron ¹¹	1,286				For oil.
Pike Township ¹²	1,835				For oil or gas; unproductive.
Do. ¹³	1,500				For oil or gas; abandoned.
West Branch Township ¹⁴	1,750-2,750				For oil; unsuccessful.
Schuylkill County:					
Pinegrove.....	450	8	Many.	No flow.	
Ashland (vicinity).....	1,830	2	139	Flows.	Temp., 54°.
Delano.....	515	2			Coal prospect.
East Brookside.....	585	8			Oil well.
Mahanoy City (near).....	1,130	2	Many.	Flows.	Temp., 51°.
Shenandoah (near).....	538	8			Oil well.
Towet City.....	418				
Tremont.....		8			Do.
Somerset County:					
Elklick.....	+1,500				
Do.....	2,900				For oil.
Salisbury Basin ¹⁵	678				
Wellersburg.....	1,207				Good water.
Township unknown.....	634				

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. II, pp. 274-275.² Ibid., p. 275.³ Ibid., Vol. I³, pp. 229-230.⁴ Ibid., pp. 230-231.⁵ Ibid., Vol. I³, p. 419.⁶ Ibid., p. 121.⁷ Record, N. J. Geol. Surv. Rept., 1900, pp. 137-142.⁸ Record, Pa. 2d Geol. Surv. Ann. Rept., 1885, pp. 85-86.⁹ Ibid., 1886, part 2, pp. 775-776.¹⁰ Ibid., Vol. G³, pp. 80-81.¹¹ Ibid., Vol. G³, p. 79.¹² Ibid., Vol. I³, pp. 148-149.¹³ Ibid., pp. 149-150.¹⁴ Ibid., 1885, pp. 86-91.¹⁵ Ibid., Vol. I⁴, pp. 146-147.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Tioga County:					
Elkland					For oil or gas.
Gaines ¹	1,345				For oil or gas; abandoned.
Gaines oil field ²	565-1,320				90 wells for oil.
Wellsboro					
Union County:					
Foresthill	480			Flows.	Sulphur water.
Venango County:					
Alleghany Township ³	850				For oil; unproductive.
Do.	619-925				3 wells.
Black's siding ⁴	1,656				For oil or gas; unproductive.
Clinton Township ⁵	836-1,266				Several oil wells; mainly productive.
Cornplanter Township ⁶	451-924				For oil or gas.
Cornplanter Township(?) =(bluff between Petroleum Center and Pioneer).	780-835				4 wells.
Cornplanter Township	551-802				43 wells.
Do.	1,002-1,018				3 wells.
Cranberry Township	450-600				Several wells.
Do. ⁷	600-1,506				Numerous oil and gas wells; mainly productive.
Emelton (vicinity) ⁸	720-1,000				Numerous oil wells; mainly productive.
Franklin (one-half mile northeast). ⁹	490			Flows.	Good oil well.
Franklin (8 miles south) ¹⁰	3,880				For oil or gas unproductive.
Jackson Township ¹¹	688				Oil well.
Do.	583-688				3 wells.
Mineral Township	893-986				5 wells.
Do.	1,015-1,350				3 wells.
Oakland Township ¹²	640				
Oil City ¹³	1,070				Several oil wells.
Do. ¹⁴	540-818				Do.
Oil Creek Township ¹⁵	902-1,000				22 wells.
Do.	415-936				Numerous oil wells; mainly productive.
Petroleum Center ¹⁶	500-900				
Do.	1,010				
Pinegrove Township ¹⁷	1,869-2,060				Several oil wells.
Do. ¹⁸	912-1,070				For oil.
Pioneer (vicinity) ¹⁹	437-980				Numerous oil wells; large production.
Pithole City ²⁰	747				For oil or gas unproductive.
Pleasantville (2½ miles northwest). ²¹	415				Oil well.
Pleasantville (4½ miles southeast). ²²	1,000				Gas and oil well.
Pleasantville (2 miles northeast). ²³	885				Do.
Pleasantville Borough ²⁴	693-1,044				Numerous oil and gas wells.
Pleasantville	633-955				66 wells.
Do.	1,020-1,050				2 wells.
Pleasantville Corners.	840-870				Do.
Pleasantville (?)	607-620				Do.
Plumer (?)	930				

¹ Record, Pa. 2d Geol. Surv. Ann. Rept., Vol. I⁵, pp. 147-148; U. S. Geol. Surv., 22d Ann. Rept., 1900-1901, part 3, pp. 583-584.

² U. S. Geol. Surv., 22d Ann. Rept., 1900-1901, pp. 585-591.

³ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁴, pp. 58-59.

⁴ Ibid., Vol. I⁵, pp. 184-185.

⁵ Ibid., Vol. II, pp. 219-222.

⁶ Ibid., Vol. I⁴, pp. 59-61.

⁷ Ibid., Vol. II, pp. 203-207, 210-214; Vol. I⁴, pp. 62-63.

⁸ Ibid., Vol. II, pp. 222-225.

⁹ Ibid., Vol. I⁴, p. 65.

¹⁰ Ibid., Vol. I⁵, pp. 185-186; W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 86-87.

¹¹ Ibid., Vol. II, p. 201.

¹² Ibid., p. 202.

¹³ Ibid., Vol. III, p. 416.

¹⁴ Record, Am. Philos. Soc. Proc., vol. 16, pp. 482-487; Pa. 2d Geol. Surv. Rept., Vol. II, pp. 204-205.

¹⁵ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁴, pp. 53-54.

¹⁶ Record, Am. Philos. Soc. Proc., vol. 16, pp. 470-477.

¹⁷ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁵, p. 184.

¹⁸ Ibid., Vol. I⁴, p. 64.

¹⁹ Ibid., Vol. II, pp. 43-64; Am. Philos. Soc. Proc., vol. 16, pp. 468-471.

²⁰ Ibid., Vol. I⁵, p. 179.

²¹ Ibid., p. 175.

²² Record, Am. Philos. Soc. Proc., vol. 16, p. 497.

²³ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁴, pp. 54-55.

²⁴ Ibid., Vol. II, pp. 9-34; Vol. III, p. 420; Vol. I⁴, p. 55; Am. Philos. Soc. Proc., vol. 1⁵, pp. 435-460.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Venango County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Plumer (1 mile south) ¹	464	.....	.....	.....	For oil or gas; abandoned.
President (near) ²	1,280	.....	.....	.....	Numerous oil or gas wells.
Raymilton ³	893-1,410	.....	.....	.....	Several oil or gas wells.
Raymilton (near) ⁴	845-1,410	.....	.....	.....	Several oil wells.
Reno ⁵	570-590	.....	.....	.....	For oil; unproductive.
Do.	1,090	.....	.....	.....	4 wells.
Richland Township	705-970	.....	.....	.....	For oil; abandoned.
Rockland station ⁶	701	.....	.....	.....	Numerous oil wells.
Rockland Township ⁷	600-1,100	.....	.....	.....	Do.
Do.	1,094	.....	.....	.....	Several oil or gas wells.
Do.	1,650	.....	.....	.....
Rouseville (vicinity) ⁸	450-800	.....	.....	.....
Salem (vicinity) ⁹	962-1,200	.....	.....	.....	Small oil well.
Salina (?)	1,020	.....	.....	.....
Sandy Creek Township ¹⁰	792	.....	.....	.....	4 wells.
Do.	1,410	.....	.....	.....
Scrubgrass Township	720-740	.....	.....	.....	Numerous oil wells.
Do.	1,100	.....	.....	.....	2 oil wells; 1 abandoned.
Shamburg ¹¹	547-972	.....	.....	.....	2 oil wells.
Sugar Creek Township ¹²	583-606	.....	.....	.....	Numerous oil and gas wells.
Sulphur Run ¹³	925-1,350	.....	.....	.....
Titusville ¹⁴	538-966	.....	.....	.....
Victory Township	3,880	.....	.....	.....
Township unknown	448-980	.....	.....	.....	46 wells.
Do.	1,016	.....	.....	.....
Warren County:					
Cherry Grove Township ¹⁵	1,548-2,004	.....	.....	.....	Several oil and gas wells; some unproductive.
Colorado district	551-822	.....	.....	.....	17 wells.
Corydon Township	720	.....	.....	.....	For oil.
Deerfield Township	546-690	.....	.....	.....	2 wells.
Do.	484-837	8-5½	.....	.....	Several wells; for oil.
Dennis Run ¹⁶	426-632	.....	.....	.....	Several oil and gas wells.
Eldred Township ¹⁷	415-481	.....	.....	.....	Oil and gas wells.
Do.	588-914	.....	.....	.....	2 wells.
Do.	420-1,250	8-5½	.....	.....	Many wells; for oil.
Elk Township ¹⁸	1,500	.....	.....	.....	For oil; abandoned.
Elrod Township ¹⁹	588-914	.....	.....	.....	For oil or gas.
Enterprise ²⁰	474-487	.....	.....	.....	Several oil wells.
Enterprise (vicinity) ²¹	462-800	.....	.....	.....	For oil or gas.
Fagundas Township	618-760	.....	.....	.....	4 wells.
Do.	803	.....	.....	.....
Gilson Run	541	.....	.....	.....
Grand Valley (4 miles south)	789	84-5½	.....	.....	For oil; fresh water at 55 feet.
Kinzua Township ²²	1,048-2,285	.....	.....	.....	Several oil wells; mainly unproductive.
Limestone Township	431-743	.....	.....	.....	8 wells.
Do.	1,005	.....	.....	.....
Lottsville ²³	960-1,515	.....	.....	.....	2 oil or gas wells; abandoned.
Neiltown Township (?)	1,000	.....	.....	.....
North Warren (near) ²⁴	475-965	.....	.....	.....	Numerous gas and oil wells; some unproductive.
Do. ²⁵	1,200-1,400	.....	.....	.....	Several oil and gas wells; unproductive.
Do. ²⁶	1,835	.....	.....	.....	For oil; abandoned.
Pinegrove Township ²⁷	750-1,830	.....	.....	.....	Several oil and gas wells; small production.
Pittsfield (township) ²⁸	747	.....	.....	.....	For oil or gas; unproductive.

¹ Record Pa. 2d Geol. Surv. Rept., Vol. I³, p. 180.² Ibid., pp. 180-181.³ Ibid., Vol. I³, pp. 181-183; Vol. I⁴, p. 68; Vol.

III, pp. 419-420.

⁴ Ibid., Vol. I⁴, pp. 68-69.⁵ Ibid., Vol. II, pp. 208-210.⁶ Ibid., Vol. II, p. 207.⁷ Ibid., pp. 215-218.⁸ Ibid., Amer. Philos. Soc. Proc., vol. 16, pp. 477-

486.

⁹ Record, Pa. 2d Geol. Surv. Rept., Vol. II, pp.

205-206.

¹⁰ Ibid., p. 201.¹¹ Ibid., pp. 34-42; Am. Philos. Soc. Proc., vol. 16,

pp. 460-468.

¹² Ibid., Vol. II, pp. 200-201.¹³ Ibid., Vol. I³, pp. 182-183.¹⁴ Ibid., Vol. I⁴, p. 56.¹⁵ Ibid., pp. 26-27, 375-376.¹⁶ Record, Am. Philos. Soc. Proc., vol. 16, pp.

367-370.

¹⁷ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁴, pp.

52-53.

¹⁸ Ibid., p. 80.¹⁹ Ibid., Vol. II, pp. 195-196.²⁰ Ibid., pp. 65-66.²¹ Record, Am. Philos. Soc. Proc., vol. 16, pp.

367-369.

²² Record, Pa. 2d Geol. Surv. Rept., Vol. I⁴, pp.

27-29.

²³ Ibid., Vol. I³, pp. 232-233.²⁴ Ibid., Vol. I⁴, pp. 10-15.²⁵ Ibid., pp. 11-13.²⁶ Ibid., p. 12.²⁷ Ibid., Vol. I⁴, pp. 16-18.²⁸ Ibid., Vol. II, p. 196.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks
Warren County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Pittsfield (township) ¹ ...	1,500	.....	.....	.....	For oil or gas; unsuccessful.
Pleasant Township ²	1,586	.....	.....	.....	For oil or gas; unproductive.
Do. ³	818-900	.....	.....	.....	Several small oil wells.
Sheffield (vicinity) ⁴	1,645	.....	.....	.....	Good gas well.
Do. ⁵	1,565?	.....	.....	.....	For oil or gas; unsuccessful.
Do.....	825	.....	.....	.....	For oil or gas; abandoned.
Do. ⁶	961-1,200	.....	.....	.....	For oil or gas.
Sheffield Township ⁷	1,435-2,016	.....	.....	.....	Numerous oil and gas wells.
Spring Creek Township ⁸	600-1,061	.....	.....	.....	Several oil and gas wells; small production.
Do.....	484	8-5½	.....	.....	For oil; fresh water flowed 10 gallons a minute at 198 feet; oil and gas strata at 224 and 463 feet; abandoned.
Southwest Township ⁹	500-1,550	.....	.....	.....	Numerous oil and gas wells.
Stoneham (vicinity) ¹⁰	1,025-1,600	.....	.....	.....	Several oil and gas wells; mostly productive.
Tidioute (vicinity) ¹¹	408-715	.....	.....	.....	Numerous oil and gas wells; none large producers, and many abandoned.
Do.....	803	.....	.....	.....
Triumph ¹²	+472	.....	.....	.....	For oil; unsuccessful.
Triumph (vicinity) ¹³	739-815	.....	.....	.....	Several oil wells.
Triumph Township ¹⁴	2,464-2,700	.....	.....	.....	For oil or gas; unsuccessful.
Do. ¹⁵	805-908	.....	.....	.....	Numerous oil and gas wells.
Do.....	543-961	.....	.....	.....	13 wells.
Warren (near) ¹⁶	521-1,065	.....	.....	.....	Numerous oil and gas wells; some good producers.
Warren Township(?).....	2,016	.....	.....	.....
Watson Township ¹⁷	1,936	.....	.....	.....	For oil or gas; unproductive.
Wrightsville (1 mile northeast), ¹⁸	1,200	.....	.....	.....	Abandoned as dry hole.
Near Warren-McKean County line.	2,254	.....	.....	.....
Washington County:					
Allen Township ¹⁹	2,060	.....	.....	.....	Gas well.
Amwell Township ²⁰	2,385	.....	.....	.....	For oil or gas; unproductive.
Do.....	2,390	.....	.....	.....	Gas.
Do.....	460-602	.....	.....	.....	3 wells.
Beallsville (one-half mile east), ²¹	3,200	10-4	.....	.....
Beallsville (10 miles west), ²²	2,774	.....	.....	.....
Buffalo Township.....	510	.....	.....	.....
Do.....	2,350-2,760	.....	.....	.....	21 wells; some oil and gas.
Cannonsburg (vicinity), ²³	1,763-2,502	.....	.....	.....	Numerous oil and gas wells; some unproductive.
Canton Township ²⁴	2,727	.....	.....	.....	For oil or gas.
Do.....	2,068	.....	.....	.....	Gas well.
Do.....	1,977	.....	.....	.....	Do.
Carroll Township.....	2,152	.....	.....	.....	2 gas wells.
	2,218	.....	.....	.....

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. II, p. 197.² Ibid., Vol. I, p. 174.³ Ibid., Vol. I, p. 19.⁴ Ibid., pp. 23, 379-380.⁵ Ibid., pp. 24, 386-381.⁶ Ibid., Vol. II, pp. 194-195.⁷ Ibid., pp. 193-194; Vol. I, pp. 24-26; Vol. I, pp. 174-175; 1886, part 2, pp. 698-700.⁸ Ibid., Vol. I, p. 252-263.⁹ Ibid., pp. 49-52; Vol. I, p. 855; Am. Philos. Soc. Trans., vol. 16, pp. 346-367.¹⁰ Ibid., pp. 20-23.¹¹ Ibid., pp. 31-48; Am. Philos. Soc. Proc., vol. 16, pp. 372-374.¹² Record, Am. Philos. Soc. Proc., vol. 16, p. 494.¹³ Ibid., pp. 370-372.¹⁴ Record, Pa. 2d Geol. Surv. Rept., Vol. I, pp. 280-283.¹⁵ Ibid., Vol. I, pp. 173-174; Vol. I, pp. 283-286.¹⁶ Ibid., Vol. I, pp. 1-9.¹⁷ Ibid., p. 20.¹⁸ Ibid., p. 236.¹⁹ Ibid., Vol. I, pp. 301-302.²⁰ Ibid., pp. 307-308.²¹ Record, etc., W. Va. Geol. Surv. Rept., vol. 1(a), 1904, pp. 116-119.²² Ibid., p. 121.²³ Record, Pa. 2d Geol. Surv. Rept., Vol. I, pp. 281-297.²⁴ Ibid., pp. 279-280.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Washington County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Cecil Township	2,247	.....	.....	.....	Brine.
Charleroi (southwest of).	2,080 to 2,165	.....	.....	.....	{ Several wells; for oil or gas.
Cross Creek Township.	4,303	.....	.....	.....	.....
Donegal Township.	3,200	.....	.....	.....	Unproductive.
East Bethlehem Township. ¹	604	.....	.....	.....	Salt well; abandoned.
East Bethlehem Township (and vicinity).	2,017-3,180	.....	.....	.....	14 wells; principally gas
East Pike Run Township. ²	1,950	.....	.....	.....	Gas well.
Fallowfield Township (southeast corner). ³	1,950	.....	.....	.....	Do.
Franklin Township. ⁴	2,608	.....	.....	.....	For oil or gas; abandoned.
Good Intent (2½ miles southwest). ⁵	2,720	.....	.....	.....	For oil or gas; unproductive.
Hickory	.....	.....	.....	.....	Gas well.
Hickory (2½ miles southwest). ⁶	2,245	.....	.....	.....	Large gas well.
Hickory (2 miles southeast). ⁷	2,205	.....	.....	.....	Large flow of gas.
Hickory (vicinity). ⁸	700-1,151	.....	.....	.....	Several large gas wells.
Hopewell Township.	3,455	.....	.....	.....	Unproductive.
Little Washington.	.....	.....	.....	.....	2 gas wells.
Lock No. 3.	2,495	.....	.....	.....	Gas well.
McDonald. ⁹	2,342	.....	.....	.....	Do.
Monongahela. ¹⁰	2,152-2,218	.....	.....	.....	Gas wells.
Morris Township	506-919	.....	.....	.....	5 wells; 1 gas, 2 oil.
Do.	2,822	.....	.....	.....	.....
Mount Pleasant Township.	700	.....	.....	.....	Gas well.
Do.	1,060-2,245	.....	.....	.....	4 wells; 1 gas.
North Strabane Township.	1,800	.....	.....	.....	Small gas well.
South Strabane Township. ¹¹	2,410-2,503	.....	.....	.....	Gas wells.
Taylorstown. ¹²	2,350-2,760	.....	.....	.....	Several gas and oil wells.
Thomas (near)	2,275	13-6½	.....	.....	For oil; water at 80 and 1,082 feet; gas at 1,285 feet.
Venice (1 mile northwest). ¹³	2,247	7½-5½	.....	.....	For oil or gas; unsuccessful.
Washington. ¹⁴	2,285-2,599	.....	.....	.....	Several oil and gas wells.
Washington (near). ¹⁵	1,977-2,420	.....	.....	.....	Do.
West Alexander (3 miles west). ¹⁶	3,200	.....	.....	.....	For oil or gas; unproductive.
West Amity Station (near). ¹⁷	+2,390	.....	.....	.....	Gas well.
West Bethlehem Township.	490	.....	.....	.....	.....
Do.	2,685	.....	.....	.....	2 gas wells.
Do.	2,967	.....	.....	.....	.....
Do.	3,013	.....	.....	.....	.....
West Finley Township.	2,720	.....	.....	.....	Unproductive.
West Middletown. ¹⁸	3,455	.....	.....	.....	For oil or gas; abandoned.
West Pike Run Township.	2,806	.....	.....	.....	.....
Woodrow (near). ¹⁹	+4,303	.....	.....	.....	Gas well.
Township unknown.	1,763-1,998	.....	.....	.....	5 wells; 3 gas.
Do.	2,054-2,458	.....	.....	.....	13 wells; 3 gas, 1 oil.
Do.	2,502-2,900	.....	.....	.....	3 wells; 2 dry.
Wayne County:					
Forest City	.....	.....	.....	.....	Coal prospect.
Honesdale (5 miles from Honesdale (6 miles north)). ²⁰	2,500	.....	.....	.....	2 oil wells; abandoned.
Honesdale (6 miles north).	1,505	.....	.....	.....	For oil.
Westmoreland County:					
Allegheny Township. ²¹	1,250-2,847	.....	.....	.....	For oil or gas; mostly unproductive.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. K, pp. 178-179.² Ibid., Vol. I⁵, pp. 302-303.³ Record, U. S. Geol. Surv. Folio 94, pp. 17-18.⁴ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁵, p. 279.⁵ Ibid., pp. 305-306.⁶ Ibid., 1886, part 2, pp. 754-755.⁷ Ibid., pp. 769-772.⁸ Ibid., pp. 758-760; Am. Philos. Soc. Proc., vol. 16, p. 489.⁹ Record, W. Va. Geol. Surv. Rept., vol. 1, 1889, pp. 214-230.¹⁰ Pa. 2d Geol. Surv. Rept., Vol. I⁵, p. 301.¹¹ Record, ibid., p. 280.¹² Ibid., pp. 298-299.¹³ Ibid., 1886, part 2, pp. 759-760.¹⁴ Ibid., pp. 764-767.¹⁵ Ibid., pp. 760-763; W. Va. Geol. Surv. Rept., vol. 1(a), 1904, p. 120.¹⁶ Ibid., Vol. I⁵, pp. 304-3⁰5.¹⁷ Ibid., p. 307.¹⁸ Ibid., 1886, part 2, pp. 756-758.¹⁹ Ibid., pp. 755-756.²⁰ Ibid., Vol. G⁴, pp. 91-93.²¹ Ibid., Vol. I⁵, pp. 211-2¹5; Vol. II, pp. 277-278.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Westmoreland County—Con.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Bell Township	1,878				Unproductive.
Do.	2,392				
Do.	2,575				Gas.
Blairsville ¹	2,060				For oil or gas; abandoned.
Burrell Township ²	2,500				
Do. ³	1,850				Do.
Do.	2,060				Gas.
Carpenters station (near) ⁴	1,541				For oil or gas.
Cookville (north and west).	1,960-2,170				Several wells; for oil or gas.
Derry Township.	450-521				2 wells; brine.
Do.	1,015				2 wells.
Do.	2,502				
Do.	2,070				Unproductive.
East Huntingdon Township.					
Franklin Township	1,312-1,450				10 gas wells.
Gibsonton (three-fourths mile north). ⁵	2,638				Gas well.
Hempfield Township ⁶	1,255				Do.
Irwin	4,380				
Do. ⁷	2,340				For oil or gas; unproductive.
Latrobe ⁸	1,980				For oil or gas.
Lower Burrell Township.	1,565-2,896				10 wells; 8 gas.
Loyalhanna Township.	1,755				Unproductive.
Do.	2,180-2,216				2 wells; 1 gas.
Mount Pleasant Township.	844				Gas well.
Murrysville ⁹	1,337-1,440				Numerous oil and gas wells.
Murrysville (vicinity) ¹⁰	1,312-1,465				Large oil field.
North Huntingdon Township.	2,340				Unproductive.
North Washington Township.	1,608-1,791				3 gas wells.
Oakland Cross Roads.	1,742-1,787				2 wells.
Pennsylvania Township. ¹¹	2,495				Large gas well.
Do. ¹²	1,580-1,690				Several large gas wells.
Pleasant Unity (2½ miles northwest). ¹³	650				For oil or gas; unproductive.
Reagantown (south of) ¹⁴	2,070				Do.
Rostraver Township	2,662-2,803				
Sewickley Township	1,769-3,150				2 unproductive wells.
Webster Township (northeast, east, and southeast).	1,935-2,250				Many wells; for oil and gas.
Tarentum (1¼ miles south-east).					For oil or gas; abandoned.
Unity Township.	650				Unproductive.
Upper Burrell Township.	2,302-2,500				3 wells; 2 gas.
Waltz Mill (near) ¹⁵	1,769-3,151				2 borings for oil or gas; unproductive.
Washington Township ¹⁶	1,301-1,638				Gas wells.
Do.	1,501-2,250				11 wells; 8 gas.
Township unknown.	755				
Do.	2,663				
Wyoming County:					
Lovelton (near).					Deep well.
York County:					
Manchester ¹⁷	1,520				For oil or gas.
Miscellaneous:					
Allegheny River	403				
Boydstown Township	1,210				
Eulalia Township	2,100				
Grimes Township	1,345				
Hooks Run	1,426				
West Hickory Creek	400-632				2 wells.
Do.	2,525-2,900				5 wells; 1 gas.
Do.	3,020				
Do.	760-869				3 wells; 2 gas.

¹ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁶, pp. 221-225.² Ibid., pp. 212-213.³ Ibid., 1886, part 2, pp. 686-687.⁴ Ibid., pp. 725-726.⁵ Record, U. S. Geol. Surv. Folio No. 94, p. 18.⁶ Record, Pa. 2d Geol. Surv. Rept., Vol. I⁶, p. 223.⁷ Ibid., pp. 221-222.⁸ Ibid., pp. 223-224.⁹ Ibid., pp. 215-218.¹⁰ Ibid., 1886, part 2, pp. 673-674, 721-724.¹¹ Ibid., Vol. I⁶, pp. 219-220.¹² Ibid., pp. 218-219; 1886, part 2, pp. 724-725.¹³ Ibid., Vol. II, pp. 280-281.¹⁴ Ibid., Vol. I⁶, pp. 227-228.¹⁵ Ibid., pp. 225-227.¹⁶ Ibid., 1886, part 2, pp. 726-730.¹⁷ Ibid., Vol. II, pp. 278-279.

PENNSYLVANIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Miscellaneous—Continued.					
West Hickory Creek.....	1,040-1,460	.....	.....	.....	14 wells; 6 gas.
Do.....	1,505-1,980	.....	.....	.....	19 wells; 6 gas; 1 oil.
Do.....	2,000-2,405	.....	.....	.....	7 wells; 1 gas; 1 oil.
Do.....	2,665-3,375	.....	.....	.....	2 wells; 1 gas; 1 dry.
Do.....	1,325-1,475	.....	.....	.....	3 wells; 2 gas.
Do.....	1,504-1,635	.....	.....	.....	8 wells; 4 gas.

PUBLICATIONS RELATING TO DEEP BORINGS IN PENNSYLVANIA.

Oil well records, selected from the collections of Mr. J. F. Carll, by J. P. Lesley: American Philosophical Society Proceedings, volume 16, pages 346-380, Philadelphia, 1877.

On the first systematic collection and discussion of the Venango County oil wells of western Pennsylvania, by E. S. Nettleton, prepared for publication by J. F. Carll: American Philosophical Society Proceedings, Nos. 97-99, for 1876-1877, volume 16, pages 429-495, Philadelphia, 1877.

Oil well records and levels, by J. F. Carll: Pennsylvania Second Geological Survey, Report of Progress, 1876-1877, Volume II, 398 pages, Harrisburg, 1877.

The geology of the oil regions of Warren, Venango, Clarion, and Butler counties, by J. F. Carll: Pennsylvania Second Geological Survey, Report for 1875-1879, Volume III, 482 pages, Harrisburg, 1880.

The geology of Erie and Crawford counties, by I. C. White: Pennsylvania Second Geological Survey, Report of Progress, 1879, Volume QQQQ, 406 pages, Harrisburg, 1881.

Geological report on Warren County and neighboring oil regions, by J. F. Carll: Pennsylvania Second Geological Survey, Report for 1880-1883, Volume I¹, 439 pages, Harrisburg, 1883.

O. S. C. Carter, artesian water supplies for Philadelphia: Franklin Institute Journal, 1893, volume 135, page 58; volume 136, pages 230-239, 298-305.

United States Geological Survey Folio No. 82, 1902, by M. R. Campbell.

United States Geological Survey Folio No. 94, 1903, by M. R. Campbell.

Gaines oil field of northern Pennsylvania, by M. L. Fuller: Twenty-second Annual Report of the United States Geological Survey, 1900-1901, pages 579-627.

RHODE ISLAND.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Kent County:					
Warwick.....	502	8	120	No flow.	Hard water.
Newport County:					
Fort Greble.....	762	.....	.....	.....	Good supply of water.
Providence County:					
Arlington.....	402	8	.....	32	
Providence.....	400	6	85	No flow.	
Do.....	460	6	110	No flow.	
Saylesville.....	1,436	.....	15	No flow.	Abandoned.

SOUTH CAROLINA.

Abbeville County:					
Abbeville.....	504	8	80	3	
Greenwood.....	400	8	40	4	
Aiken County:					
Aiken ¹	558	8-6	50	170	In granite.
Barnwell County:					
Bamberg ²	470-555	1½-2	35-40	+12-30	Several wells.

¹ Record, U. S. Geol. Surv. Bull. No. 138, p. 220.

² Ibid., p. 221.

SOUTH CAROLINA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Beaufort County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Beaufort ¹	800	.....	.....	.....
Mays River Neck	800	.....	.....	- 1	Very sulphurous water.
Charleston County:					
Charleston ²	1,970	.....	250	+ 4	Temp., 99.5°.
Do. ³	1,260	.....	30	+25	Saline water; temp., 87°.
Do.	1,950	3½	167	.....	Temp., 99°.
Do.	1,970	2½	104	.....	Do.
Do.	2,050	4	451	.....	Do.
Do.	1,945	5	695	.....	Do.
Charleston (vicinity) ⁴ ..	425-475	.....	.....	.....	Several wells.
Charleston	2,000	.....	.....	.....
Johns Island	500	6	11	Flows.	Temp., 70°.
Chester County:					
Chester	700	.....	.....	.....	In granite; unsuccessful.
Do.	500	8	.....	.....	Unsuccessful.
Colleton County:					
Green Pond	503	3	1	Flows.	Temp., 70°.
Jacksonboro.	420	3	4	Flows.	Temp., 72°.
Walterboro.	490	6	Many.	-30	Soft water.
Florence County:					
Florence ⁵	1,335	10-8	100	-20	Lowest water at 1,215 to 1,220 feet.
Do.	420	.....	Many.	.....	Fine water.
Georgetown County:					
Georgetown	400?	.....	Not any.	.....
Hampton County:					
Hampton	800	.....	.....	Flows.	
Do.	58½	6	Many.	- 9	Soft, irony water.
Peoples	850	6	100	Flows.	Temp., 76°.
Varnville	983	6	Many.	-12	
Kershaw County:					
Camden	618-625	.....	Many.	-20	2 wells.
Laurens County:					
Sullivan's Island	1,308	12-3	10	.....	Temp., 87°.
Marion County:					
Marion	1,244	8-6	½	Flows.	
Orangeburg County:					
Orangeburg ⁶	1,160	6-2½	Many.	-52	Pumped at 300 feet.

¹ Analysis, U. S. Geol. Surv. Bull. No. 138, p. 220.² Record, Artesian Wells Report of Scientific Committee: Municipal Rept. Charleston, 1881, pp. 3-4, plate.³ Analysis, U. S. Geol. Surv. Bull. No. 138, p. 212.⁴ Ibid., pp. 214-216.⁵ Record and analysis, *ibid.*, 218-219.⁶ Record, *ibid.*, p. 220.

PUBLICATIONS RELATING TO DEEP BORINGS IN SOUTH CAROLINA.

Artesian wells report of scientific committee, etc.: Municipal Report of the City of Charleston, S. C., 1881, 61 pages, plates, Charleston, 1882.

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

SOUTH DAKOTA.

Location.	Depths.	Diameter.	Yield per minute	Pressure.	Remarks
Aurora County:	<i>Feet</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
T. 101, R. 64, sec. 1	630	.....	.....	.....
T. 101, R. 64, sec. 3	800	2	50	.....
T. 101, R. 64, sec. 6	730	2	30	.....
T. 101, R. 64, sec. 17	960	2	60	.....
T. 102, R. 63, sec. 10	536	.....	.....	.....
Do. ¹	613	2	3	.....
T. 102, R. 63, sec. 11	460	.....	.....	.....
Crystal Lake Township, sec. 17.	850	4½	600	55	
T. 102, R. 64, sec. 19	800	3-2	40	78	
Do.	800	3-2	40	.....
T. 102, R. 64, sec. 29	600	2	8	.....
T. 102, R. 65, sec. 25	795	2	10	40	
T. 102, R. 66, sec. 7	800	2	120	.....
T. 102, R. 66, sec. 17	835	4½	400	.....

SOUTH DAKOTA—Continued.

Location.	Depths.	Diameter.	Yield per minute.	Pressure.	Remarks.
Anrora County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
T. 103, R. 63, 5 miles southeast of Plankinton.	705	3	200		
T. 103, R. 63, sec. 4	500				
T. 103, R. 63, sec. 8	755	3	100	80	
T. 103, R. 63, sec. 9	470				
T. 103, R. 63, sec. 10	900, 425	2	± 4	+12	
T. 103, R. 63, sec. 11	830, 440	2	4	10	
T. 103, R. 63, sec. 13	426				
T. 103, R. 63, sec. 24	425				
T. 103, R. 63, sec. 25	420				
T. 103, R. 63, sec. 26 ¹	490, 530	2	10		
T. 103, R. 63, sec. 28 ²	716	3	200		
T. 103, R. 63, sec. 32	623	3-2	15		
T. 103, R. 63, sec. 35	484	4-3			
Do	507				
(?)	530	2	30		
City of Plankinton	745-830	4½-3	60-225		The 830 foot well has pressure of 91 pounds.
Plankinton Township well, R. 64, sec. 22.	775	4½	200	55	
T. 103, R. 64, sec. 27	765				
T. 103, R. 64, sec. 29	715		1, 200		
T. 103, R. 65, sec. 31	830	2	40		
T. 103, R. 66, sec. 10	900	2	± 4	+12	White Lake City well No. 2.
T. 103, R. 66, sec. 11	830	2	4	±10	White Lake City well No. 3.
T. 103, R. 66, sec. 34	842	6			
White Lake	863	4	150	35	
White Lake (7¼ miles northwest).	814	2-1½	35	Flows.	
White Lake (10 miles northwest).	918	3-1½	5	Flows.	
T. 104, R. 63, sec. 1	470	2	4		
T. 104, R. 63, sec. 2	740				
T. 104, R. 63, sec. 3	508				
T. 104, R. 63, sec. 10	440				
T. 104, R. 63, sec. 15	465				
T. 104, R. 63, sec. 17	540				
T. 104, R. 63, sec. 20	530				
T. 104, R. 63, sec. 21	523-575	4½	150	45	
T. 104, R. 63, sec. 22 ¹	525	4½-3	168		
T. 104, R. 63, sec. 26	426				
T. 104, R. 63, sec. 35	400, 450				
T. 104, R. 64, sec. 34	590				
Do	545	2	2½	15	
T. 104, R. 65, sec. 26	728	2	84		
T. 104, R. 66, sec. 2	844	2	105		
T. 104, R. 66, sec. 3	922	2	75		
T. 105, R. 63, sec. —	475	2	5		
T. 105, R. 63, sec. 2	400				
T. 105, R. 63, sec. 7	580				
T. 105, R. 63, sec. 24	487	2	32		
Do	500				
T. 105, R. 63, sec. 26	475, 490				
T. 105, R. 63, sec. 28	508, 560				
T. 105, R. 63, sec. 35	620				
Do ³	760				
T. 105, R. 64, sec. 2	640				
T. 105, R. 64, sec. 22	563				
T. 105, R. 66, sec. 24	953	2	60		
T. 105, R. 66, sec. 32	1, 222	3			
Beadle County:					
T. 109, R. 61	670	1½			
T. 109, R. 62	782-916	1½-9½	20-250	125	
T. 109, R. 63	806-856	1½	Many.		
T. 109, R. 64	830, 910	1½	45		
T. 110, R. 59	748, 730	2, 1½	33, 6		
Do	857	2	50		
T. 110, R. 60	746-930	1½-4	35, 930	100	Pressure given is for the 930-foot well.
T. 110, R. 61	879	2	150-200	60-100	
Do	742	2	30		
Do	900	2, 3	130, 500	125	2 wells.
T. 110, R. 62	792, 804	1½	50		
Do ⁴	784-1, 139	1½-3	350-2, 250	120-165	Huron town wells.
T. 110, R. 63	812-870	1½-2	26-30		
T. 110, R. 64	847	2	100		
T. 110, R. 65	863-910	1½	31-50		
T. 111, R. 59	925, 940	2	50, 20		

¹ Record, U. S. Geol. Surv., 18th Ann. Rept., part 4, pl. 40.² Ibid., Mitchell folio No. 99, p. 3.³ Ibid., p. 2.⁴ U. S. Geol. Surv., 17th Ann. Rept., part 2, pp. 22-23.

SOUTH DAKOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Pressure.	Remarks.
Beadle County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
T. 111, R. 61	757-836	1½-3	25-360		
T. 111, R. 62	744-925	1½-2	35-300		
T. 111, R. 63	780-918	2-1½	35-114		
T. 111, R. 64	784-870	1½-2	43-100		
Do. ¹	930	8-5	330		
T. 111, R. 65	900, 1,000	1½	20, 80	127	Wolsey well.
T. 112, R. 59	915-945	1½	25-40		
T. 112, R. 60	779	8	400-600		
Do.	870	1½	40	120	
T. 112, R. 61 ²	778, 917	1½-4	35		
Do.	746-968	1½-3	45-600		
T. 112, R. 62	780-950	1½-3	25-240	125?	
T. 112, R. 63	601-870	1½-2	16-200	63	Pressure refers to only one well.
T. 112, R. 64	900	1½	45	20-90	
T. 112, R. 65	955	1½			
T. 113, R. 59	854	1½			
T. 113, R. 60	832, 810	1½, 2	130, 40		
T. 113, R. 61	740-810	3-1½	25	(?), 115	
T. 113, R. 62	775-815	2	5 ³	415 ³	
T. 113, R. 63	890	2	300		
Do.	988	2½	300	100	
T. 113, R. 63 ¹	800-950	1½	300		
Do.	953	4-3	300-50		
T. 113, R. 64	792-1,118	1½-4½	11, 550	150	Hitchcock well.
T. 113, R. 65	933-1,000	1	20-1, 535		One 175-pound pressure.
T. 114, R. 59	1,038		36-70	8	
Donohomme County:					
T. 92, R. 60	885, 920	2			
T. 93, R. 58 ³	630-660	3	95-100		30 pounds pressure in 885-foot well.
T. 93, R. 59	590-855	1½-3	15-252	45	
T. 93, R. 60 ⁴	620	1½-3	15-252	40-66	
Do. ⁵	592-828	1½-8	72, 3, 292		Springfield city well.
T. 93, R. 61	735-1,000	1½-8	72, 3, 292	86	
T. 93, R. 62	862, 897	2-6	25-70	12-14	
T. 94, R. 58	576-645	6	1, 400	62, 58	Choteau Creek wells.
T. 94, R. 59 ⁴	552-75	2-3	11, 600		
Do.	667, 357	1-8	13-150	40	
T. 94, R. 64 ⁴	1,074 ⁴	2, 4½	75, 1,000	30	40 pounds pressure in 752-foot well.
T. 95, R. 59	78	3-2½		2½	City of Tyndall.
T. 95, R. 60	822	2-3	26-97		Layson well.
T. 96, R. 58 ⁶	590, 680	2	52		Yield decreased to 50.
T. 96, R. 59 ⁶	590-700	6	9		Scotland wells.
T. 96, R. 60 ⁷	565	2-7	Few.	55-65	At Hutterisches Colony.
Brookings County:					
Brookings	556	4½	Several.	-42	Pressure not sufficient to afford a flow. Togranite.
DeWitt County:					
T. 121, R. 60	940	1½	57		
T. 121, R. 61	900, 940	1½	14, 43	168	
T. 121, R. 62	936, 960	2-8	106, 306		
T. 121, R. 63	898-980	1½-2	33-96		
T. 121, R. 64	1,000	1½-2	96		
Do.	903-1,015	1½-2	35-96	20-60	Warner town well.
T. 121, R. 65	1,070	1½	46		Temperature of 66° reported in 2 wells.
T. 122, R. 60	940-1,000	2	15-76		Temperature of flow is 70°.
T. 122, R. 61	900-960	1½-2	39-70	125	Town of Ferney.
T. 122, R. 63	920-940	1½	25-34	120	
T. 122, R. 64	950, 1,000	1½	30		
T. 122, R. 65	1,080	1½	37		
T. 123, R. 60 ⁸	920-977	1½	10-105		
Do.	922, 960	5-6	830	135	
T. 123, R. 61	920-935	1½-2	15-123		Groton town wells Nos. 1 and 2.
T. 123, R. 62	900	2	95		
T. 123, R. 63		1½-2	31-96		
Aberdeen ⁹	918-1,117	1½-6	250-1,060	40-138	
Aberdeen	1,200	6	450	210	
T. 123, R. 64	1,300	6-4½	1,350		
Do.	1,300	8-4½	1,000		Aberdeen city well No. 3.
T. 123, R. 65	1,070-1,167	1½	25-53		Aberdeen city well No. 4.
T. 124, R. 60 ⁹	942	4-2½	150	137	

¹U. S. Geol. Surv., 17th Ann. Rept., part 2, pp. 2-23.
²Ibid., pl. 76.
³Ibid., p. 50.
⁴Ibid., p. 58; Olivet folio No. 96, p. 1.
⁵Ibid., 18th Ann. Rept., part 4, p. 586.
⁶Ibid., p. 587.
⁷Ibid., Water-Sup. and Irr. Paper No. 34, pl. 7.
⁸Record, U. S. Geol. Surv., 17th Ann. Rept., part 2, pp. 16-18, pl. 72.
⁹Ibid., pp. 15-17.

SOUTH DAKOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Pressure.	Remarks.
Brown County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
T. 124, R. 62	900-1,012	1½-2	20-60	.....
T. 124, R. 63	983, 945	2	65, 123	.....
T. 124, R. 64	975	1½	31	.....
T. 124, R. 65	.....	1½	.....	.....
T. 125, R. 61	716	.....	.....	.....
T. 125, R. 62	872, 940	1½, 4½	40, 940	160	Columbia city wells; several flows.
T. 125, R. 62	901-1,002	1½	25-35	.....
T. 125, R. 63	942	1½	30-45	.....
T. 125, R. 65	1,021-1,100	1½	21-48	.....
T. 126, R. 60	950	2	248	.....
T. 126, R. 61	965	.....	.....	135	Several flows.
T. 126, R. 64	1,030	6	.....	35	
T. 126, R. 65	1,021-1,150	1½-2	17-136	.....
T. 127, R. 61	960	2	56	.....
T. 127, R. 62	900, 940	1½	35, 36	.....
T. 127, R. 63	800, 856	.....	.....	.....
T. 127, R. 64	1,139	6-4	139	70	Frederick city well.
Do.	1,094, 1,200	6	10, 30	.....
T. 127, R. 65	1,084	2	30	.....
T. 128, R. 61	1,000	3	144	.....	City of Hecla.
Do.	920	1½	20	.....
T. 128, R. 62	975	2	100	.....
T. 128, R. 65	1,082	3	20	43	
Brule County:					
T. 101, R. 67	750-950	1½-3	16-60	20-40	
T. 101, R. 68	815-962	1½-3	20-1,098	12-25	
T. 102, R. 67	750-880	2-3	18-100	40	Pressure given is for only some of the wells.
T. 102, R. 68	800-1,050	1½-4	9-1,000	10	Pressure given is for 1 well.
T. 102, R. 69	900	2-3	50-800	5-40	
T. 102, R. 70	1,027-1,230	2-6	400-900	2-40	
T. 102, R. 71	1,230-1,270	8	45-60	.....
T. 103, R. 67	840-976	2-3	40-90	.....
T. 103, R. 68	900-1,210	2-6	60-750	.....
Do.	1,254	6	185	7-20	Kimball city well.
T. 103, R. 69	983-1,210	2	12-60	40	
T. 103, R. 71	1,063-1,100	1½-6	25-1,000	.....
T. 104, R. 68	960	2-1½	128	.....
T. 104, R. 69	940-1,200	2-3	60-70	.....
T. 104, R. 70	927	10	1,385	.....	Flows at 890 and 903 feet.
T. 104, R. 71	600-1,186	2-8	3-300	.....
Do.	645, 670	8	4,500	39, 105	Chamberlain Electric Light Co.'s wells Nos. 1 and 2; supply and pressure diminished.
Do.	815, 960	6-4	537, 700	+121	Chamberlain city wells Nos. 1 and 2; supply greatly diminished.
Do.	540-600	4-6	1,450-5,000	40	Quamberg's 4 wells, supply decreasing.
T. 105, R. 67	940	2	80	.....
T. 105, R. 68	930-987	2-6	300-815	5-75	
T. 105, R. 69	1,075	2	30	16	Flows at 990 and 1,060 feet.
Do.	965	2	80	.....
Buffalo County:					
T. 106, R. 68	975	2	140	.....
T. 106, R. 69	875	3-2	135	75	
T. 107, R. 69	1,174	2-1½	45	.....
T. 108, R. 70	1,450	2	27	8	
Crow Creek Agency	780	6	.....	65-85	Water temp., 72°; final flow at 760 feet.
Butte County:					
Belle Fourche	525	.....	60	31	Maximum flow at 510 feet.
Do.	881	4	30	.....	Flows at 297 and 560 feet.
Do.	736	3	60	17	Near Belle Fourche.
Charles Mix County:					
T. 94, R. 64	651	6	3,000	119	Yankton Agency, temp., 70°.
T. 95, R. 63	795	4	.....	.....
T. 95, R. 64	1,020	2	.....	.....	No flow.
T. 95, R. 65	730	1	16	40	
T. 96, R. 62	150	.....	.....	.....
T. 96, R. 63	151	2	8-15	.....
T. 96, R. 64	144	2	7½	.....
T. 96, R. 65	775½, 802	8-6	1,500	70	Lake Andes, Nos. 1 and 2.
T. 96, R. 68	810	4½	37	.....
T. 97, R. 66	800-905	1-2	4-20	.....
T. 97, R. 67	700-900	1½-1½	5-150	5	

¹ Record, U. S. Geol. Surv., 17th Ann. Rept., part 2, pp. 15-17.

² Ibid., pp. 16-18, pl. 72.

³ Ibid., pp. 42-48.

⁴ Ibid., 18th Ann. Rept., part 4, p. 573.

⁵ Ibid., p. 570.

SOUTH DAKOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Pressure.	Remarks.
Charles Mix County—Con.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
T. 98, R. 64	772	2	200	52	
T. 98, R. 65	920-940	2	6, 11	2-8	
T. 98, R. 66	820-950	2-3	50-65	24-30	
T. 98, R. 67	800-991	1-3	6-65		Various pressures given, the greatest being 63 pounds.
T. 98, R. 68	800-1,110	1½-3	10-150	3-80	
Do.	1,220	6			No flow.
T. 98, R. 69	644	6	50	+24	
T. 99, R. 66	840	1½	20	+24	
T. 99, R. 67 ¹	780-950	1½-3	4-50	-50	Greatest pressure reported.
T. 99, R. 68	720-1,006	1-3	2-78	-40	Do.
T. 99, R. 69	944, 966	3, 2	60	50	
T. 99, R. 70	840-1,000	1½-3	10-30	20-26	
T. 100, R. 67	734-875	1½-3	20-120	-87	Do.
T. 100, R. 68	720-930	1-2	7-31½	-13	Do.
T. 100, R. 69	856-1,030	2	15-125	15	Pressure given is for 1 well.
T. 100, R. 70	890-900	1½, 2	16	30	
T. 100, R. 71	600-868	8	500-3,000		
Clark County:					
T. 113, R. 58	990	2	17		
T. 114, R. 59	1,100, 1,038	2	6, 8		
Do.	866-946	1½			
Clark	1,200				2 unsuccessful wells.
T. 117, R. 59 ²	1,020-1,200	1½-6	15-35		
T. 118, R. 59	1,013-1,080	1½-2	25-150		
Clay County:					
T. 92, R. 51, sec. 33	400	3-2	Few.		Water rises a few feet above the surface.
Vermilion	507	3	Few.		
T. 93, R. 51, sec. 29	400	1½	3		Flow decreasing.
T. 93, R. 51, sec. 31	410	1	1		Do.
T. 93, R. 52, sec. 28	400	2			
T. 94, R. 52, sec. 11	402	2	5		Do.
T. 94, R. 52, sec. 15	400	1½	Many.		Do.
T. 94, R. 53, sec. 33	500	2	Few.		Irony; flow decreasing.
T. 95, R. 52, sec. 9	500	3-2	3		Soft; flow decreasing.
T. 95, R. 52, sec. 17 ³	507				
Custer County:					
Buffalo Gap	700				2 unsuccessful borings.
Davison County:					
T. 101, R. 60 ⁴	413-525	2	25-45		Very hard rock bottom in 477-foot well.
T. 101, R. 61	425-640	1½-2	15-48		Depths increase regularly from northeast to southwest in this township.
T. 101, R. 62 ⁵	480-775		60		
T. 102, R. 61	500				
T. 102, R. 62	449-642	2-1½	20-90		
T. 103, R. 60 ⁶	431-550		35	13	Yield and pressure for 550-foot well sunk in 1896.
T. 103, R. 60 ⁷	765				In Mitchell; flows at 285, 376, 445, and 540 feet; quartzite from 540 to 765 feet.
Do.	433-586	2-8	20-600	13-28	In Mitchell and vicinity.
T. 103, R. 61	410-500	2	110-120		
T. 103, R. 62	400-495	2-4½	35-70		
	646	4½	700		Flows at 350, 470, and 620 feet.
T. 104, R. 60 ⁸	400-507	3-4½	10-100		
T. 104, R. 61	400-653	2-3	22-210		Several flows.
T. 104, R. 62 ⁸	405-601	2-4½	5-156?		
Day County:					
Webster	1,716		+69		Water rises to -220 feet.
Do.	1,550?	2			Unsuccessful.
Andover ⁹	1,075	6½	300	90	Saline.
T. 122, R. 59, sec. 4	1,080	1½	40	85	
T. 123, R. 58	1,240	3			
T. 124, R. 58	1,240				Water just flows.
T. 124, R. 58, sec. 6	930	1½	28	70	
T. 124, R. 58	1,200	1½	15	40	
T. 124, R. 59, sec. 2	930	1½	40	75	
T. 124, R. 59, sec. 36	970	1½	35	90	
Devey County:					
Cheyenne Agency ¹⁰	1,337	8-4	500	205	Temp., 90° or 92°.

¹ Record U. S. Geol. Surv., 17th Ann. Rept., part 2, pp. 44-45.² Ibid., 18th Ann. Rept., 1897, part 4, pp. 18, 21.³ Ibid., Parker folio No. 97, p. 21.⁴ Ibid., Alexandria folio No. 100, p. 2.⁵ Ibid., Mitchell folio No. 99, pp. 2-3.⁶ Ibid., 17th Ann. Rept., part 2, pp. 39-40, 44.⁷ U. S. Geol. Surv. Mitchell folio No. 99.⁸ Record, ibid., 18th Ann. Rept., part 4, p. 575.⁹ Ibid., 17th Ann. Rept., part 2, p. 19.¹⁰ Ibid., 18th Ann. Rept., part 4, p. 588.

SOUTH DAKOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Pressure.	Remarks.
Douglas County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
Delmont ¹	821	2	60	.....
Armour ¹	737	6	1,500	55	
Armour Mill Company's well. ¹	800	8	1,500	.....
T. 98, R. 63, sec. 20.....	722	1½	Many.	.....
T. 98, R. 64, sec. 2.....	901	8-6	1,200	.....
T. 98, R. 64, sec. 24.....	736	2	+20	.....
T. 98, R. 65, sec. 2 ²	860	6	900	.....
T. 99, R. 63, sec. 35.....	703½	8-6	2,100	75	
T. 99, R. 65, sec. 14.....	925	4	600-700	.....
T. 99, R. 65.....	1,010	6	1,000	.....
T. 100, R. 62, sec. 16.....	600	2	Many.	.....
T. 100, R. 62, sec. 18.....	1,025	.....	1,025	.....
Flensburg.....	611	2	60	.....
Flensburg (one-half mile west).....	651	2	.....	.....
Flensburg (three-fourths mile west).....	775	2	65-70	.....
T. 100, R. 63, sec. 15.....	750	4	600-700	.....	County well.
T. 100, R. 64, sec. 26.....	937	6	900	40	Do.
Do.....	975	4	1,000	.....	Do.
Edmunds County:					
T. 120, R. 67.....	1,141	1½	25	.....
T. 121, R. 66.....	987-1,100	1½-2	12-100	.....
T. 121, R. 67.....	1,025-1,220	1½	20-50	.....
T. 121, R. 68.....	1,155-1,295	1½-3	40-50	.....
T. 121, R. 69.....	1,355-1,240	1½	40, 25	.....
T. 121, R. 70.....	1,300-1,370	1½	35	.....
T. 121, R. 71.....	1,500-1,569	1½	20	.....
T. 122, R. 66.....	1,000-1,090	1½-2	15-70	.....
T. 122, R. 67.....	1,000-1,140	1½	5-40	.....
T. 122, R. 68.....	1,145-1,170	1½	20-35	.....
T. 122, R. 69.....	1,305-1,360	1½	35-70	.....
T. 122, R. 71.....	1,526	1½	2	+12	Clear, soft water; temp 56°.
T. 123, R. 66.....	1,075-1,125	2-1½	25-90	110	Pressure refers to 1,125-foot well.
T. 123, R. 67.....	1,100, 1,160	1½	25-35	.....
T. 123, R. 68.....	1,195-1,245	2-3	97-150	.....	The 1,245-foot well is in town of Ipswich.
T. 123, R. 69.....	1,370-1,420	1½	30	.....
T. 123, R. 70.....	1,498	2	3½	20	Roscoe City.
T. 124, R. 66.....	1,125-1,148	1½	40-41	.....
T. 124, R. 67.....	1,150-1,370	1½-2	15-120	.....
T. 124, R. 68.....	1,225-1,350	1½	25-45	.....
T. 124, R. 69.....	1,356	2	60	.....
Fall River County:					
Ardmore.....	1,500	.....	.....	.....	Unsuccessful.
Argentine ³	550	.....	.....	.....
Edgemont ⁴	1,125	.....	Several.	.....	Plugged at 700 feet; water at 509 feet.
Edgemont (near).....	960	.....	Several.	.....	Water from 578 feet.
Minnekahta ⁵	1,348	.....	.....	.....
Smithwick (7 miles southwest).....	600	.....	.....	.....	In progress.
Faulk County:					
T. 116, R. 66.....	970	1½	30	.....
T. 117, R. 66.....	913-1,054	1½	45-65	.....
T. 117, R. 67.....	1,000, 997	1½	48-27	.....
T. 117, R. 68.....	1,095, 1,156	1½-2	75, 90	.....
T. 117, R. 69 (Orient).....	1,232	.....	60	25-34	
Orient (4 miles north-east). ⁶	1,215	6-5½	950	.....
T. 117, R. 70.....	1,552	3-1½	17	.....
T. 118, R. 66.....	938-1,041	1½	35-55	.....
T. 118, R. 67.....	1,001-1,125	1½-2	30-75	.....	First flow at 850 feet.
T. 118, R. 68.....	1,099-1,385	1½-2	20-45	.....
T. 118, R. 69.....	1,220-1,466	1½-4	25-40	60	Pressure is for 1 well; 1,466-foot well in Faulkton.
T. 118, R. 70.....	1,183-1,608	2-3	45-100	.....
T. 119, R. 66.....	970-1,008	1½-2	35-68	.....
T. 119, R. 67.....	1,030-1,172	1½	20-160	.....
T. 119, R. 68.....	1,110-1,165	1½, 2	30, 150	.....
T. 119, R. 69.....	1,206-1,456	2-3	25-100	.....
T. 119, R. 70.....	1,367-1,402	2	100, 185	.....
T. 119, R. 71.....	1,545	2	45	.....
T. 120, R. 67.....	1,030-1,140	1½-3	25-160	.....

¹Record, U. S. Geol. Surv., 17th Ann. Rept., part 2, pp. 46-50.

²Ibid., part 4, p. 575.

³Analysis, *ibid.*, 21st Ann. Rept., 1899-1900, part 4, p. 570.

⁴Ibid., pp. 568, 571.

⁵Ibid., p. 578.

⁶Record, *ibid.*, 17th Ann. Rept., part 2, 1896 p. 22.

SOUTH DAKOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Pressure.	Remarks.
Faulk County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
T. 120, R. 68	1,025-1,125	1 $\frac{1}{2}$	(?)—25	(?)—85	
T. 120, R. 69	1,197-1,287	1 $\frac{1}{2}$ -2	10-125	.....
T. 120, R. 70	1,342-1,512	1 $\frac{1}{2}$ -2	12-100	.....
T. 120, R. 71	1,505-1,570	2-3	27-35	.....
T. 120, R. 72	1,580-1,650	2	30-70	.....
Grant County:					
T. 120, R. 48, sec. 22, NE.	407	2	2	16	
T. 120, R. 48, sec. 18, SE.	422	2	10	7	
T. 120, R. 48, sec. 7, NW.	510	2	30	13	
T. 120, R. 49, sec. 13, NE.	459	2	45	17	
Gregory County:¹					
Fort Randall	610	4	600	.....	Flow diminishing.
T. 97, R. 68, sec. 28, NE.	800	3	320	.....
T. 97, R. 68, sec. 29, NE.	730	6-4	800	.....	Flow slightly diminished.
T. 97, R. 68, sec. 30	714-892	3	50-270	.....	Hard water; temp., 80° to 86°.
Hand County:					
T. 110, R. 67, sec. 7, SW.	1,474	3-2	.....	.....	Pump.
T. 110, R. 68, sec. 21, NW.	1,611	2	.....	.....	Water to -8c feet.
T. 110, R. 68, sec. 28, NE.	838	1 $\frac{1}{2}$	50	.....
T. 111, R. 66, sec. 1, NE.	931	1 $\frac{1}{2}$	41	.....
T. 111, R. 66, sec. 8, NE.	.....	1 $\frac{1}{2}$	.....	.....
T. 112, R. 66, sec. 30, NW.	1,269	2-1 $\frac{1}{2}$	40	.....
T. 112, R. 67, sec. 4, SW.	1,125	1 $\frac{1}{2}$	50	.....
T. 112, R. 67, sec. 5, NW.	1,165	2-1 $\frac{1}{2}$	14	.....
T. 112, R. 67, sec. 7	1,272	.....	Few.	40	
T. 112, R. 67, sec. 18	1,343	3	350	125	
T. 112, R. 67, sec. 26, SW.	1,246	.....	40	.....
T. 112, R. 67, sec. 33	1,375	3	1,350	119	
T. 112, R. 68, sec. 2, SW.	1,158	1 $\frac{1}{2}$	135	.....
T. 112, R. 68, sec. 7	1,200	4	50	.....
T. 112, R. 68, sec. 10	1,140	3 $\frac{1}{2}$	.....	.....
Miller ²	1,139	6 $\frac{1}{2}$ -4 $\frac{1}{2}$	360	120	
Miller, Lost Creek Ranch Co.	1,142	3-2	40	.....
T. 112, R. 69, sec. 9, SE.	1,300	1 $\frac{1}{2}$	30	.....
T. 112, R. 69, sec. 11	1,207	2	100	.....
T. 112, R. 70, sec. 5, SW.	1,400	2	20	.....
T. 112, R. 70, sec. ?	1,440	1 $\frac{1}{2}$	30	.....
T. 113, R. 66, sec. 11, SW.	980	2	100?	+8	
T. 113, R. 66, sec. 15, SW.	967	1 $\frac{1}{2}$	.....	.....
T. 113, R. 66, sec. 18, SE.	1,163	1 $\frac{1}{2}$	40	.....
T. 113, R. 66, sec. 20, SW.	1,058	1 $\frac{1}{2}$	35	.....
T. 113, R. 66, sec. 24, SE.	1,002	1 $\frac{1}{2}$	50	.....
T. 113, R. 66, sec. 24	980	1 $\frac{1}{2}$	35	.....
T. 113, R. 67, sec. 14, SE.	1,155	2 $\frac{1}{2}$	.....	.....
T. 113, R. 67, sec. 15, SE.	800	2	.....	.....
T. 113, R. 67, sec. 25, SE.	1,168	1 $\frac{1}{2}$	35	.....
T. 113, R. 67, sec. 17, SW.	1,137	.....	.....	.....
T. 113, R. 67, sec. 25	1,140	3	400	125	
T. 113, R. 68, sec. 29, SW.	1,125	3	.....	.....
T. 113, R. 69, sec. 13, NE.	1,162	2	100	.....
T. 113, R. 69, sec. 14, NW.	1,215	2	.....	.....
T. 113, R. 69, sec. (?)	1,200	.....	.....	.....
T. 113, R. 69, sec. 33, SE.	1,214	1 $\frac{1}{2}$	60	.....
T. 113, R. 70, sec. 1, SW.	1,228	2	150	.....
T. 113, R. 70, sec. (?)	1,250	2	30	.....
T. 114, R. 66, sec. 9, NE.	966	2	50	.....
T. 114, R. 66, sec. 11	1,070	1 $\frac{1}{2}$	35	.....
T. 114, R. 66, sec. 12, NW.	1,011	1 $\frac{1}{2}$	35	.....
T. 114, R. 66, sec. 14, SE.	960	1 $\frac{1}{2}$	40	.....
T. 114, R. 66, sec. 22, NE.	958	1 $\frac{1}{2}$	42	.....
T. 114, R. 66, sec. 35 $\frac{1}{2}$, W.	1,010	1 $\frac{1}{2}$	35	.....
T. 114, R. 67, sec. 30, SW.	1,102	1 $\frac{1}{2}$	25	.....
T. 114, R. 68, sec. 8, SW.	1,170	1 $\frac{1}{2}$	35	.....
T. 114, R. 68, sec. 9, SW.	1,185	1 $\frac{1}{2}$	30	.....
T. 114, R. 68, sec. 12, NE.	1,050	1 $\frac{1}{2}$	40	.....
T. 114, R. 68, sec. 19, NE.	1,140	1 $\frac{1}{2}$	35	.....
T. 114, R. 68, sec. 27, SE.	1,272	.....	.....	.....
T. 114, R. 69, sec. (?)	1,338	.....	25	.....
T. 114, R. 69, sec. 14, SE.	1,197	2	.....	.....
T. 114, R. 70, sec. 2, NW.	±1,270	2	80	.....
T. 114, R. 70, sec. 8, SW.	1,380	2	120	.....	Gas with second flow at 1,375 feet.
T. 114, R. 70, sec. 15	1,303	3-1 $\frac{1}{2}$	15 or 25	.....
T. 114, R. 70, sec. 19, NE.	1,305	1 $\frac{1}{2}$	55	.....
T. 114, R. 70, sec. 20, NE.	1,350	2	120	.....
T. 115, R. 66, sec. 35, NE.	993	1 $\frac{1}{2}$	.....	.....
T. 115, R. 67, sec. 12, NW.	1,015	1 $\frac{1}{2}$	.....	.....
T. 115, R. 68, sec. 10, NE.	1,182	1 $\frac{1}{2}$	.....	.....
T. 115, R. 68, sec. 20	1,400	4 $\frac{1}{2}$ -2	180	.....

¹Record, U. S. Geol. Surv., 17th Ann. Rept., part 2, 1896, p. 58.²Ibid., p. 26.

SOUTH DAKOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Pressure.	Remarks.
Hand County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
T. 115, R. 68, sec. 22, NE	1,065	1½	60		
T. 115, R. 68, sec. 10, SE	1,335	2	35		
T. 115, R. 68, sec. 14, SW	1,242	1½	16		
T. 115, R. 68, sec. 24, NW	1,370	2	135		
T. 115, R. 70, sec. 14, NE	1,300	2	100		
T. 115, R. 70, sec. 28, SW	966	1½	35		
T. 116, R. 67, sec. 15, SE	853	1½			
T. 116, R. 67, sec. 26	1,115	1½	68		
T. 116, R. 68, sec. 28, NE	1,260	1½	40		
T. 116, R. 68, sec. 35, SW					
Hanson County:					
T. 101, R. 58 ¹	412				
T. 103, R. 59 ¹	400-470				
T. 104, R. 57, sec. 3	532	2	2	+ 6	
T. 104, R. 57, sec. 7	510	3-2	16		
T. 104, R. 57, sec. 8 ²	589, 600	1½, 2	20, 50		
T. 104, R. 57, sec. 17	510	3	2		
T. 104, R. 57, sec. 21	550	2	2		
T. 104, R. 57, sec. 22	543	2	50		
T. 104, R. 57, sec. 24	555	2	+1		
T. 104, R. 57, sec. 27	508	2	4		
T. 104, R. 57, sec. 30 ¹	558				
T. 104, R. 58, sec. 9	535	2	5		
T. 104, R. 58, sec. 12 ³	483	4	35	20	
T. 104, R. 58, sec. 13 ²	550	2	150		
T. 104, R. 58, sec. 14 ²	528	2-1½	30		
T. 104, R. 58, sec. 17	440	1	Few.		
Hughes County:					
Pierre (city well)	1,281	8-6	2,088		
Pierre	1,160-1,537			210	Pressure given is the greatest reported.
Pierre (northeast of)	1,645	3-1½	115		
East Pierre ⁴	1,192		900	+160	
Harrold ⁴	1,453	4	84	+ 20	
Hutchinson County:					
T. 97, R. 56	445, 480	2			
Menno	417	6	(5)		Low pressure.
T. 97, R. 57	406-747	1½-2	Many.	25	
T. 97, R. 59	480-620	1½-2	30-50	25-35	
T. 97, R. 60	540-760	1½-2	40-100	35-60	
Do. ⁵	842	4½	700	9	Tripp town well.
T. 97, R. 61	945				
T. 98, R. 58	420				
T. 98, R. 59	400-450	1½-2	4-15		
T. 98, R. 60	470-580	2-5	16-120		
T. 98, R. 61	482-560	1½-3	13-60		
T. 99, R. 59	490	2			
T. 99, R. 60 ⁷	400-540	1½-3	10-150		
Do.	522	6	5		
Do.	542	3	30	20	Parkston city well.
T. 99, R. 61	490-572	1½-2	8-50		Do.
T. 100, R. 59 ⁶	410				
T. 100, R. 60	420-560	2	3-10		
T. 100, R. 61 ⁸	419-585	2-3	1-90		
Hyde County:					
Afton (1 mile east)	1,370	2	40		
Afton (3 miles east)	1,350	2	18		
Edwin.	1,445	2-1½			
Edwin (near)	1,360-1,396	1½	25-34		3 wells.
Highmore ⁷	1,552	6	9	12-15	Temp., 72°.
Highmore (3 miles north)	1,487	2	120		
Highmore (4 miles north-east)	1,490	2	120		
Highmore (8 miles north-east)	1,397	3-2	70		Mitchell ranch.
Highmore (3 miles north-west).	1,590	2	12		
Highmore (14 miles northwest).	1,508	2	180		
Highmore	1,631	3	14		
Ree Heights (3 miles northwest).	1,440	2	100		
Jerauld County:					
T. 106, R. 63	715-760	2-3	200-280	110-140	
T. 106, R. 64 ⁹	735-880	2½	5-280	114	

¹ U. S. Geol. Surv. Alexandria folio No. 100.² Record, U. S. Geol. Surv., 17th Ann. Rept., part 2, pl. 84.³ Ibid., 18th Ann. Rept., part 4, p. 579.⁴ Ibid., 17th Ann. Rept., part 2, pl. 76.⁵ One-fourth of an inch stream.⁶ U. S. Geol. Surv. Water-Sup. and Irr. Paper No. 34.⁷ Record, *ibid.*, 17th Ann. Rept., part 2, pp. 47-48; 18th Ann. Rept., 1897, part 4, pp. 580-585.⁸ Ibid., 18th Ann. Rept., 1897, part 4, pp. 580-585.⁹ Ibid., 17th Ann. Rept., part 2, p. 24.

SOUTH DAKOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Pressure.	Remarks.
Jerauld County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
T. 107, R. 63	860	1½	75		
T. 107, R. 64	1,200	4	1		
T. 107, R. 65	749, 785	1½-3	38,500	(?) + 32	Temp., 75°.
T. 108, R. 63	799-840	2-1½	2-45		
T. 108, R. 64	1,057	2½	200	90	
T. 108, R. 65¹					
Kingsbury County:					
T. 109, R. 57, sec. 30	925	2	80	+20	
T. 109, R. 58, sec. 8	815	2	90		
Esmond	870	2	75		
T. 109, R. 58, sec. 29	840		Many.		
Do.	845	2	100		Clear, soft water.
T. 109, R. 58, sec. 35	906	2	50	20	
Do.	600, 640	2			Water nearly to surface.
Do.	400-500			21	Several wells.
Arlington	786				No flow.
T. 110, R. 57, sec. 18	970	2	20	8	
T. 110, R. 57, sec. 19	940		60	27	Spear well.
Iroquois²	1,115	4½	1,000	67	Main flow from 850 to 900 feet.
T. 110, R. 57, sec. 2	820	2	80		
T. 110, R. 58, sec. 28	850	1½	35		
Desmet	1,610				Water from -20 to -40.
T. 111, R. 56, sec. 32	500		Many.		No flow.
T. 111, R. 57, sec. 5	1,170				Do.
Do.	600		Many.		Do.
T. 111, R. 57, sec. 28	1,090	2			No water.
T. 111, R. 57, sec. 31	970	2	30		
T. 111, R. 58, sec. 20	1,005	2			
T. 111, R. 58, sec. 22	943		Many.	50	
Do.	1,020	2			
T. 111, R. 58, sec. 24	1,010	2	18		
T. 111, R. 58, sec. 34	850	2	50		
Hetland	710		None.		Dry hole.
T. 112, R. 56	600		Many.		Water level, -100 feet.
T. 112, R. 57, sec. 7	1,120	2	4	15	
T. 112, R. 57, sec. 30	1,066	1½	1½		
T. 112, R. 57, sec. 31	1,060	1½	3		
T. 112, R. 58, sec. 3	1,000	2	40	40	
T. 112, R. 58, sec. 14	1,030	2	20	30	
T. 112, R. 58, sec. 21	1,045		Many.		
T. 112, R. 58, sec. 26	1,051	1½	8		
T. 112, R. 58, sec. 30	947	1½	10		
T. 112, R. 58, sec. 35	1,040	2	45		
Bancroft	1,094	2	25		
Lake County:					
Madison	1,082				Unsuccessful.
Lyman County:					
T. 104, R. 71, sec. 7, NW	737	2	Many.		
T. 104, R. 71, sec. (?)	600	2			Small flow.
T. 104, R. 72, sec. 14	563	2			First flow at 360 feet, second at 460 feet, main at 560 feet, equal top of Dakota.
Oacoma (southwest of)	645-1,028	3-2	90-300		
T. 108, R. 78, sec. 31 (?)	1,653	3-1½	40	20	
McPherson County:					
T. 125, R. 66, sec. 24, NW	1,160	1½	40		Water clear.
T. 125, R. 67, sec. 4, SW	1,190	2	80		Do.
T. 125, R. 67, sec. 8, SE	1,185	1½	20		Do.
T. 125, R. 67, sec. 16, SW	1,180	1½	60		Water milky.
T. 125, R. 67, sec. 20, NE	1,180	1½	60		Water clear.
T. 125, R. 67, sec. 26, S	1,165	2	160		Water clear and soft.
T. 125, R. 68, sec. 3, SE	1,280	1½	40		
T. 125, R. 68, sec. 11, SW	1,260	1½	30		
T. 125, R. 68, sec. 25, SW	1,260	2	100		
T. 125, R. 69, sec. 24, SE	1,507		8		
T. 126, R. 66, sec. 9, NW	1,150	1½	50		Water clear.
T. 126, R. 66, sec. 12, SE	1,150	1½	40		Do.
T. 126, R. 66, sec. 19, SW	1,180	1½	60		Do.
T. 126, R. 66, sec. 30, SW	1,160	1½	60		Do.
T. 126, R. 66, sec. 31, NE	1,170	1½	60		Water muddy.
T. 126, R. 67, sec. 21, NW	1,290	2	30		Water clear.
T. 126, R. 67, sec. 29, NW	1,230	1½	35		Do.
T. 126, R. 68, sec. 10	1,102	2			
T. 126, R. 68, sec. 23, NE	1,280	1½	50		Do.
T. 127, R. 66, sec. 11, NE	1,150	1½	80		Do.
T. 127, R. 67, sec. 1, NW	1,220	1½	60		Do.
T. 127, R. 67, sec. 3, SW	1,330	1½	80		Do.
T. 127, R. 67, sec. 7, NE	1,320	1½	30		
T. 127, R. 68, sec. 24, NE	1,485	1½	11		Do.
T. 128, R. 66, sec. 8, NW	1,280	1½	40		Do.
T. 128, R. 66, sec. 19, NE	1,250	1½	25		

¹Record, U. S. Geol. Surv., 17th Ann. Rept. part 2, pp. 29-30.

²Ibid., pp. 22-23.

SOUTH DAKOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Pressure.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
McPherson County—Cont'd.					
T. 128, R. 66, sec. 25, NW.	1,170	1 $\frac{1}{2}$	26	.....	Water clear.
T. 128, R. 66, sec. 28, NW.	1,250	1 $\frac{1}{2}$	25	.....	Do.
T. 128, R. 66, sec. 30, SE.	1,250	1 $\frac{1}{2}$	25	.....	Do.
T. 128, R. 67, sec. 2, NW.	1,460	1 $\frac{1}{2}$	25	.....	Do.
T. 128, R. 67, sec. 13, SE.	1,725	1 $\frac{1}{2}$	25	.....	.....
T. 128, R. 67, sec. 14, NE.	1,350	1 $\frac{1}{2}$	35	.....	Do.
T. 128, R. 67, sec. 15, SE.	1,425	1 $\frac{1}{2}$	26	.....	Do.
T. 128, R. 67, sec. 25, NW.	1,300	1 $\frac{1}{2}$	35	.....	Do.
T. 128, R. 67, sec. 33, NW.	1,436	1 $\frac{1}{2}$	30	.....	Do.
Marshall County:					
Langford.	1,050	6	400-500	60	.....
T. 125, R. 58, sec. 6.	960	1 $\frac{1}{2}$	50	.....	.....
T. 125, R. 58, sec. 31.	990	1 $\frac{1}{2}$	35	.....	.....
T. 125, R. 59, sec. 35, SE.	930	1 $\frac{1}{2}$	25	.....	.....
T. 125, R. 59, sec. 35.	925	1 $\frac{1}{2}$	10	.....	.....
T. 125, R. 60, sec. 34.	953	2	70	.....	.....
T. 126, R. 56, sec. 7.	980	1 $\frac{1}{2}$	60	.....	.....
T. 126, R. 57, sec. 2.	1,110	2	15	.....	.....
T. 126, R. 57, sec. 5.	1,015	1 $\frac{1}{2}$	25, 30	.....	2 wells.
T. 126, R. 57, sec. 6.	890	1 $\frac{1}{2}$	35	.....	.....
T. 126, R. 57, sec. 7.	960	1 $\frac{1}{2}$	10	.....	.....
T. 126, R. 57, sec. 9.	1,200	1 $\frac{1}{2}$	25	.....	.....
T. 126, R. 57, sec. 12.	968	1 $\frac{1}{2}$	25	.....	.....
T. 126, R. 57, sec. 22.	1,018	1 $\frac{1}{2}$	30	.....	.....
T. 126, R. 57, sec. 34.	1,034	1 $\frac{1}{2}$	25	.....	.....
T. 126, R. 58, sec. 1, SW.	938	1 $\frac{1}{2}$	35	.....	.....
T. 126, R. 58, sec. 15, SW.	953	1 $\frac{1}{2}$	45	.....	.....
T. 126, R. 58, sec. 19.	950	2	95	.....	.....
T. 126, R. 58, sec. 26.	965	1 $\frac{1}{2}$	10	.....	.....
T. 126, R. 58, sec. 28.	940	1 $\frac{1}{2}$	30	.....	.....
T. 127, R. 57, sec. 12, NE.	940	1 $\frac{1}{2}$	6	.....	.....
T. 127, R. 57, sec. 23, NE.	1,152	2 $\frac{1}{2}$ -1 $\frac{1}{2}$	40	.....	.....
T. 127, R. 57, sec. 32.	1,010	1 $\frac{1}{2}$	35	.....	.....
T. 127, R. 58, sec. 32, SW.	922	1 $\frac{1}{2}$	35	.....	.....
Britton ¹ .	1,004	8-3 $\frac{1}{2}$	600	150	.....
Britton (near).	1,300	2-1 $\frac{1}{2}$	.....	.....	Water rises to — 6 feet.
T. 128, R. 56, sec. 3.	980	1	18	.....	.....
T. 128, R. 58, sec. 11, NW.	930	1 $\frac{1}{2}$	30	.....	.....
Newark.	940	8-6	600	125	.....
Meade County:					
Fort Meade.	1,450	.....	12	.....	Flow from 322 feet.
Sturgis (6 miles north).	750	6-3 $\frac{1}{2}$	Many.	15	.....
Meyer County:					
Rosebud Agency (26 miles northeast).	2,500	8-6	.....	+260	.....
Miner County:					
T. 105, R. 57.	430	.....	Many.	.....	Nonflowing wells at Howard and Villas.
T. 106, R. 56.	450-465	.....	.....	.....	No flow; good pump supply; soft water.
T. 107, R. 56.	450-580	.....	Many.	.....	Soft water; Carthage City well.
T. 108, R. 57.	884	2 $\frac{1}{2}$ -4	60	33	No flow; soft water.
Do.	408-450	.....	Many.	.....	Do.
T. 108, R. 58.	405-430	.....	Many.	.....	.....
T. 108, R. 58, sec. 22.	894	2	.....	.....	.....
T. 108, R. 59, sec. 1.	824	1	.....	.....	.....
Minnehaha County:					
Sioux Falls.	575	.....	.....	.....	Unsuccessful.
Moody County:					
Flandreau (5 miles southwest of).	455	.....	.....	.....	Water found in sand.
Pennington County:					
Rapid City, (one-half mile southeast of).	400	.....	.....	.....	Small flow in sandstone.
Potter County:					
T. 117, R. 77, sec. 3, SW.	1,770	2	12	.....	.....
T. 117, R. 77, sec. 21.	1,604	2	60	.....	.....
T. 117, R. 78, sec. 6.	1,761	2	.....	.....	.....
Gettysburg.	2,130	3	.....	.....	.....
Sanborn County:					
T. 105, R. 59.	476	.....	.....	.....	Water to — 108 feet. Unlimited supply.
T. 105, R. 60.	400-630	2	15-165	35	Flow from Dakota sandstone.
T. 105, R. 61 ² .	420-670	1 $\frac{1}{2}$ -2	4-125	80	Flows from Benton formation and Dakota sandstones.
Batcher ³ .	585	3-2	80	90	Pressure is for one well.

¹ Record, U. S. Geol. Surv., 17th Ann. Rept., part 2, p. 181.² Ibid., pp. 631-633; Mitchell folio No. 99.³ Ibid., pp. 631-633.

SOUTH DAKOTA—Continued.

Location.	Depth.	Dia- meter.	Yield per minute.	Pressure.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
Sanborn County—Cont'd.					
T. 105, R. 62	400-490	1½-2			Small flows from Benton formation and Dakota sandstone.
T. 106, R. 59	625	6-2½			Flow from Dakota sandstone.
T. 106, R. 59, sec. 18¹	701				Do.
Artesian²	708		120		Do.
T. 106, R. 60	580-686				Do.
T. 106, R. 61	560-576	2			Do.
T. 107, R. 62	689-756	1½-2			Do.
Woonsocket³	725	6	1,150	130	Do.
Do	775		Many	125	Woonsocket mill well.
T. 108, R. 60	530				Flow from Benton formation.
T. 108, R. 62	792	1½	23		Flow from Dakota sandstone.
Spink County:					
T. 114, R. 60	835-920	1½-2			
T. 114, R. 61	750-800	1½-2	15-50		
T. 114, R. 62	890-1,000	1½-4½	30-1,000	125-150	
T. 114, R. 63	884-1,150	1½-4½	30-1,200	50	Only one pressure reported.
T. 114, R. 64	970-921	2, 1½	100, 35		
T. 114, R. 65	870-940	1½-1½	35-45		
T. 115, R. 60	866-937	1½-2	Few.		
T. 115, R. 61	450-1,050	1½-4½	25-75	? - 87	
T. 115, R. 62	787-987	1½-2	42-350		
T. 115, R. 63	940-980	1½-2	40-100		
T. 115, R. 64	874-1,085	1½-4½	40-1,000		
T. 115, R. 65	955	1½	60		
T. 116, R. 60	918	1½			
T. 116, R. 61	920-960	1½	18-40		
T. 116, R. 62	880-920	1½-2	35-120		
Frankfort⁴	895	4½	600		Blaine well.
Do	1,008	8-4½			
T. 116, R. 63	858-1,029	1½-2	25-80		
T. 116, R. 64	858-965	1½-2	45-175		
Redfield⁴	964	6½-4½	1,260	177	Town well.
Do	1,025	6	1,900		Hassel & Meyers well.
Do	960, 1,060	4½		+87, 105	Redfield City wells, Nos. 2 and 3.
Do	956	4½	300	+124	Institution for feeble-minded.
T. 116, R. 65	908, 918	1½-2	150		
T. 117, R. 60⁴	897, 967	4½	370, 600	122, 112	Doland town wells.
T. 117, R. 60	921-987	1½	10-35		
T. 117, R. 61	888-968	1½	50-110		
T. 117, R. 62	906-950	1½-4½	35-350		
T. 117, R. 63	850-1,052	1½-2	20-53		
T. 117, R. 64	813-1,387	1½-1½	20-70		
T. 117, R. 65	890-1,029	1½	35-65		
T. 117, R. 66	984	1½	50		
T. 117, R. 67	870	1½	45		
T. 118, R. 60	850-986	1½-2	25-35		
Turton	920	4½	1,300		Town well.
T. 118, R. 61	873-988	1½	21-40		
T. 118, R. 62	863-1,012	1½-2	25-120		
T. 118, R. 63	855-960	1½-2	10-200		
T. 118, R. 64⁴	870-1,021	1½-8	30-306		
Do	925	4½	100	60	{ Chicago, Milwaukee and St. Paul Railroad well and mill well, at Ashton.
	1,003	8	2,000	150	
T. 118, R. 65	932-1,079	1½-2	35-150	? - 150	
T. 119, R. 60	891-1,056	1½	30-150	130	
T. 119, R. 61	825-970	1½	2-60		
T. 119, R. 62	910-1,018	1½	26-45		
T. 119, R. 63⁴	920-958	1½-4½	60-894	141, 153	
T. 119, R. 64	993	6-1½	1,300	135	
T. 119, R. 65	943-1,019	1½	30-60		
T. 119, R. 66	1,046	1½	40		
Melette⁴	920-1,065	3-6	467-1,320	165	
Northville	980	6	1,900	156	Well in Cond.
	1,020	2	150		
T. 120, R. 60	960	4½			
T. 120, R. 61	920	1½	45		
T. 120, R. 62	950-1,170	1½	20-30		
T. 120, R. 63	920	2	180		
T. 120, R. 64	900-948	1-1½	12-84	120	
T. 120, R. 65	918	3	278		

¹U. S. Geol. Surv. Alexandria folio No. 100; p. 2.

²Ibid., 17th Ann. Rept., 1896, part 2, pp. 631-633.

³Record, *ibid.*, 18th Ann. Rept., 1897, part 4, p. 575.

⁴Ibid., pp. 19-20.

SOUTH DAKOTA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Pressure.	Remarks.
Sully County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Pounds.</i>	
T. 113, R. 79, sec. 32, SE...	1,565	3-2	175	+60	Water saline.
T. 114, R. 77, sec. 11, NW...	1,717	2	85	+20	Hard water; no gas; Oneida town well.
T. 115, R. 79, sec. 3, SE...	1,645	2	20	.....	Water soft, warm gassy; Pearl Township well "No. 2."
T. 115, R. 79, sec. 28, NW of NE.	1,781	2	65	25	Water soft, gassy; Pearl Township well "No. 1."
T. 116, R. 78, sec. 19.....	1,595	2	85	65	Water soft and gassy.
Todd County:					
Fort Randall ¹	610	4	600	.....
Turner County:					
Hurley (4 miles southwest). ²	513	.....	.....	.....
T. 99, R. 55, sec. 34, SE. ³	440	.....	.....	.....
Walworth County:					
Selby.....	1,897	2-1½	17	+16	Water alkaline, warm, gassy; main flow from 1,880 feet.
Yankton County:					
T. 93, R. 54.....	450	2	80	.....
T. 93, R. 55.....	400-521	1-3	50-350	30-49	
Yankton (R. 55-56) ⁴	493	8	3,000	52	Excelsior mill; flow decreasing.
Fountain mills.....	600	6	1,500	48	Flow decreasing.
City well.....	619	8	1,000	18	
Asylum.....	672	4½	165	10	
College Hill.....	524	2	2,600	27	
Near (Cement Co.).....	645	6	500	.....	5 flows.
Whiting nursery.....	521	3	350	49	
.....	400-475	2	6-95	.....	Small wells; flow decreasing.
2 miles west.....	400	2	60	60	
T. 93, R. 57.....	530, 585	1½, 2	21	+17	
T. 94, R. 54.....	432-510	2	35-75	.....
T. 94, R. 55.....	435-648	2	3-100	12	Some alkaline water; flow decreasing.
T. 95, R. 54.....	545, 580	1-2	8	6	
T. 95, R. 55.....	535, 554	2	Many.	.....	Several flows.
T. 95, R. 56.....	544-640	2-3	43, 65	+15	
T. 96, R. 55 ²	590	.....	.....	.....	No flow.
T. 96, R. 56 ²	700	.....	Many.	.....	Hard water; flow ceased.
T. 96, R. 57.....	505	2	5	.....

¹ Record, U. S. Geol. Surv., 17th Ann. Rept., 1896, part 2, p. 58.

² U. S. Geol. Surv. Parker folio No. 97.

³ Ibid., Water-Sup. and Irr. Paper No. 34.

⁴ Record, ibid., 17th Ann. Rept., 1896, part 2, pp. 53, 58.

PUBLICATIONS RELATING TO DEEP BORINGS IN SOUTH DAKOTA.

Report on Irrigation, 52d Congress, 1st session, Senate Ex. Doc. No. 41, part 2, pp. 40-65, Washington, 1893.

Preliminary report on the artesian waters of a portion of the Dakotas, by N. H. Darton: United States Geological Survey, Seventeenth Annual Report, 1895-96, part 2, pp. 609-694, Washington, 1896.

New development in well boring and irrigation in South Dakota, by N. H. Darton: United States Geological Survey, Eighteenth Annual Report, 1896-97, part 4, pp. 567-615, Washington, 1897.

Geology and water resources of a portion of eastern South Dakota, by J. E. Todd: United States Geological Survey, Water-Supply and Irrigation Paper, No. 34, 34 pages, plates and maps, Washington, 1900.

United States Geological Survey, Olivet, Parker, Mitchell, and Alexandria folios (Nos. 96, 97, 99, and 100).

Preliminary report on the geology and underground water resources of the Central Great Plains, by N. H. Darton: United States Geological Survey Professional Paper No. 32, Washington, 1905.

TENNESSEE.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Benton County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Eva.....	727	6	5	-19	
Cheatham County:					
Kingston Springs.....	1,000				Unsuccessful.
Coffee County:					
Tullahoma.....	700				Oil well.
Crockett County:					
Bells.....	1,100				Prospect well; unsuccessful.
Crockett Mills.....	+900	3		No flow.	Abandoned.
Do.....	420	3	Many.	-30	
Dickson County:					
Dull (2 miles from).....	565	4½			3 oil wells.
Do.....	2,000	4½			Oil well.
Dyer County:					
Dyersburg ¹	600		140	Flows.	Do.
Do.....	600		130		Do.
Do.....	591	6	100	+11	
Fentress County:					
Little Crab ²	2,185				For oil; not found in paying quantities.
Hamilton County:					
Chattanooga.....	600	10-8	50	-45	
Hardin County:					
Lexington.....	700				
Saltillo.....	950	36-6	Many.	Flows.	Sulphur; temp., 45°; bored in 1830.
Knox County:					
Knoxville.....	2,100				Temp., 57°.
Lawrence County:					
Iron City.....	400	12			For oil or gas.
Do.....	480				For gas; not in use.
Morgan County:					
Rugby.....					Several wells for oil.
Obion County:					
Rives.....	500			-30	
Overton County:					
Livingston (just southwest). ²	2,080				For oil.
Putnam County:					
Cookeville (2 miles southwest). ²	1,990				Do.
Cookeville (8 miles northeast). ²	1,549				Do.
Scott County:					
Elgin (2½ miles northwest). ²					Do.
Glen Mary (2 miles west). ³	1,236-1,340				Oil wells; several others in Scott County.
Do.....	600				
Helenwood (?). ³	1,500				For oil; unsuccessful.
Shelby County:					
Memphis.....	450-400	8-6	200-100		Several wells.
Do. ⁴	+1,156				Several wells for oil; abandoned.
Do.....	3,000-2,000				
Union County: (?)					
Hurricane Creek ¹	530				Oil well.

¹ Tenn. Com. Ag. Oil Region Rept., 1877, pp. 54, 73.² Record, U. S. Geol. Surv. Folio No. 53, pp. 4-5.³ U. S. Geol. Surv., 17th Ann. Rept., 1895-96, part 3, pp. 699-700.⁴ Tenn. State Board of Health Bull., vol. 5, 1890, pp. 98-106.

PUBLICATIONS RELATING TO DEEP BORINGS IN TENNESSEE.

United States Geological Survey, Seventeenth Annual Report, 1896, parts 2 and 3.

"Oil region," Tennessee: Commissioner of Agriculture Report, 1877.

Tennessee State Board of Health Bulletin, volume 5, 1890.

United States Geological Survey Folio No. 53, by M. R. Campbell, 1899.

TEXAS.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Anderson County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Palestine	650	6	Few.	—200	
Palestine (1½ miles)	400-444	8-6	121	No flow.	Several wells.
Do.	560	6	100	— 80	
Angelina County:					
Burke	500				Salt water; abandoned.
Lufkin	1,300				No water; abandoned.
Archer County:					
Archer City	550	6	Few.	— 50	Alkali water.
Do. ¹	736			No flow.	
Do.	500				Salt water only.
Atascosa County:					
Tobey	1,200-1,300				
Bastrop County:					
Bastrop.	+900				No water.
Bell County:					
Belton (9 miles west) ...	700			Flows.	
Belton (10 miles south-east) ..	1,800		Many.	Flows.	
Belton (2 miles north-east) ..	1,000			Flows.	
Belton (19 miles west) ..	830			Flows.	
Belton (9 miles south-west) ..	772		70	Flows.	
Belton ²	975	4	173.6	Flows.	Soft water.
Belton (1 mile south-west) ..	1,060		347	Flows.	Do.
Belton (1 mile south) ...	1,000			Flows.	
Holland (10 miles south) ..	1,800		10	Flows.	Salt water.
Killeen	606			— 60	
Rogers	+1,600			Flows.	
Salado (5 miles south-east) ..	412			—397	
Temple (1 mile west) ...	1,850		Many.	Flows.	Temp., 91°.
Do.	1,800		Few.	Flows.	
Troy	1,472	8		Flows.	Soft water.
Do.	1,474		14	Flows.	
Do.	1,464		243	Flows.	Do.
Youngsfort	404		1	Flows.	
Do.	417			Flows.	
Youngsfort (1½ miles east) ..	433			Flows.	
Youngsfort (one - half mile north) ..	444		1	Flows.	
Bexar County:					
Aul ³	673			— 4	
Fort Sam Houston	726		200	— 5	Water-bearing beds at 351 and 398 feet; water at 398 feet being salty.
San Antonio ⁴	822-1,200		55-200		Numerous wells.
Do.	1,250				
Do.	465		56		
San Antonio (1 mile west) ..	835		55		
San Antonio	870		861		
San Antonio (3 miles southeast) ..	1,100				Hot sulphur water.
San Antonio (3 miles south) ..	1,900		555		
San Antonio (6 miles southeast) ..	2,215				Water at 1,800 feet.
San Antonio (2 miles south) ..	1,900		555	— 84	
San Antonio	500				Several wells.
Do.	650-715		500-700		Do.
San Antonio (2½ miles northwest) ..	540				
San Antonio	630				
Do.	750-780		1,000		Do.
Do.	450				
Do.	657		250		Do.
San Antonio (3 miles north) ..	583			— 50	
Bosque County:					
Cayote (3 miles north-east) ..	439			No flow.	
Clifton	640		170	Flows.	
Do.	700		Many.		Temp. 70°.

¹Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 262.²Record, Artesian waters of Texas west of the 97th meridian, by R. T. Hill: 52d Cong., 1st sess., Senate Ex. Doc. No. 41, part 3, 1893 p. 116.³Record, U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 2, p. 272.⁴Ibid., pp. 290-297.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Comanche County—Continued.					
Clifton (3 miles north) . . .	662	.....	220	Flows.	Temp., 84°; soft water.
Clifton (1 mile west) . . .	715	.....	60	Flows.	Soft water.
Clifton (3¼ miles north) . . .	670	.....	170	Flows.	
Clifton (8 miles south-east) . . .	840	.....	170	Flows.	
Clifton (3 miles west) . . .	612	.....	.....	Flows.	Do.
Clifton (1 mile west) . . .	687	.....	.....	Flows.	Do.
Clifton . . .	700	.....	Many.	.....	Temp., 70°.
Clifton (three-fourths mile west) . . .	700	.....	11	Flows.	Soft water.
Cyrus (1 mile east) . . .	1,000	.....	Many.	Flows.	
Eulogy . . .	780	.....	34	Flows.	
Do. . .	529	.....	30	Flows.	
Eulogy (1 mile north) . . .	475	.....	.....	Flows.	Do.
Eulogy (three-fourths mile north) . . .	460	.....	10	Flows.	
Eulogy (one-fourth mile west) . . .	430	.....	68	Flows.	Do.
Fowler (1½ miles north) . . .	735	.....	123	Flows.	Do.
Kimball . . .	550-630	.....	.....	Flows.	Several wells.
Kimball (6 miles west) . . .	564	.....	60	+ 20	Soft water.
Kopperl . . .	400	.....	.....	Flows.	
Kopperl (three-fourths mile east) . . .	600	.....	800	Flows.	Do.
Kopperl . . .	625	.....	150	Flows.	Slightly brackish.
Kopperl (¾ miles west) . . .	609	.....	200	.....
Kopperl . . .	525	.....	.....	Flows.	
Meridian . . .	450-580	.....	25-45	Flows.	Several wells; soft water.
Meridian (10 miles east) . . .	850	.....	16	Flows.	
Meridian (12 miles east) . . .	875	.....	— 42	.....	Soft water.
Morgan . . .	600	.....	100	Flows.	Do.
Do. . .	580-620	.....	20-150	Flow.	Several wells; soft water.
Morgan (1 mile south-east) . . .	575	.....	170	Flows.	Soft water.
Morgan . . .	800	.....	50	Flows.	
Morgan (5 miles east) . . .	780	.....	40	Flows.	
Morgan (12 miles east) . . .	501	.....	100	Flows.	
Morse (4 miles south-west) . . .	622	.....	.....	No flow.	Do.
Valley Mills . . .	805	.....	.....	Flows.	
Valley Mills (5 miles north) . . .	870	.....	.....	Flows.	Do.
Valley Mills (1 mile north) . . .	706	.....	.....	Flows.	
Valley Mills (5 miles north) . . .	877	.....	.....	Flows.	Do.
De Kalb County:					
De Kalb (13 miles north of, at mouth of Mill Creek) . . .	425	2	.....	— 2	Abandoned.
New Boston . . .	1,200	.....	.....	— 75	
Do. . .	536	3½	.....	.....	Salt water at 500 feet.
Do. . .	800	.....	.....	— 20	Once flowed.
Do. . .	1,200	5	.....	— 60	Salty water; used for stock.
Fort Bend County:					
Fort Bend . . .	550	.....	.....	.....
Fort Bend (4 miles north) . . .	502	2	70	.....
Fort Bend . . .	600-1,500	.....	.....	.....
Columbia (2 miles west)² . . .	600	.....	.....	.....	Strong pressure of gas at 600 feet; large flow of water with small quantities of oil.
Damon (northwest of)⁴ . . .	1,160	.....	.....	.....	Herndon well; rock salt from 587 to 1,160 feet; considerable quantities of sulphur water; no traces of oil.
Do. ⁴ . . .	1,097	.....	.....	.....	Well No. 1 of the J. M. Guffey Petroleum Co.
Damon (southwest of)⁴ . . .	1,230	.....	.....	.....	Diamond Mound Oil and Pipe Line Company's well.
Dumont . . .	650	.....	.....	.....
Dumond Point . . .	1,500	.....	.....	.....	Prospect for oil; artesian water stratum at 1,000 feet.
Dumond . . .	1,070	4	215	Flows.	
Do. . .	1,000	.....	.....	.....
Elasco . . .	1,100	8	694	Flows.	

Record, 51st Cong., 1st sess., Senate Ex. Doc.

²Record, *ibid.*, p. 40.

32d, p. 269.

⁴Ibid., pp. 37-39.

S. Geol. Surv. Bull. No. 212, p. 41.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Brazoria County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Velasco (3½ miles southwest).	745	.....	.....	.....	Limestone at 745 feet, where strong gas flow was struck, causing abandonment of well.
Velasco.....	1,060	.....	20-50	Flows.	7 wells.
Brown County:					
Brownwood (northeast of).	1,900	.....	.....	.....	Oil borings; some gas.
Brownwood.....	1,938	10-6	32	+ 74	
Do.....	1,558	.....	.....	.....	Failure.
Do.....	1,803	.....	.....	.....	Do.
Menardville (near).....	1,100	.....	.....	.....	Found water, etc., but well now caved in.
Burleson County:					
Bryan (16 miles south) ..	870	2	22	Flows.	
Bryan (12 miles from)...	835	2	35	+ 30	Temp., 85°.
Do.....	635	2	22	+ 25	Temp., 76°.
Do.....	550	7	15	+ 20	Do.
Myers.....	440	1-2	2	.....	Temp., 60°.
Do.....	860	4-2	30	+ 20	Temp., 90°.
Calhoun County:					
O'Connorsport ¹	1,484	.....	.....	.....
Do. ¹	494	.....	.....	.....
Port Lavaca (8 miles) ..	402	.....	25	Flows.	
Port Lavaca (8 miles southeast).	440	.....	5	Flows.	
Port Lavaca (25 miles southeast).	530	4	40	Flows.	
Port Lavaca (24 miles southeast).	1,484	.....	40	Flows.	3 wells.
Callahan County:					
Baird.....	415	8	.....	.....	Abandoned.
Cameron County:					
La Parra ranch ² ..	1,500	.....	.....	.....	For oil; abandoned.
.....	1,364	.....	8-1,000	Flow.	36 wells.
Camp County:					
Pittsburg.....	1,600	.....	Many.	.....
Do.....	1,860	6-4	Many.	- 10	Water from 200 feet down.
Do.....	1,860	.....	140	- 8	
Carson County:					
Panhandle City.....	600	.....	.....	.....	Unsuccessful.
Chambers County:					
High Island ³	610	.....	.....	.....	Abandoned.
Do. ³	1,000	.....	.....	.....	Oil at 504 feet, in small quantity.
Turtle Bayou.....	850	4	139	Flows.	
Do.....	900	4	.....	.....
Wallisville.....	400	.....	70	.....
Winnie (3 miles north) ⁴ ..	1,510	.....	.....	.....
Cherokee County:					
Circle.....	600	.....	.....	.....	Test for oil.
Jacksonville.....	2400	.....	.....	.....	Clogged with sand.
Morton.....	600	.....	.....	.....	Abandoned.
Rusk.....	620	.....	.....	.....	Do.
Wells.....	600	.....	.....	.....	Unsuccessful.
Childress County:					
Childress.....	1,263	.....	.....	.....	Impregnated with salt and gypsum.
Do.....	415	5	35	-400	
Collin County:					
Celina.....	470	.....	7.7	-145	Soft water.
Celina (1 mile west) ..	400	.....	.....	-100	Do.
Frankfort (2 miles southwest).	442	.....	.....	- 50	Salty water.
Lebanon.....	400	.....	Many.	-100	
McKinney.....	1,860	.....	21	- 70	Soft water.
Prosper.....	470	.....	Many.	No flow.	Do.
Prosper (three-fourths mile east).	660	.....	4	-244	Do.
Colorado County:					
Columbus.....	807	.....	.....	Flows.	
Concho County:					
Eden.....	987	.....	7	Flows.	Salty water.
Do.....	800	.....	.....	.....	Oil water; abandoned.
Cooke County:					
Gainesville.....	±1,250	.....	.....	- 40	
Do.....	850	.....	243	- 10	
Do.....	480	.....	.....	- 40	
Do.....	405	.....	69	No flow.	
Do.....	632	.....	Many.	- 7	

¹ U. S. Geol. Surv. Bull. No. 212, pp. 34-35.² Ibid., p. 19.³ Record, U. S. Geol. Surv. Bull. No. 212, p. 124.⁴ Ibid., p. 61.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Cooke County—Continued.					
Gainesville.....	700	.....	.....	— 30	
Do.....	850	.....	6	.....
Hemming.....	426	.....	100	Flows.	Soft water.
Pilotpoint (8 miles north-west).	426	.....	1	.....	Do.
Coryell County:					
Copercas Cove.....	1,865	.....	.....	— 100	Brackish water.
Copercas Cove (4 miles north).	500	.....	Many.	No flow.	Salty water.
Copercas Cove.....	1,875	.....	.....	— 475	
Coryell (3 miles east).....	940	.....	Many.	— 50	Soft water.
Gatesville.....	500-550	6	2-20	Flow.	Several wells.
Do.....	700	.....	175	.....
Do.....	475	.....	.....	No flow.	Soft water.
Gatesville (8 miles west).....	612	.....	.....	.....	Do.
Gatesville (6 miles south-east).	558	.....	4	Flows.	
Hurst Lake.....	500	.....	.....	.....
Mound (2 miles north-east).	697	.....	.....	— 5	Mineral water.
Oglesby (2½ miles north-west). ¹	500	.....	.....	No flow.	Soft water.
Pecangrove.....	590	.....	.....	Flows.	
The Grove.....	900	.....	680	— 13	
Waldo (2 miles south).....	423	.....	.....	— 85	Saline water.
Dallas County:					
Cedar Hill (19 miles southwest).	750	.....	Many.	— 300	Soft water.
Dallas (1 mile east).....	850	.....	70	Flow.	2 wells.
Dallas (6 miles west-northwest).	+400	.....	Many.	Flows.	
Dallas.....	790-1,000	.....	Many.	Flows.	Numerous wells
Do.....	718	.....	.....	Flows.	Much soda in water.
Do.....	700	.....	12	Flows.	
Dallas (City Park).....	672	.....	15	Flows.	
Dallas.....	±2,500	.....	.....	.....
Dallas (1 mile south).....	850	.....	70	Flow.	2 wells.
Dallas (6 miles west-northwest).	±400	.....	Many.	Flows.	
Eagleford.....	417	.....	800	+ 35	Soft water.
Estelle.....	970	.....	.....	Flow.	Do.
Lancaster.....	1,057	.....	.....	Flows.	Do.
Orphans' Home Station (2 miles southeast).	685	.....	.....	No flow.	Very salty water.
Orphans' Home Station.....	1,230	.....	20	— 40	Mineral water.
Trinity Mills (4 miles east).	±468	.....	.....	— 25	
Do.....	415	.....	.....	— 25	
Denton County:					
Argyle (1½ miles east).....	500	.....	.....	Flows.	Soft water.
Bolivar.....	1,176	.....	.....	Flows.	
Denton.....	460	.....	.....	+ 15	
Do.....	550	6	6	+ 20	
Do.....	600	.....	Few.	.....
Do.....	620	.....	8	Flows.	
Do.....	600	.....	.....	Flows.	
Do.....	606	.....	28	Flows.	
Do.....	592	6-4	12	.....
Krum (2½ miles south).....	450	.....	.....	No flow.	
Pilotpoint.....	937	.....	17	— 25	Do.
Roanoke (west).....	476	.....	.....	— 33	
Roanoke.....	400-600	.....	40-50	Flows.	Several wells.
Roanoke (one-half mile south).	505	.....	.....	— 16	
Stony (1½ miles south).....	447	.....	3	Flows.	Soft water.
Duval County:					
Benavides (near) ²	1,200	.....	.....	.....	Small quantities of oil at various depths
Dimmit County:					
Carrizo Springs (near) ..	400-690	4-10	100-1,400	Flows.	Several wells.
Eastland County:					
Cisco.....	1,680	8	.....	— 25	Salt water.
Eastland ³	500	.....	.....	.....	Abandoned.
Do.....	1,300	6	.....	No flow.	Salt water.
Do.....	400	.....	.....	Flows.	Mineral water.
Ector County:					
Odessa.....	830	8	.....	.....	Abandoned.
Edwards County:					
Rocksprings.....	400	.....	Many.	No flow.	2 wells.
Do.....	450	.....	Many.	No flow.	Do.

¹ Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 283.³ Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, pp. 268, 269.² U. S. Geol. Surv. Bull. No. 212, p. 19.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Ellis County:</i>	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Boyce (1½ miles west) ...	981	.....	1½	Flows.	Soft water.
Do.	975	.....	.....	Flows.	Do.
Ferris	1,360	.....	89	Flows.	.....
Forreston	400	.....	.....	.....	No water.
Italy	1,400	.....	½	— 10	Soft water.
Midlothian	464	.....	.....	— 200	.....
Millford	2,018	.....	.....	Flows.	Mineral water.?
Mountain Peak (three-fourths mile southwest).	435	.....	Many.	No flow.	Soft water.
Palmer	1,154	.....	+9	Flows.	Do.
Do.	1,154	.....	.....	Flows.	Do.
Do.	1,178	.....	83	Flows.	Do.
Waxahachie	1,990	.....	.....	Flows.?	.....
Do.	1,700	.....	.....	— 15	Do.
Waxahachie (6 miles southwest).	700	.....	.....	— 125	.....
<i>El Paso County:</i>					
Eagleflat	600	.....	.....	.....	No water.
El Paso (northwest of) ..	800	.....	.....	.....	In granite; no water.
El Paso (10 miles north-east). ¹	621	.....	.....	— 215	.....
El Paso (5 miles north-east). ²	2,285	.....	.....	— 172?	If any similar but shallower wells in this vicinity; principal water horizon is at 230 feet; no water below 450 feet.
El Paso (1½ miles east) ¹	1,693	.....	.....	— 15?	For artesian water; unsuccessful.
El Paso (8 miles north-east). ³	450	.....	.....	.....	.....
El Paso (16 miles east) ²	605	.....	.....	.....	Abandoned.
El Paso (20 miles north-east). ³	450	.....	.....	.....	.....
El Paso (25 miles south-east). ³	500	.....	.....	— 410	.....
El Paso (35 miles south-east). ⁴	500	.....	.....	.....	Dry.
El Paso (40 miles north-east). ³	850	.....	.....	.....	Do.
Finlay ⁴	1,080	8	.....	.....	Bad water at 396 feet; abandoned.
Fort Bliss Station	403	4½	Many.	— 130	.....
Fort Hancock ³	600	.....	.....	.....	Abandoned; water unfit for boiler use.
Haskell	2,029	12-7½	Few.	No flow.	2 wells; dry.
Kent (35 miles north-west). ³	916 and 800	.....	.....	.....	.....
Kent (30 miles north) ³ ..	700	.....	.....	.....	Dry.
Kent (7 miles north) ³ ..	515	.....	.....	.....	Do.
Kent	400	.....	.....	.....	Do.
Lasca (near) ³	1,100	.....	.....	— 600	Well abandoned; little water at 600 feet.
Plateau ³	547	.....	.....	.....	Dry.
Plateau (3 miles east) ³ ..	600	.....	.....	— 260	Abandoned.
Sierra Blanca ⁵	943	5½	Many.	No flow.	Bad water.
Do. ³	1,350	.....	.....	.....	Well abandoned; water unfit for boiler use.
Torbert	1,100	8-5½	.....	.....	Abandoned; small amount of fair water at 696 feet.
Torrence (near)	850	18-10	70	— 357	At milepost 199.
Toyah (60 miles north-west). ³	546	.....	.....	— 260	.....
Van Horn	600	5½	.....	— 500	Several wells.
<i>Erath County:</i>					
Dublin	400	.....	.....	— 8	.....
Thurber ⁶	3,050	.....	.....	No flow.	.....
<i>Falls County:</i>					
Marlin	3,350	.....	140	+ 322	Temp., 147°.
<i>Fannin County:</i>					
Bonham	+ 400	.....	.....	.....	.....
Do.	+ 400	.....	.....	.....	.....
Do.	1,500	.....	.....	.....	No water.
Honeygrove	1,700	.....	Many.	.....	Strong mineral water.
Do.	1,650	.....	Many.	— 50	Do.
Do.	1,500	.....	.....	.....	.....

¹ Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 297.² Record, Texas Univ. Mineral Survey Bull. No. 9, 1904, pp. 96-97.³ Texas Univ. Mineral Survey Bull. No. 9, 1904, pp. 109-111.⁴ Analysis, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 272.⁵ Record, *ibid.*, p. 296.⁶ *Ibid.*, p. 270.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Fannin County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Honeygrove.....	1,000	.....	.....	—300	Salty water; not in use.
Do.....	1,200	.....	.....	No flow.	
Ladonia.....	.....	.....	.....	.....	Never completed.
Do.....	1,033	.....	.....	.....
Fort Bend County:					
Arcola.....	+910	.....	300	Flows.	
Sugarland.....	600-1,550	3-4	.....	Flows.	Several wells.
Do.....	1,550	8-4	104	+ 9	
Do.....	1,760	.....	7	Flows.	
Franklin County:					
Mount Vernon.....	400	.....	.....	No flow.	Large supply of water.
Freestone County:					
Bonner.....	.....	.....	.....	.....	Not completed.
Fairfield (8 miles north-west).....	1,350	.....	.....	.....
Fairfield (10 miles north-east).....	1,200	.....	.....	.....	Sulphur water at 800 feet.
Wortham.....	.....	.....	.....	.....	Salt water.
Frio County:					
Derby.....	540	.....	Many.	— 35	
Pearsall.....	600	.....	15	Flows.	
Do.....	400	.....	30	Flows.	
Do.....	650	.....	30	Flows.	
Do.....	620	.....	.....	— 20	
Pearsall (15 miles east).....	.....	.....	.....	Flows.	Several wells.
Pearsall (20 miles south-east).....	(?)	.....	.....	.....
Galveston County:					
Alta Loma.....	875-950	9	310	22	Numerous wells; temp., 75°-78°.
Do.....	726-868	5-7	.....	.....	13 wells.
Dickinson ¹	600	3	14	Flows.	
Do.....	624	3	40	Flows.	
Dickinson (3 miles west).....	700	3	34.7	Flows.	
Dickinson (one-fourth mile west).....	588	1	.....	Flows.	
Fairwood ²	575	3	50	Flows.	Temp., 78½°.
Galveston ³	3,070	22-6	Many.	Flows.	Brackish water at various depths to bottom.
Do.....	1,346	.....	400	Flows.	Salty water.
Do.....	810-973	.....	Many.	Flows.	Several wells; water too salty.
Galveston (2¼ miles west).....	1,365	.....	250	Flows.	Temp., 84°.
Heffron.....	480	3	52	+ 16	Temp., 60°±.
Hitchcock ⁴	726	.....	66	Flows.	Temp., 77°; many wells in vicinity.
Hitchcock (1¼ miles northwest).....	710	.....	100	Flows.	Temp., 77°.
Do.....	768	.....	48	Flows.	Temp., 78°.
Hitchcock.....	700-750	3-4½	20-75	Flows.	3 wells.
League City.....	410-750	.....	.....	.....	6 wells.
North Galveston.....	575-1,590	3	70 each.	Flows.	Several wells.
Texas City.....	725	.....	+104	+ 16	
Do.....	900	.....	+104	+ 16	
Gillespie County:					
Morris Ranch ⁵	1,100	.....	.....	— 55	
Grayson County:					
Denison (1 mile south) ⁶	1,800	2½	.....	.....	Abandoned.
Pottsboro (7 miles west).....	±500	.....	Many.	Flows.	Pure water.
Sherman.....	632	.....	.....	.....	Fine water.
Do.....	915	.....	.....	.....
Do.....	2,500	.....	Many.	— 40	
Do.....	660	.....	.....	.....	Several wells.
Sherman (18 miles north).....	480	.....	.....	No flow.	
Whitesboro.....	+800	.....	.....	No flow.	
Gregg County:					
Longview.....	500	.....	80	.....	Lignitic.
Grimes County:					
Navasota ⁷	830	.....	.....	To surface.	
Navasota (16 miles north).....	999	.....	Many.	Flows.	
Guadalupe County:					
Davenport.....	810	.....	.....	—180	Good water.
Hall County:					
Newlin Station.....	550	6	.....	.....	4 layers of salt water; abandoned.

¹ Analysis, Texas Geol. Surv. 4th Ann. Rept., 1892, p. 104.² Ibid., p. 102.³ Record, etc., *ibid.*, pp. 87-101; U. S. Geol. Surv., 21st Ann. Rept., 1899-1900, part 7, pp. 402-406.⁴ Analysis, etc., *ibid.*, pp. 102-103.⁵ Record, U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 2, p. 272.⁶ Ibid., 21st Ann. Rept., 1899-1900, part 7, p. 197.⁷ Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 265.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Hamilton County:					
Hamilton	425				Water only at 350 feet to 48 feet.
Hico	1,365	12		--125	Water at 210, 300, 600, and 900 feet.
Do.	1,200			No flow.	
Lanham	470				Abandoned.
Do.	500				Do.
Do.	600				
Hardin County:					
Batson	885	4			Produces 50 barrels of oil daily.
Saratoga ¹	995				Libbie well.
Do. ²	700				Ccnroy well.
Do. ²	600				Texas geyser well.
Do. ²	1,700				Some oil and 2 streams of hot water encountered; the first stream had temperature of 100° and was found at 938 feet; the other stream, at 950 feet, was hotter.
Saratoga (3 miles west) ³	958				
Sour Lake (3 miles north-east). ⁴	1,284				
Sour Lake ⁵	1,400				Oil and gas; some salt water.
Do. ⁶	725, 680				
Do. ⁷	1,500				Oil-bearing horizons at 960 feet and 1,460 feet; hot sulphur water encountered at several levels.
Do. ⁸	1,000-2,000				Several wells; unproductive.
Harris County:					
Cedar Bayou	558	3			
Do.	600	3		Flows.	
Do.	727	3	5	Flows.	Temp., 76°.
Do.	610	3	30		Do.
Houston	1,006				
Do.	493	8	120	Flows.	
Do.	564	8	130	Flows.	
Do.	850	5	200	Flows.	
Do.	500 or less.			Flows.	Fine water.
Do.	700				
Do.	600		42		Temp., 70.
Houston (3 miles from)	2,025	8-4			Large supply of water; gas at 1,600 feet.
Humble	600	3½	50	Flows.	Fresh water.
Do.	1,000	6-2½			Prospect for oil; unsuccessful.
Do.	990	11½-6			Produces 100 barrels of oil daily; gas present in increasing amounts below 600 feet.
Do.	1,500				Prospect for oil; little gas at 600 feet; water-bearing beds 600 to 650 feet and 1,150 to 1,200 feet.
Laporte	454	3	41	Flows.	
Do.	440	3	80	Flows.	
Strong Junction	450	3	48	+ 9	
Zimbi ⁹	480				No water; abandoned.
Do.	520				Do.
Harrison County:					
Marshall	1,000			No flow.	
Marshall (9 miles south)	450	6-4		- 75	Very slightly salty.
Hartley County:					
Hartley	410	5	17		
Hays County:					
San Marcos ¹⁰	1,490		6	Flows.	Waters at 128, 191, 652, 1,178, 1,291, 1,345, and 1,475 feet.
Hidalgo County:					
Brownville (50 miles northwest)	70			No flow.	
Hidalgo	700			-100	
"Magueyes" ¹¹ ⁸	1,001	8			Test well.
Valeo	1,001				No water below.
	438-484		10-75	Flows.	5 wells.

¹ Record, U. S. Geol. Surv. Bull. No. 212, pp. 120-121.² U. S. Geol. Surv. Bull. No. 212, p. 121.³ Record, *ibid.*, p. 59.⁴ *Ibid.*, p. 60.⁵ Partial record, *ibid.*, p. 116.⁶ Record, *ibid.*, p. 117.⁷ U. S. Geol. Surv. Bull. No. 212, pp. 117-118.⁸ *Ibid.*, p. 118.⁹ Record, etc., Texas Geol. Surv. 4th Ann. Rept., 1892, p. 107.¹⁰ Record, U. S. Geol. Surv., 18th Ann. Rept., 1896-97, pp. 287-290.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Hill County:					
Abbott (1½ miles north) .	446	.....	20	—160	
Do.....	486	.....	Several.	—186	
Aquilla.....	600	.....	Few.	Flows.	
Do.....	800	.....	Several.	Flows.	
Blum (4¼ miles east)	532	.....	.....	—200	
Hillsboro.....	1,800	.....	.....	Flows.	
Do.....	1,762	.....	34.7	Flows.	
Do.....	500	.....	.....	.....	Failure.
Hubbard.....	3,166	.....	.....	Flows.	
Itasca.....	1,800	.....	.....	Flows.	
Do.....	1,680	.....	160	+ 35	
Whitney.....	1,575	.....	.....	+ 40	
Do.....	1,000	.....	139	Flows.	
Do.....	438	.....	.....	430	
Hood County:					
Neri (2 miles south).....	415	.....	.....	No flow.	Soft water.
Hopkins County:					
Sulphur Springs.....	1,514	6-4	.....	.....	Small supply of water.
Houston County:					
Crockett.....	630	5-3	Many.	—190	
Kenard.....	1,065	3	80	—105	Water tastes like alum.
Howard County:					
Big Spring.....	603	7	.....	.....	Salt water at 300 feet; abandoned.
Hunt County:					
Commerce.....	2,300	.....	.....	.....
Jack County:					
Keechi.....	400	.....	10	—400	Soft water.
Jackson County:					
Edna (near).....	1,370	.....	.....	.....	Evidences of oil at 852 feet; artesian water at 1,000 feet.
Ganado (25 miles south-east) .	402	.....	4	Flows.	
Ganado (2 miles south) ..	800	.....	.....	Flows.	
Jeff Davis County:					
Valentine.....	1,245	5½-3	Many.	No flow.	
Jefferson County:					
Beaumont (17¼ miles southwest) .	1,515	6-4	.....	.....	For oil; unsuccessful; water at 220 and 260 feet; gas at 240 and 300 feet.
Beaumont (Spindletop pool). ¹	930	.....	.....	.....	Oil well.
Do. ²	1,006	.....	.....	.....	Do.
Do. ³	765-1,139	.....	.....	.....	280 producing wells.
Beaumont (near Spindletop pool). ⁴	1,400-2,075	.....	.....	.....	11 wells; no oil.
Do. ⁵	800-2,315	.....	.....	.....	52 dry and abandoned wells.
Big Hill ⁶	1,400	.....	.....	.....	Few small pockets of oil.
Port Arthur.....	± 800	5	.....	Flows.	Mineral water; temp., 80°.
Do. ⁷	1,260	.....	.....	.....	Abandoned.
Sabine Pass (3 miles west). ⁸	1,486	.....	.....	.....	Do.
Johnson County:					
Alvarado.....	1,500	.....	.....	Flows.	
Burleson (1 mile west) ..	500	.....	.....	No flow.	Soft water.
Burleson (2¼ miles west) .	465	.....	Many.	No flow.	Do.
Cleburne.....	970-1,003	.....	70	—40 to —70	Many wells.
Cleburne (6 miles south) .	520	.....	Many.	No flow.	Soft water.
Cleburne (5 miles south-east) .	568	.....	.....	—168	Do.
Cleburne (3 miles south-west) .	420	.....	Many.	—160	Do.
Cleburne (3 miles north-west) .	424	.....	Many.	—274	
Freeland (2 miles south) .	500	.....	15	Flows.	Do.
Freeland (2¼ miles south) .	618	.....	18	Flows.	
Freeland (1½ miles south) .	585	.....	65	Flows.	Good water.
Freeland (1½ miles west) .	548	.....	12	Flows.	Soft water.
Godley (5 miles south) ..	420	.....	Many.	No flow.	Do.
Greenway (one-half mile west) .	590	.....	45	.....	Do.
Greenway (one-half mile northwest) .	602	.....	22	Flows.	Do.

¹ Record, U. S. Geol. Surv. Bull. No. 212, pp. 74-75.² Ibid., pp. 76-77.³ U. S. Geol. Surv. Bull. No. 212, pp. 77-85.⁴ Record, *ibid.*, pp. 88-102.⁵ U. S. Geol. Surv. Bull. No. 212, pp. 103-104.⁶ Ibid., p. 126.⁷ Record, *ibid.*, p. 112.⁸ Ibid., p. 113.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Johnson County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Joshua (3 miles west)...	525	.....	.....	No flow.	Soft water.
Joshua (6 miles north-west).	424	.....	.....	—189	.....
Keene.....	750	.....	.....	—300	Do.
Rendou (2 miles north)...	535	.....	Many.	No flow.	Do.
Riovista (1 mile north-east).	460	.....	Many.	No flow.	Do.
Riovista (3 miles east)...	540	.....	.....	—176	Do.
Kearnes County:					
Kearnes.....	1,800	.....	.....	.....	Failure.
Kaufman County:					
Kaufman.....	450	.....	.....	.....	Do.
Kaufman (1 mile north-west).	600	.....	.....	.....	Do.
Terrell.....	2,200	8	70	—50	Good water.
Kerr County:					
Kerrville.....	1,325	.....	.....	—75	Good water at 750 feet.
Kerrville (9½ miles northeast). ²	1,100	.....	Several.	—55	Granite below 180 feet.
Kinney County:					
Austin (near).....	400	.....	.....	.....	Several wells.
Brackettville (7 miles from). ³	404	.....	Several.	.....	.....
Spofford Junction.....	1,700	.....	.....	.....	Failure.
Lamar County:					
Paris.....	444	.....	.....	.....	Abandoned.
Do.....	1,350	.....	Many.	—5	.....
Lasalle County:					
Cotulla ⁴	825	.....	.....	Flows.	Bad water.
Do.....	1,010	.....	55.5	.....	.....
Do.....	852	.....	.....	.....	Do.
Do.....	800	.....	2	Flows.	Temp., 86° F.; alkaline-saline water.
Do.....	1,008	.....	Many.	+6	Bad water.
Cotulla (8 miles south)...	600	.....	.....	—100	.....
Lavaca County:					
Hallettsville.....	300-560	.....	.....	Flow.	.....
Liberty County:					
Dayton ⁵	1,900	.....	.....	.....	J. M. Guffey Petroleum Co.'s well.
Do. ⁶	500-1,000	.....	.....	.....	Taylor-Dayton Co.'s wells.
Do. ⁶	1,200	.....	.....	.....	Rock salt from 800 to 1,200 feet.
Keno.....	700	.....	.....	.....	No water below 90 feet; abandoned.
Stilson ⁵	500	{ (nearly) }	.....	.....	2 wells.
Limestone County:					
Island ⁶	+800	.....	.....	.....	Dry.
Wexia.....	1,333	4½	.....	.....	Oil or gas prospect; abandoned; some water at 512 feet.
Llano County:					
Llano (9 miles southeast)	500	.....	.....	+2	Coal prospect; abandoned.
McLennan County:					
Bruceville.....	1,560	6	.....	+125	.....
Do.....	1,565	.....	139	Flows.	Soft water; temp., 95°.
China Springs.....	1,380	.....	.....	Flows.	Another flow at 800 feet; temp., 102°.
Do.....	1,100	.....	40	Flow.	2 (?) wells.
Crawford (4 miles west)...	1,000	.....	31	.....	Soft water.
Do.....	1,040	.....	31	.....	Do.
Do.....	945	.....	140	.....	Temp., 72° F.; 2 wells.
Do.....	1,060	.....	50	.....	Soft water.
Eddy.....	1,565	.....	208	Flows.	Do.
Farr (2 miles south).....	1,065	.....	10	Flows.	.....
Harmosa.....	1,730	.....	139	.....	Soft water, temp., 103°.
Lorena.....	1,495	Many.	.....	Flows.	Soft water.
Lorena (5 miles west)...	760	Few.	.....	Flows.	Sal. water.
Lorena.....	1,495	Many.	.....	Flows.	Soft water.
McGregor.....	1,030	.....	139	—10	Do.
Do.....	470	.....	.....	Flows.	.....
Do.....	991	.....	348	.....	.....
McGregor (5 miles west)	490	.....	Many.	—11	Do.
Moody.....	1,508	.....	69	No flow.	Soft water.

¹ Record, Artesian waters in Texas west of 97th meridian, by R. T. Hill. 52 Cong., 1st sess., Senate Ex. Doc. No. 41, part 3, p. 99. Another authority gives 2,700 feet as depth.

² U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 2, p. 271.

³ Record, *ibid.*, p. 278.

⁴ Texas Geol. Surv. 2d Ann. Rept., 1891, p. 71; analysis, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 272.

⁵ Record, U. S. Geol. Surv. Bull. No. 212, pp. 46-47.

⁶ U. S. Geol. Surv. Bull. No. 212, p. 24.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
McLennan County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Moody.....	1,300			No flow now.	
Do.....	1,450			— 15	
Ocee (1 mile east).....	1,098	6	160	Flows.	Soft water.
South Bosque (3 miles west).....	450		1		
Waco ¹	1,812-1,862	8-4	51-400	Flow.	Numerous wells; temp., 103°.
Waco (5 miles west).....	1,470	4½	347	Flows.	Pure water; temp., 90°.
West.....	1,690		208	Flows.	
McMullen County:					
Tilden.....	475	4½	8	Flows.	Salty water.
Do. ²	600				Strong flow of brackish water, with gas.
Tilden (12 miles south) ²	900				Small flow of strong salt brine.
Marion County:					
Jefferson.....	802		Few.	Flows.	Sulphur water, but good.
Matagorda County:					
Bay City (10 miles east) ³	+900				Small quantities of oil, and at 900 feet the gas became unmanageable and well was abandoned; gas not utilized.
Maverick County:					
Eagle Pass ⁴	1,508				Salty water.
Do.....	400				Abandoned.
Medina County:					
Hondo.....	1,000				No water.
Do.....	1,500		Many.	—175	
Menard County:					
Menardville.....	1,175				Oil boring unsuccessful.
Milam County:					
Baileyville.....	800				Failure.
Baileyville (3 miles west).....	831			No flow.	Water very salty.
Branchville (4 miles east).....				Flows.	
Do.....	700			— 6	
Maysfield.....	1,356	4	Many.	— 34	
Thorndale.....	1,790				No water.
Do.....	3,200				Do.
Mills County:					
Goldthwaite.....	563	10-7		— 20	
Do.....	600				
Do.....	563	10-7		— 20	
Mitchell County:					
Colorado ⁵	1,120				Several deep salt wells.
Montague County:					
Belcherville.....	900-1,200		70	Flow.	3 wells; soft water.
Bowie.....	700			—160	
Bowie (one-half mile west).....	600				
Montgomery County:					
Wilburton.....	917				Produces 50 barrels of oil daily.
Conroe.....	1,236	8		Flows.	
Nacogdoches County:					
Chireno ⁶	840		50	+ 10	
Nacogdoches.....	400		Many.		In progress.
Nacogdoches (13 miles southeast).....	435	6			Water at 68 and 393 feet; oil at 212, 312, 328, and 360 feet.
Navarro County:					
Corsicana.....					
Corsicana (3 miles west).....	2,500				
Do.....	2,300				
Corsicana.....	2,477				Several wells.
Do.....	1,000-1,200				Many oil wells.
Do.....	2,483		208	+150	Water, gas, and oil; temp., 126°.
Do.....	2,150		208		Oil at 1,100 feet.
Do.....	2,487		Many.		
Do.....	2,500		+194.4	+ 85	Temp., 126° f.
Do.....	1,035				Oil well.
Newton County:					
Call.....	700		Several.	Flows.	
Do.....	796	4	87	Flows.	

¹ Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, pp. 265, 269; analysis, p. 271.

² U. S. Geol. Surv. Bull. No. 212, p. 18.

³ Ibid., p. 127.

⁴ Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 266.

⁵ Record, U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 2, p. 265.

⁶ Record, La. Geol. Surv. Rept., 1902, p. 126.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Nueces County:	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Alice ¹	1,000				
Alice (near) ¹	500-750				Several wells; strong artesian flows.
Coldris.....	590	5 $\frac{3}{8}$ -4 $\frac{1}{2}$	80	Flows.	
Corpus Christi (10 miles west).....	625	5 $\frac{3}{8}$ -4 $\frac{1}{2}$	150	Flows.	
Corpus Christi.....	+675				
Do.....	1,765		50		Mineral water at about 600 feet only.
Do.....	525		300		
Do.....	560		100		
Do.....	402-1,240		5-400	Flow.	73 wells.
Palo Pinto County:					
Gordon.....	485		1	+ 23	Salt water.
Do.....	498	1	1	+ 23	Salt water and gas.
Parker County:					
Weatherford ²	500			- 50	
Do.....	402		69	-250	Good water.
Do.....	440				
Do.....	488			-250	
Pecos County:					
Dryden.....	1,797	7 $\frac{1}{2}$ -1	18	-600	
Do.....	590		Many.	-539	
Longfellow.....	683	8	20	No flow.	
Lozier.....	770	7 $\frac{1}{2}$	Few.	No flow.	
Pecos ³	683		20		
Do.....	987		28		Do.
Do.....	1,797		16		Do.
Do.....	770		15		
Sanderson ⁴	987	7 $\frac{1}{2}$	30	No flow.	
Sanderson.....	2,000				No water.
Polk County:					
Moscow (4 miles from) ..	400		Many.		
Valda.....	420	4	45	Flows.	
Valda (5 miles west of) ⁵	543				
Valda.....	±1,000			Flows.	Abandoned.
Presidio County:					
Valentine.....	1,280				No water.
Red River County:					
Clarksville.....	1,060			Flows.	Brackish water; abandoned.
Do.....	+1,100		Many.	-10 to - 12	Salty water.
Do.....	+1,200			- 23	Salty water; gas, also.
Do.....	561	4	80	- 23	Fine fresh water.
Do.....	600	8-6	Many.	- 50	Soft water.
Do.....	1,400		Many.	Flows.	
Do.....	1,800		Many.		Salty.
Reeves County:					
Pecos (4 miles west).....	400			No flow.	
San Martina ⁶	400		40		
Toyah.....	834	9-3	300	Flows.	Sulphur water.
Do.....	514	12	9	Flows.	
Refugio County:					
O'Connor Ranch.....	825-946		104-200	Flow.	3 wells.
Refugio ⁷	853		104	Flows.	
Refugio.....	956		104	Flows.	
Do.....	1,000		347	Flows.	
Roberts County:					
Miami.....	- 500				Several wells in county.
Robertson County:					
Bremond.....	1,500			No flow.	Some water.
Calvert ²	460			- 30	
Do. ⁸	585-620	4	Many.	Flow.	Several wells.
Calvert (5 miles southwest).....	510	1	Many.	Flow.	Several wells in vicinity.
Do.....	900	1		- 20	
Calvert (5 miles west).....	400			- 20	
Do.....	800			-100	
Franklin.....	1,200			No flow.	
Hearne.....	740			Flows.	Many wells in vicinity.
Do.....	400-450	4		Flow.	Several wells.
Do.....	450-700	2	3-10	+10-+40	Do.
Do.....	300-700		3	Flows.	

¹ U. S. Geol. Surv. Bull. No. 212, p. 18.² Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, p. 266.³ Record, etc., U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 2, p. 267.⁴ Ibid., p. 274.⁵ Record, U. S. Geol. Surv. Bull. No. 212, p. 54.⁶ Texas Univ. Mineral Survey Bull. No. 9, 1904, pp. 109-111.⁷ Record, 51st Cong., 1st sess., Senate Ex. Doc. No. 222, pp. 266-267.⁸ Record, Texas Geol. Surv., 4th Ann. Rept., 1892, p. 109.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Robertson County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Hearne (12 miles north-west).	300-700		3	Flows.	
Mumford.....	300-1,000		2-12		Several wells.
San Augustine County:					
San Augustine (6 miles south).	415	6	Few.	+ 30	Good water.
San Augustine (2 miles west).	700		Many.	Flows.	Oil test well.
San Patricio County:					
Sinton.....	983		60	Flows.	
Sabine County:					
Hemphill (15 miles east-southeast of).	1,975	10-6		Flows.	Artesian water at 1,030 and 1,215 feet; oil well in progress.
Shackelford County:					
Albany.....	400		Few.		
Shelby County:					
Timpson.....	900			- 80	
Smith County:					
Lindale.....	+ 500	4	3	+ 10	
Tyler.....	1,150	6			In progress, 190'.
Do.....	1,207	4½-6	3	-100	
Do.....	+ 500		Many.		
Starr County:	526-800		15-250	Flow.	7 wells.
Stephens County:					
Breckenridge.....	1,400				Failure.
Sutton County:					
Sonora.....	480				Several wells.
Do.....	800				Oil.
Tarrant County:					
Arlington.....	1,480		21		Strong mineral water.
Bedford (2 miles south).	602½			Flows.	Soft water.
Birdville.....	406			No flow.	Do.
Birdville (1 mile north).	486			20	Do.
Birdville (one-half mile from).	420		Many.	Flowed once.	
Brambleton.....	485			-130	Do.
Crowley.....	486		3	No flow.	Do.
Crowley (3 miles north-west).	446			-150	Do.
Crowley (7 miles south-west).	430			No flow.	Do.
Crowley (2 miles from).	484	2		-134	Do.
Enon.....	442			-142	
Enon (1 mile west).	430		5	- 60	
Enon (3 miles northeast).	460		Many.	- 90	Do.
Fort Worth ¹ :					
Do.....	484			- 50	
Do.....	450				
Do.....	465		30	Flows.	
Do.....	950-1,400	10-4	140	Flow.	Several wells.
Do.....	4,000				No flow below 1,200 feet; temp., 140° at 3,250 feet.
Do.....	760			Flows.	
Fort Worth (3 miles north).	1,200				
Fort Worth (10 miles east).	480	4½	+208		
Fort Worth (12 miles southeast).	534			-450	
Fort Worth (7 miles south). ²	+ 400				
Grapevine.....	423			No flow.	Soft water.
Handley.....	509			- 25	Do.
Haslett (1 mile south).	430			-255	Do.
Haslett (3 miles south-east).	480		3	-258	
Keller.....	400				
Do.....	457		50	- 50	
Do.....	430				
Marine (one-half mile northeast).	1,200		545	Flows.	Temp., 78°; soft water.
Oak Grove (1 mile south).	500		3½	- 72	Soft water.
Randol (1 mile north-east).	546			- 10	Sulphur water.
Randol (one-half mile southwest).	525		156	Flows.	

¹ Record, Artesian waters of Texas west of 97th meridian, by R. T. Hill: 52d Cong., 1st sess., Senate Ex. Doc. No. 41, part 3, pp. 105-106.

² Fifty-first Cong., 1st sess., Senate Ex. Doc. No. 222, p. 270.

³ Record, Artesian waters of Texas west of 97th meridian, by R. T. Hill: 52d Cong., 1st sess., Senate Ex. Doc. No. 41, part 3, p. 104.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Tarrant County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Randol (3 miles south-west).	420	.....	.....	Flows.	Soft water.
Randol (one-half mile north).	505	4	.....	Flows.	Do.
Timber	576	.....	2½	.....	Salt'y water.
Webb	800	.....	.....	-160	Poor water.
Taylor County:					
Abilene	2,500	.....	.....	.....
Do.	2,223	.....	.....	.....
Merkel	+2,000	.....	.....	.....
Tom Green County:					
San Angelo	960	.....	.....	.....
Travis County:					
Austin (Fifth and Jacinto streets). ¹	2,020	.....	175	Flows.	
Austin (asylum).	1,280	.....	.....	.....
Austin (poorhouse)	1,300	.....	5	No flow.	
Austin	471	.....	5	.....
Do.	1,450	.....	5	.....
Austin (East Fifth street).	700	.....	14	Flows.	In progress 1897; sulphur water.
Austin (natatorium) ²	2,025	10-8 and 7-6.	175	Flows.	Main flow at 1,875 feet; temp., 100°.
Austin (asylum) ³	1,975	.....	+104	+40	
Austin ⁴	2,053	.....	.....	-5	
Do.	1,280	.....	.....	.....
Manor ⁴	2,220	6	69	+30	Temp., 93°.
Roundrock	400	.....	1	No flow.	
Walters	700	.....	.....	.....
Trinity County:					
Trinity	+900	.....	Few.	.....	Salt'y, sulphur water.
Tyler County:					
Kountze (15 miles west)	1,737	6-4	.....	.....	Drill hole.
— ⁵	824	.....	.....	.....	2 miles from Neches River, between Rush and Wolf creeks.
Uvalde County:					
Sabinal	529	.....	.....	.....
Uvalde	512	.....	Few.	-85	
Do.	1,000	.....	.....	No flow.	
Valverde County:					
Comstock (20 miles from). ⁶	569	.....	.....	.....
Del Rio ⁷	760	.....	.....	-60	Mineral waters.
Del Rio (30 miles north).	475	.....	.....	-300	
Del Rio (3 miles south).	460	.....	.....	Flows.	Sulphur water.
Van Zandt County:					
Myrtle Springs	650	.....	.....	.....	Unsuccessful.
Willis Point	1,100	6	.....	To surface.	
Victoria County:					
Victoria	815-956	.....	70-200	Flow.	3 wells.
Do. ⁸	953	.....	.....	.....
Do.	1,045	.....	80	Flows.	
Do.	716	2	10	Flows.	
Victoria (17 miles south).	592	3	10	Flows.	
Victoria (20 miles south-east).	704	.....	30	Flows.	
Walker County:					
Huntsville	2,210	9-3	Many.	-100	
Ward County:					
Barstow	+500	.....	.....	No flow.	
Washington County:					
Brenham	600	.....	.....	.....	Failure.
Webb County:					
Encinal	900	.....	.....	-200	Good water.
Laredo	1,200	.....	.....	No flow.	
Wharton County:					
Pierce	1,509	2	.....	Flows.	
Pierce Station	850 or 900	.....	.....	.....
Wilbarger County:					
Vernon ⁹	(?)	.....	.....	.....
Do.	(?)	.....	.....	.....

¹ Record, U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 2, pp. 280-283.² U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 2, pp. 280, 284.³ Ibid., pp. 280, 284.⁴ Record, *ibid.*, pp. 285-286.⁵ Record, U. S. Geol. Surv. Bull. No. 212, p. 57.⁶ Record 51st Cong, 1st sess, Senate Ex. Doc. No. 222, p. 284.⁷ U. S. Geol. Surv., 18th Ann. Rept., 1896-97, part 2, pp. 265, 299.⁸ Record, U. S. Geol. Surv. Bull. No. 212, p. 33.⁹ Analysis, Texas Geol. Surv., 4th Ann. Rept., 1892, p. 105.

TEXAS—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Williamson County:</i>	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Cornhill	404	.....	.....	—282	
Georgetown (2 miles east) ..	520	.....	15	.....
Gravis (1½ miles south) ..	412	.....	3	— 96	Sulphur water.
Roundrock	1,400	.....	.....	— 4	
Taylor	1,400	.....	104	Flows.	
Do	2,800	.....	27	Flow.	2 wells; poor water.
Do	1,500	.....	15	+ 40	Several wells.
<i>Wilson County:</i>					
Gonzales	1,400	.....	15	+ 60	Flows at 650, 950, 1,300, and 1,400 feet.
Do	625	10-8	30	Flows.	
Gonzales (1 mile north) ..	1,135	.....	Many.	— 60	
Sutherland	1,500	.....	.....	.....	For oil; unsuccessful.
<i>Wise County:</i>					
Newark	410	5	1	+ 14	Temp., 65°.
Park Springs	400	6	Many.	— 60	
Rhome	1,400	.....	.....	.....
<i>Wood County:</i>					
Mineola	1,200	6-3	.....	— 40	
<i>Zavalla County:</i>					
Batesville	700	.....	.....	—300	

¹ Brown coal and lignite: Texas Geol. Surv. Rept. 1892, pp. 132-135.

PRINCIPAL PUBLICATIONS RELATING TO THE UNDERGROUND WATERS OF TEXAS.

Report of F. E. Roesler, division field agent for Texas, letter from the Secretary of Agriculture transmitting a report on the preliminary investigations to determine the proper location of artesian wells within the area of the ninety-seventh meridian and east of the foothills of the Rocky Mountains, Fifty-first Congress, first session: Senate Ex. Doc. No. 222, pages 243-319, Washington, 1890.

Report of E. T. Dumble on the existence of artesian waters west of the ninety-seventh meridian, etc., Fifty-first Congress, first session: Senate Ex. Doc. No. 222, pages 99-102, Washington, 1890.

Preliminary reports on the artesian wells of the Gulf coastal slope, by J. A. Singley: Texas Geological Survey Fourth Annual Report, 1892, pages 85-113, Austin, 1893.

On the occurrence of artesian and other underground waters in Texas, etc., west of the ninety-seventh meridian, by R. T. Hill, report on irrigation, Fifty-second Congress, first session: Senate Ex. Doc. No. 41, part 3 (Final Geological Reports), pages 41-166, plates, Washington, 1893.

Geology of the Edwards Plateau and Rio Grande Plain adjacent to Austin and San Antonio, Tex., with reference to the occurrence of underground waters, by Robert T. Hill and T. Wayland Vaughan: United States Geological Survey, Eighteenth Annual Report, 1896-1897, part 2, pages 193-321 and plates, Washington, 1898.

Geography and geology of the Black and Grand prairies, Texas, with detailed descriptions of the Cretaceous formations and special reference to artesian waters, by R. T. Hill: United States Geological Survey, Twenty-first Annual Report, 1899-1900, part 7, pages 1-649, Washington, 1901.

Oil Fields of Texas-Louisiana Gulf Coastal Plain, by C. W. Hayes and William Kennedy, United States Geological Survey Bulletin No. 212, Washington, 1903.

Geology and water resources of northern Louisiana and southern Arkansas, by A. C. Veatch: Prof. Paper U. S. Geol. Survey No. 46. (In preparation.)

UTAH.

Location.	Depths.	Diameter.	Yield per minute.	Height of water.	Remarks.
Beaver County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Milford.....	400-470	2-4½	7-20	+1½-2	Good soft water; temperature of flow in 470-foot well is 80°.
Boxelder County:					
Ogden (50 miles west)....	780	.....	.....	No flow.	Salt water.
Utah Hot Springs.....	600	.....	.....	.....	Test well for gas or oil; heavy pressure of gas below 500 feet.
Cache County:					
Benson.....	460	2	50	+18	Good water; trace of lithia.
Bensonward.....	480, 510	.....	.....	.....	.....
Cache Junction.....	430	3	.....	-8	Good sulphur water.
King.....	430	1½	5	.....	Good water, some iron and gas; temp., 56°.
Logan.....	400-480	2	8-20	+3-12	Good soft water.
Logan (9 miles north-west).....	480	2	50	+4	Do.
Logan (SW. ¼ sec. 1).....	496	.....	.....	.....	.....
Smithfield.....	410	.....	3	.....	.....
Davis County:					
Bountiful.....	400	.....	4-60	.....	.....
Bountiful (2 miles north-west).....	580	.....	.....	.....	No water.
Layton.....	500	4½-1½	Few.	.....	.....
East Bountiful.....	30-500	2	10-120	+10-30	Many wells.
Farlington.....	±2,000	.....	.....	.....	For oil; unsuccessful.
Hooper (near).....	1,088	2	.....	27	Good hard, clear water.
Kaysville.....	500-574	2-3	10-30	+2-6	Good soft water; temperature of flow in 500-foot well is 62°.
Syracuse.....	400-1,000	.....	.....	Flow.	.....
Woods Cross.....	500	2	30	Flows.	Good water, trace of iron and sulphur; temperature of flow, 54° to 64°.
Emery County:					
Desert.....	990	6	.....	Flows.	.....
Green River.....	1,400	11-4½	.....	-15	Mineral water; not used.
Green River (18 miles west).....	1,335	14-6½	11	+74	Considerable sulphur in the water, also trace of iron and magnesia.
Green River (17 miles northwest).....	1,325	10-6½	.....	Flows.	Alkaline water; temp., 66°.
Iron County:					
Lund.....	585½	12-6	50	-6	Water contains large amount of suspended and dissolved solids.
Paragonah.....	412	2	.....	.....	Cool water.
Parowan (4 miles north).....	500	2	.....	+10	Very hard water.
Juab County:					
Fishsprings.....	400	1½	10	-12	Hard, salty water.
Kane County:					
Sulphur Springs.....	650	.....	.....	No flow.	.....
Millard County:					
Clear Lake.....	400-1,325	2½-4	.....	-1-5	Good water
Fillmore.....	600	.....	.....	.....	In progress, test well, no water, prospects of striking oil.
Piute County:					
Circleville.....	450	.....	.....	.....	.....
Salt Lake County:					
Brighton.....	409, 411	.....	.....	.....	.....
Draper.....	500	.....	.....	No flow.	.....
Eldorado.....	412	2	.....	+12	Good soft sulphur water; temp., 70°.
Do.....	1,365	.....	25	.....	.....
Salt Lake City (Rio Grande and Western R.R.).....	1,073	.....	120	Flows.	.....
Salt Lake City (Utah Light and Power Co.).....	920	4	120	-42	.....
Salt Lake City (Inland Crystal Salt Co.).....	800	6-4	110	.....	Some salt and sulphur; temp., 60°.
Salt Lake City.....	950	6	120	+50	Temperature of flow, 60°.
Do.....	600	8	.....	Flows.	Good soft water, temp., 55°.
Do.....	550	8	500	.....	.....
Do.....	1,105	8	350	.....	.....
Salt Lake City (12 miles north).....	500-750	.....	.....	.....	Several wells.

UTAH—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Tooele County:	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Clover.....	1,004	.....	.....	.....
Grantsville.....	432	2	5	+20	Slight amount of sulphur and iron in water.
St. John.....	400, 1,000	.....	.....	.....
Uinta County:					
Bridgeport.....	2,700	.....	+8	.....	Water soft, slightly alkaline.
Buenavista.....	500	2- $\frac{1}{2}$	.....	.....	Abundant supply of water.
Vernal.....	979	.....	.....	.....	Abandoned.
Do.....	900	8	.....	.....	Surface water only.
Utah County:					
American Fork.....	500	.....	.....	.....	Many wells of same depth.
Do.....	543	3	12	-4 $\frac{1}{2}$	Good water.
Benjamin.....	560	2	20	Flows.	Soft water with slight trace of sulphur; temp., 72°.
Lehi City.....	400	.....	.....	Flows.	
Spanish Fork (4 miles from post-office).	404	2	15	+ $\frac{1}{2}$	Good soft water.
Spanish Fork.....	404	.....	.....	Flows.	
Do.....	420	2	60	.....
Do.....	400	2	5	.....
Do.....	400	2	70	.....
Do.....	410	2	40	.....
Weber County:					
Hooper.....	400-1,000	2	.....	.....
Plain City.....	450	.....	.....	Flows.	

VERMONT.

Bennington County:					
Bennington.....	1,255	8-6	.....	.....
Chittenden County:					
Burlington.....	410	8	.....	- 15	
Do.....	430	8	60	- 15	
Do.....	490	6	.....	.....
Fort Ethan Allen.....	496	8	110	-100	
Shelburne.....	1,400	6	.....	.....
Winooski.....	495	8	21	Flows.	

VIRGINIA.

Alexandria County:					
Alexandria (brewery) ..	430	8	90	.....
Alexandria (ice works) ..	401	8	20	.....
Alleghany County:					
Covington.....	1,138	.....	400	.....
Augusta County:					
Middlebrook.....	460	5	10	- 50	
Staunton (asylum).....	696	5	60	- 60	
Staunton (mile east).....	460	5	9	- 30	
Botetourt County:					
Blueridge Springs.....	500	6	75	.....
Elizabeth City County:					
Buckroe Beach.....	+400	.....	.....	.....
Fort Monroe ¹	907	.....	.....	.....
Do. ²	945	.....	50	+ 17	
Do. ³	2,254	.....	.....	- 20	
Northend Point ⁴	1,172	.....	Not any.	.....	Drilled in 1894: saline water flowed at 591 feet. Saline water. Salty water at 1,320 and 2,131 feet; 1 horizons of water not tested at 630, 985, 1,520, 1,630, 1,915, and 1,945 feet.
Fairfax County:					
Ditchley.....	620	1	2	Flows.	
Sandy Point ⁵	560	.....	Many.	No flow.	Water at 270 feet; rock below.
Gloucester County:					
Claybank.....	538	1	Several.	Flows.	
Gloucester.....	600	.....	Not any.	.....
Roanes ⁶	716	6	50	+ 23	

¹Record, Geology of the Virginias, by W. B. Rogers, New York, 1884, pp. 731-736; Am. Inst. Mining Eng. Trans., vol. 24, pp. 380-384; U. S. Geol. Surv. Bull. No. 138, p. 167.

²Record, etc., N. J. Geol. Surv., Rept., 1898, pp. 122-126; U. S. Geol. Survey Folio No. 80.

³Record, U. S. Geol. Surv. Folio No. 80.

⁴Record, Am. Inst. Mining Eng. Trans., vol. 24, pp. 384-386.

⁵Record, U. S. Geol. Surv. Bull. No. 138, p. 178.

⁶N. J. Geol. Surv., Rept., 1899, pp. 86-87.

VIRGINIA—Continued.

Location.	Depth.	Dia- me- ter.	Yield per minute.	Height of water.	Remarks.
Greene County: Stanardsville.....	<i>Feet.</i> 1,150	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	For oil; no success.
Henrico County: Cotman.....	730	.....	40	No flow.	In granite.
Richmond (paper mill).....	400	.....	Several.	.....
Richmond (Sherwood Park).....	900	.....	Not any.	.....
Richmond (Ginter Farm).....	400	.....	Many.	.....
Richmond.....	445	.....	.....	.....	Small supply of water at 102 feet.
James City County: Williamsburg.....	876	.....	Not any.	.....
Lancaster County: Lancaster.....	+400	.....	.....	No flow.	Abandoned.
Windmill Point.....	450	.....	.....	.....
Norfolk County: Lambert Point ¹	616	6	65	+ 23	Temperature about 70°.
Norfolk (Money Point).....	562	.....	Many.	Flows.	Ferruginous water.
Norfolk (waterworks). ²	1,760	12-4½	150	Flows.	Saline waters at several horizons.
Northumberland County: Dymer Creek ³	507	.....	.....	.....
Fairport ⁴	662	8-6	75	Flows.	
Reedville.....	680	8-6	85	+ 3	Temp., 78°.
Nottoway County: Crewe.....	500	.....	Few.	Flow.	
Allisonia.....	400-1,200	.....	.....	.....	Several wells.
Delton.....	+400	.....	Not any.	.....	Abandoned.
Dublin.....	475	6	25	-80	
Pulaski.....	400-600	6	100	-10	Several wells.
Do.....	1,200	.....	.....	.....
Princess Anne County: Virginia Beach ⁵	600	.....	.....	.....	Only small amount of water.
Rockingham County: Harrisonburg.....	420	8	.....	-10	
Roanoke County: Roanoke.....	1,200	6	.....	- 4	Not in use.
Warwick County: Newport News ⁵	600	.....	Few.	No flow.	
Wise County: Stonega.....	503	8	55	-16	
Toms Creek.....	.....	6	100	No flow.	
Wythe County: Foster Falls.....	808	.....	100	- 2	
Miscellaneous: Oak Springs.....	400	1	Several.	Flows.	

¹ Record, U. S. Geol. Surv. Folio No. 80; No. 138, p. 172; N. J. Geol. Surv. Rept., 1899, pp. 87-92.

² Record, etc., N. J. Geol. Surv. Rept., 1899, pp. 92-102; U. S. Geol. Surv. Folio No. 80.

³ Record, U. S. Geol. Surv. Bull. No. 138, p. 176.

⁴ N. J. Geol. Surv. Rept., 1898, pp. 121-122.

⁵ U. S. Geol. Surv. Folio No. 80, p. 4.

PRINCIPAL PUBLICATION RELATING TO DEEP WELLS IN VIRGINIA.

Artesian well prospects in the Atlantic Coastal Plain region, by N. H. Darton: United States Geological Survey Bulletin No. 138, 232 pages, 19 plates, Washington, 1896.

United States Geological Survey Folio No. 80, by N. H. Darton.

WASHINGTON.

Location.	Depths.	Dia- me- ter.	Yield per minute.	Height of water.	Remarks.
Adams County: Cunningham.....	<i>Feet.</i> 426	<i>Inches.</i> 6	<i>Gallons.</i>	<i>Feet.</i> -356	Soft water; supply in- creasing.
Eureka Flat (southeast of Snake River).....	200-900	.....	.....	.....	Several wells.
Franklin County: Connell.....	676	5	.....	-640	Farm supply; soft water; temperature of water at mouth, 51°.

WASHINGTON—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Franklin County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Connell (6 miles south-east).	674	.....	.....	.....	Braden well.
Connell (3 miles south-east).	420 (?)	.....	.....	.....	Brummond well.
Connell (west of) .....	.....	.....	.....	.....	Many wells.
Pasco ¹	527	6	Many.	Flows.	Good supply of water. Mineral (?) water at 600 feet, which rises 100 to 125 feet; pump, 2½ inch; black basalt most of way.
Do.....	404				
Do.....	400				
Rye Grass (near).....	575	.....	.....	.....	Not very good supply of water; in basalt; Duni-gan well.
Sulphur (6 miles south).	975	.....	5-6	.....
Sulphur (5 miles south).	575	.....	.....	.....	Little water.
Sulphur Lake (6 miles north).	676	.....	.....	.....	Abandoned.
Jefferson County:					Do.
Junction City	800	1½	½	Flows.	For coal; unsuccessful.
Port Discovery	800	.....	.....	.....	Do.
Port Townsend	1,060	.....	.....	.....	For coal; unsuccessful.
Port Townsend (3 miles from).	1,500	.....	.....	.....	Do.
Port Townsend (9 miles from).	1,100	.....	.....	.....	For coal; unsuccessful.
Port Townsend (15 miles from).	700	.....	.....	.....	Do.
Port Townsend (18 miles from).	900	.....	.....	.....	Do.
Port Townsend (near) ..	1,300	.....	.....	.....	Well at Fort Flagler.
Kitsap County:					
Port Blakely	410	4½	500	- 6	Unsuccessful.
Kittitas County:					
Ellensburg (2 miles northwest).	700	.....	.....	-40	Unsuccessful.
Roslyn	700	.....	Many.	Flows.	
Port Discovery (4 miles northeast).	1,230	.....	.....	.....
Stevens County:					
Colville	700	10-6	.....	.....	Water irony.
Walla Walla County:					
Walla Walla	564	6	130	.....	Temp., 67°; irrigation.
Yakima County:					
North Yakima	625	5½-3	+1	Flows.	Temp., 74°; flow decreasing; sulphurous.
Do.....	826	4-2½	.....	+40	Temp., 78°; soft water.
Do.....	626	.....	.....	Flows.	Soft water; used for irrigation; temp., 74°.
Do.....	828	6	.....	+ 4	Do.
Do.....	570	6½-2½	.....	+20	Soft water; used for irrigation; temp., 60°.
Do.....	1,020	4½	.....	+80	Soft water; used for irrigation; temp., 75°.
Do.....	1,200	3½	.....	Flows.	Soft water; used for irrigation; temp., 81°; sulphurous.
Do. ²	404	6	Many.	Flows.	Several wells. Temp., 71°.
Do.....	534-835	8, 6 and 3	Many.	Flow.	
Do.....	650	.....	Many.	Flows.	
Do.....	1,050	5-3½	.....	+110	
Do.....	940	6-4	.....	Flows.	
Prosser	500	.....	Many?	No flow.	

WEST VIRGINIA.

Barbour County:					
Elk Creek (below Philippi). ³	1,915	.....	.....	.....	For oil or gas.
Philippi (4 miles west) ⁴ .	2,594	.....	.....	.....	Do.
— 4 miles north-west. ⁵	734	.....	.....	.....	For oil.
— near ⁶	541	.....	.....	.....	Do.
.....	2,725	.....	.....	.....	Show of oil at 1,376 feet.

¹Record, U. S. Geol. Surv. Bull. No. 108, p. 39.²Ibid., pp. 56-58.³Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 348.⁴Ibid., pp. 346-348.⁵Ibid., vol. 2, pp. 357-358.⁶Ibid., vol. 1 (a), 1904, pp. 344-346.

WEST VIRGINIA—Continued.

Location.	Dep. h.	Diameter.	Yield per minute.	Height of water.	Remarks.
Berkeley County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Martinsburg.....	485	.....	.....	.....	Abandoned.
Do.....	450	.....	.....	.....
Shanghai.....	714	7	Few.	.....	Sulphur water at 188 feet; abandoned.
Boone County:					
Racine (township) ¹	1,335	.....	.....	.....
Racine (near) ²	1,401	.....	.....	.....	Show of oil.
Boyd County:					
Catlett Creek (township).....	2,025	.....	.....	.....
Central City (vicinity) ..	1,675-1,775	.....	.....	.....	2 oil wells.
Braxton County:					
Bulltown.....	1,000	.....	.....	.....	Salt well.
Burnsville.....	2,750	.....	.....	.....	Small flow of oil.
Burnsville (opposite B. & O. station). ³	2,282	.....	.....	.....	Oil and gas.
Burnsville (2 miles northeast). ⁴	2,800	}	.....	.....	Oil and gas; 2 wells.
Fallsmill.....	2,920				
Rosedale (and vicinity) ⁵	1,000				
Sutton (1½ miles below) ⁶	1,610-3,275	.....	.....	.....	Several wells; oil or gas.
	2,725	.....	.....	.....	Oil well.
Brooke County:					
Bethany (2½ miles northwest). ⁷	2,273	.....	.....	.....	Dr.
Bethany ⁷	1,577	.....	.....	.....	"Dry hole."
Bethany (2 miles below) ⁸	1,509	.....	.....	.....	"Oil and gas in top of Berea," about a 30-barrel well.
Bethany ⁸	1,546	.....	.....	.....	5-barrel well.
Cross Creek district ⁹	765	.....	.....	.....	For oil; unproductive.
Wellsburg ¹⁰	1,217	.....	.....	.....	Numerous deep gas wells now run out.
Do. ¹¹	1,310	.....	.....	.....	Gas well.
Township unknown.....	765	.....	.....	.....	Dr.
Cabell County:					
Central City (one-fourth mile back of C. and O. depot). ¹²	2,770	.....	.....	.....	For oil or gas.
Central City.....	2,900	8½-6½	Many.	Flows.	Some oil.
Do. ¹³	2,770	.....	.....	.....	Small flow of gas.
Central City Township.....	2,970	.....	.....	.....
Greenbottom Township ¹⁴	2,550	.....	.....	.....
Huntington Township ¹⁴	1,977	.....	.....	.....
Huntington.....	2,975	8½-6½	.....	.....	Oil prospect; unsuccessful; much water at bottom.
Do.....	1,200	8-6	.....	.....
Milton (and vicinity) ¹⁵	935-2,776	.....	.....	.....	Several oil and gas wells.
Toms Creek Township.....	1,755	.....	.....	.....
Calhoun County:					
Ayers Post-Office (1 mile west). ¹⁶	2,150-2,289	.....	.....	.....	Oil wells.
Bear Run ¹⁶	1,736	.....	.....	.....	"Dry hole."
Cairo (15 miles south) ¹⁷	1,837	.....	.....	.....	Oil well.
Grantsville (3 miles west). ¹⁸	2,540	.....	.....	.....	For oil or gas.
Rhoda (vicinity) ¹⁹	2,143-2,422	.....	.....	.....	Several oil wells.
Richardson (vicinity) ²⁰	2,212-2,575	.....	.....	.....	Do.
Sherman district ²¹	881	.....	.....	.....	Oil well.
Do. ²²	2,901	.....	.....	.....
Spring Fork of Yellow Creek. ¹⁸	2,155	.....	.....	.....	For oil or gas.
On Yellow Creek (Jackson farm). ²³	2,442	.....	.....	.....
Clay County:					
Big Otter.....	1,100	.....	.....	.....

¹ U. S. Geol. Surv. Folio No. 72, p. 4.² Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 499-500.³ Ibid., p. 391.⁴ Ibid., pp. 392-393.⁵ Ibid., pp. 388-390.⁶ Ibid., vol. 1, 1899, pp. 269-270.⁷ Ibid., vol. 1(a), 1904, p. 233.⁸ Ibid., p. 232.⁹ Record, Pa. 2d Geol. Surv. Rept., vol. 16, pp. 327-328.¹⁰ Record, Ohio Geol. Surv. Rept., 1888, vol. 6, pp. 337-339.¹¹ Record, Pa. 2d Geol. Surv. Rept., 1886, part 2, pp. 783-784; W. Va. Geol. Surv. Rept., vol. 1, p. 367.¹² Record, W. Va. Geol. Surv. Rept., vol. 1(a), 1904, pp. 495-496; U. S. Geol. Surv. Folio No. 69, p. 3.¹³ Ibid., vol. 1, pp. 275-276.¹⁴ U. S. Geol. Surv. Folio No. 69, p. 3.¹⁵ Record, W. Va. Geol. Surv. Rept., vol. 1(a), 1904, pp. 484-495.¹⁶ Ibid., p. 395.¹⁷ Ibid., pp. 394-395.¹⁸ Ibid., p. 397.¹⁹ Ibid., pp. 398-401.²⁰ Ibid., pp. 401-402.²¹ Ibid., vol. 2, p. 396.²² Ibid., vol. 1(a), 1904, pp. 396-397.²³ Ibid., vol. 2, pp. 395-396.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Clay County—Continued.					
Clay and Clendenin (half way between). ¹	2,614				Produced 2 barrels of oil a day; well abandoned.
Near Roan County line. ²	2,422	8½-6½			For oil or gas.
Doddridge County:					
Alpha Post-Office (1½ and 1 mile southwest and west). ³	{ 2,795 2,843				Gas well. Gas, 1,869 feet; oil, 1,905 feet; gas, 2,835 feet.
Big Flint Creek (2 miles southeast from mouth). ⁴	2,520				Oil well.
Cascara (near). ⁵	2,760				Gas and oil.
Center Point (1 mile west). ⁶	1,950				Gas, 1,890 to 1,895 feet; gas and oil, 1,902 feet.
Center Point (near). ⁷	1,910-2,880				Several oil wells.
Central	460	5		-20	Sulphur water.
Central station (three-fourths to 2 miles from). ⁸	1,879-3,085				7 wells; for oil or gas.
Cove district. ⁹	2,595-2,782				5 wells; for oil or gas.
Doddridge-Lewis County line (near). ¹⁰	{ 2,186 2,207				2 wells; for oil or gas.
Grant district. ¹¹	2,257-3,314				13 wells; for oil or gas.
Greenbrier district. ¹²	2,750-3,193				8 wells; for oil or gas.
Greenwood Post-Office (4 miles southeast). ¹³	2,081				
Kelley Post-Office (2 miles southwest). ¹⁴	2,500				"Good Injun gas well."
Kenton (?) (vicinity). ¹⁵	2,115				For oil or gas.
Leopold Post-Office (1½ and 1 mile northwest). ¹⁶	{ 2,587 2,564				"30-barrel well."
Long Run station (near). ¹⁷	2,701				"10 to 20 barrel well."
McClellan district. ¹⁸	2,158-3,206				For oil or gas.
Do.	2,791-3,131				9 wells; for oil or gas.
Do. ¹⁹	2,773				4 gas wells.
Miletus (near). ²⁰	2,930				Gas at 2,771, 2,778, and 2,800 feet, so strong that drilling had to be suspended.
Do.	2,670				For oil or gas.
Morgansville (1 mile northwest). ²¹	2,723				Gas well.
New Milton district. ²²	2,047-2,906				For oil or gas.
Oxford (2 miles northeast). ²³	2,655				6 wells; for oil or gas.
Oxford (7 miles above). ²⁴	2,484				For oil or gas.
St. Clara (2½ miles northeast). ²⁵	2,770				Oil well.
Sedalia (near). ²⁶	2,800				For oil or gas.
Do. ²⁷	2,800-3,235				Large gas well.
Vadis. ²⁸	2,207				6 wells; for oil or gas.
West Union (3 and 3½ miles southwest). ²⁹	{ 2,493 +1,745				For oil; unsuccessful on account of water.
3½ miles northwest. ³⁰	2,479				Practically dry hole.
Fayette County:					"Big gas, 1,750 feet."
Oak Hill. ³¹	541				
Powellton. ³²	+813				
Do. ³³	2,896				For oil or gas.
Gilmer County:					
Butcher Fork of Sand Fork Creek (near Lewis County line). ³⁴	2,825				

¹ Record, W. Va. Geol. Surv. Rept., vol. 1(a), 1904, pp. 474-475.² Ibid., pp. 473-474.³ Ibid., pp. 287-288.⁴ W. Va. Geol. Surv. Rept., vol. 1, pp. 332-334.⁵ Record, *ibid.*, vol. 1(a), 1904, pp. 282-283.⁶ Ibid., pp. 281-282.⁷ Ibid., vol. 1, pp. 328-332.⁸ Ibid., vol. 1(a), 1904, pp. 302-304.⁹ Ibid., pp. 297-300.¹⁰ Ibid., p. 298.¹¹ Ibid., pp. 288-292.¹² Ibid., pp. 292-294.¹³ Ibid., p. 303.¹⁴ Ibid., p. 300.¹⁵ Ibid., vol. 1, p. 335.¹⁶ Ibid., vol. 1(a), 1904, p. 297.¹⁷ Ibid., vol. 1, pp. 325-326.¹⁸ Ibid., vol. 1(a), 1904, pp. 285-287.¹⁹ Ibid., p. 282.²⁰ Ibid., vol. 1, pp. 323-324.²¹ Ibid., vol. 1(a), 1904, p. 301.²² Ibid., pp. 295-297.²³ Ibid., p. 304.²⁴ Ibid., vol. 1, 322-323.²⁵ Ibid., vol. 1(a), 1904, p. 298.²⁶ Ibid., vol. 1, pp. 326-327.²⁷ Ibid., vol. 1(a), 1904, pp. 282-284.²⁸ W. Va. Geol. Surv. Rept., vol. 1, pp. 258-259.²⁹ Record, *ibid.*, vol. 1(a), 1904, pp. 300-301.³⁰ Ibid., p. 301.³¹ Partial record, *ibid.*, vol. 2, pp. 661-662.³² Ibid., p. 622.³³ Record, *ibid.*, vol. 1(a), 1904, pp. 502-503.³⁴ Ibid., pp. 380-381.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Gilmer County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Glenville district ¹	2, 678-3, 218				Several wells for oil or gas.
Do. ²	2, 908				
Glenville ³	2, 412	7½			O'l and gas well.
Do.....	800	2½			For oil or gas; abandoned.
Joes crossing ⁴	2, 830				
Stouts Mill ⁴	694				
Stouts Mill (2 miles northeast) ⁵	2, 898				O'l.
Stouts Mill (near) ⁶	2, 672				
Stumptown (and near) ⁷	1, 215-2, 668				Several oil and gas wells.
Tanner (1 mile west) ⁸	2, 710				For oil or gas.
Troy district ⁹	2, 276-3, 204				Several oil and gas wells.
Greenbrier County:					
Ronceverte.....	800				For oil; abandoned.
Hancock County:					
Chester (¾ to 7 miles southeast) ¹⁰	1, 090-2, 266				8 oil and gas wells.
Fairview (10 miles northeast of Manington) ¹¹	1, 999				Heavy gas at 1, 992 feet; show of oil.
Grant district ¹²	1, 470				For oil; unproductive.
Grant district.....	960, 980				2 wells.
Holidays Cove (near) ¹³	1, 296				D'y hole.
King Creek (along in Turkey Foot field) ¹⁴	1, 201-1, 296				7 wells.
New Cumberland.....	+600				Gas well.
New Cumberland (2 miles east) ¹⁵	1, 198				O'l well.
Poe district ¹⁶	1, 700				For oil; unproductive.
Harrison County:					
Bridgeport.....	±2, 500				2 oil wells.
Brown (1½ miles northeast) ¹⁷	3, 635				
Browns Mills (near) ¹⁸	1, 867				For oil; unproductive.
Cherry Camp (near) ¹⁹	3, 146				"Dry hole."
Cherry Camp (vicinity) ²⁰	2, 556-2, 839				Several oil and gas wells.
Clarksburg.....	1, 700		Many.	Flows.	Some gas.
(5 miles east).....	2, 000				
(4 miles south).....	750		Many.	Flows.	Salt water.
(2 miles north) ²¹	2, 523	10-6½			O'l and gas.
Cunningham Run (head) ²²	2, 517				"Medium gas well."
Gypsy (1 mile east) ²³	2, 485				Gas well.
Jarvisville.....	2, 500-2, 800				"Three million-foot gas well in Big Injun Sand."
Lumberport (2 miles east) ²⁴	2, 347				Numerous oil wells.
Marshville (2 miles northwest) ²⁵	3, 088				Gas well.
Olive (2 miles west) ²⁶	3, 160				O'l; "40-barrel well."
Peoria.....	2, 300				O'l; "275-barrel well."
West Milford (near) ²⁷	2, 225				For oil or gas.
West Milford ²⁷	2, 460				Little gas; show of oil.
Salem.....	2, 100-2, 800				Do.
Sardis (vicinity) ²⁸	3, 081				O'l wells.
Sardis district ²⁹	2, 742-3, 299				For oil; abandoned.
Nos. 1 and 2 ³⁰	2, 930, 3, 127				For oil; 14 wells.
— ²⁴	2, 828-2, 725				J. J. Ashcraft wells.
Simpson Creek (3 miles from mouth) ³¹	2, 502				2 oil wells.

¹ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 376-377.

² Ibid., p. 331.

³ Ibid., vol. 1, pp. 259-260.

⁴ Ibid., vol. 2, p. 243.

⁵ Ibid., vol. 1(a), 1904, pp. 377-378.

⁶ Ibid., pp. 378-380.

⁷ Ibid., pp. 383-386.

⁸ Ibid., pp. 386-388.

⁹ Ibid., pp. 382-383.

¹⁰ Ibid., pp. 236-237.

¹¹ Geol. Soc. Am. Bull., vol. 3, pp. 191-192, 1892.

¹² Record, Pa. 2d Geol. Surv. Rept., Vol. 15, p. 328.

¹³ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 237.

¹⁴ Ibid., 234-235.

¹⁵ Ibid., vol. 1, p. 369.

¹⁶ Record, Pa. 2d Geol. Surv. Rept., Vol. 15, p. 327.

¹⁷ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 311.

¹⁸ W. Va. Geol. Surv. Rept., vol. 1, 1899, pp. 249-250.

¹⁹ Ibid., vol. 1 (a), 1904, pp. 317-318.

²⁰ Ibid., vol. 1, 1899, pp. 252-255.

²¹ Ibid., vol. 1 (a), 1904, pp. 328-330.

²² Ibid., p. 328.

²³ Ibid., pp. 330-331.

²⁴ Ibid., p. 327.

²⁵ Ibid., p. 315.

²⁶ Ibid., p. 310.

²⁷ Ibid., pp. 334-335.

²⁸ Ibid., vol. 1, 1899, pp. 248-249.

²⁹ Ibid., vol. 1 (a), 1904, pp. 366-311.

³⁰ Ibid., p. 309; authority, South Penn. Oil Co.

³¹ Ibid., p. 330.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Harrison County—Cont'd.					
Ten Mile district ¹	<i>Feet.</i> 2,750	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	For oil or gas; unproductive.
Vicinity of Sedalia and Salem. ²	2,868-3,609				16 wells, for oil or gas.
— ³	2,578-3,483				24 wells; covering the region where the Fifth Sand is productive of oil or gas.
Union district ⁴	2,160-3,018				16 gas and oil wells; the 2,160-foot well is the largest gas well in the State at present.
Jackson County:					
Cottageville ⁵	2,175				For oil or gas.
Kentuck Post-Office (southeast of). ⁶	1,670	10-1½			"Big gas pressure at 1,420 feet; show of oil at 1,430."
Kenna Post-Office ⁷	2,475				"Dry hole."
Ravenswood (near) ⁸	2,282				For oil or gas.
Sandyville (near) ⁹	1,787				Gas, water, and little oil at 1,787 feet.
Jefferson County:					
Harpers Ferry.....	412		Few.	No flow.	
Kanawha County:					
Cabin Creek Township.....	2,000				
Charleston (water-works). ¹⁰	1,840				For oil or gas; unproductive.
8 miles above ¹¹	2,450				Moderate flow of gas.
9 miles above ¹²	2,642				Small flow of gas.
13 miles southwest ¹³	2,000				For oil or gas; unproductive.
5 miles below ¹⁴	1,425				
— ¹⁵	2,608				For oil or gas.
— ¹⁶	1,840				Do.
Cool Spring Fork of Burning Spring Branch. ¹⁷	2,642				
Fork of Little Sandy (on Simmons farm). ¹⁸	1,700	13-6½			Gas well, water at 60 and 155 feet; hole filled with salt water, 940-990 feet; gas at 938 feet.
Kanawha (and vicinity). ¹⁹	1,000-2,450				Numerous salt and gas wells.
Kanawha River at head of Witchers Creek ²⁰	1,208				
Lens Creek Township ²¹	1,222				
Lewis Creek (¼ miles from Kanawha River) ²²	1,200				
Malden Township.....	2,450				
Malden.....	1,800				Gas well.
Simpsons Creek ²³	1,222-1,280				
Winifrede ²⁴	2,000				
Lewis County:					
Camden (near) ²⁵	2,455				Do.
Court-House district ²⁶	2,530-3,127				15 oil and gas wells.
Freemans Creek district ²⁷	1,675-3,088				33 oil and gas wells.
Lightburn (vicinity) ²⁸	2,700				For oil or gas; abandoned.
Vadis (near) ²⁹	2,703				Oil well.
Weston.....	2,700				For oil; unsuccessful.
2 miles below ³⁰	1,450				Small flow of oil.
10 miles southeast ³¹	2,142				Gas well.
Hospital for the Insane. ³²	2,401				Oil well.
	2,112				Gas well.

¹ W. Va. Geol. Surv. Repts., vol. 1, 1899, p. 251.² Ibid., vol. 1 (a), 1904, pp. 311-316.³ Ibid., pp. 319-326.⁴ Ibid., pp. 331-337.⁵ Record, *ibid.*, p. 476-477.⁶ Ibid., p. 477.⁷ Ibid., pp. 477-478.⁸ W. Va. Geol. Surv. Rept., vol. 1, pp. 283-284.⁹ Record, *ibid.*, vol. 1 (a), 1904, p. 476.¹⁰ Record, Pa. 2d Geol. Surv. Rept., vol. 15, pp. 331-332.¹¹ Ibid., p. 330.¹² Record, W. Va. Geol. Surv. Rept., vol. 1, pp. 271-272.¹³ Record, Pa. 2d Geol. Surv. Rept., vol. 15, pp. 332-333.¹⁴ Record, W. Va. Geol. Surv. Rept., vol. 2, p. 400.¹⁵ Ibid., vol. 1 (a), 1904, pp. 500-501.¹⁶ Ibid., p. 501.¹⁷ U. S. Geol. Surv. Folio No. 72, p. 3.¹⁸ Record, Pa. 2d Geol. Surv. Rept., Vol. 15, pp. 329-333; W. Va. Board of Centennial Managers, Resources Report by Maury and Fontaine, pp. 287-290.¹⁹ U. S. Geol. Surv. Folio No. 72, p. 4.²⁰ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 357-358.²¹ Ibid., pp. 369-373.²² Ibid., pp. 360-368.²³ W. Va. Geol. Surv. Rept., vol. 1, pp. 257-258.²⁴ Record, *ibid.*, vol. 1 (a), 1904, pp. 354-355.²⁵ Ibid., vol. 1, pp. 255-256.²⁶ Ibid., vol. 1 (a), 1904, pp. 355-356.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Lewis County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Weston (4 miles from) ¹	2, 202	.....	.....	.....	Oil and gas.
10 miles southwest ²	2, 645	.....	.....	.....	Oil well.
16 miles south ³	2, 936-2, 517	.....	.....	.....	2 wells for oil or gas.
Lincoln County:					
Big Hart Creek ⁴	3, 261	.....	.....	.....
Hart (near) ⁵	3, 260	.....	.....	.....	For oil or gas.
Logan County:					
(Township unknown).....	1, 710	.....	.....	.....
McDowell County:					
Welch ⁶	+605	.....	.....	.....
Marion County:					
Barrackville (3 miles northwest). ⁷	2, 873	.....	.....	.....
Brink Post-Office (1 mile east). ⁸	3, 345	.....	.....	.....
2 miles from ⁹	2, 649½	.....	.....	.....
1 mile east ⁹	3, 088	.....	.....	.....
	3, 139	.....	.....	.....
	3, 218	.....	.....	.....
Campbells Run ¹⁰	3, 340	.....	.....	.....	For oil or gas; 4 wells.
	3, 064	.....	.....	.....
	3, 202	.....	.....	.....
Dunkard Mill Run (near head waters). ¹¹	2, 717-2, 750	.....	.....	.....	2 wells.
Fairview (southwest) ¹²	1, 889	.....	.....	.....	Oil well.
2 miles northeast ¹³	1, 997	.....	.....	.....	For oil; unproductive.
2 miles south. ¹⁴	1, 970	5 7/8	.....	.....	Gas well.
	3, 028	.....	.....	.....
	3, 334	.....	.....	.....	Some gas at 3,293 feet; 25 barrels of oil daily from 3,315 feet.
Fairview (near) ¹⁴	3, 015	.....	.....	.....
	3, 135	.....	.....	.....	Produced 200 barrels of oil daily, in July, 1903, and still yields 68 barrels daily.
Farmington station (2 miles east). ¹⁵	2, 811	.....	.....	.....	For oil or gas; abandoned.
Flat Run ¹⁶	3, 061-3, 374	.....	.....	.....	6 wells; for oil or gas.
Glovers Gap (1 mile east). ¹⁷	2, 284½	.....	.....	.....
	2, 404½	.....	.....	.....
	2, 263	.....	.....	.....
	2, 967	.....	.....	.....
Glovers Gap (near) ¹⁸	3, 090	.....	.....	.....
	3, 299	.....	.....	.....
Joetown (1 mile west) ¹⁹	3, 014	.....	.....	.....	For oil or gas.
	2, 495	.....	.....	.....
Joetown (near) ²⁰	2, 759	.....	.....	.....	Do.
	2, 889	.....	.....	.....
Manington Township.....	1, 945	.....	.....	.....
Manington (near) ²¹	1, 928	.....	.....	.....	Do.
1 mile above ²²	3, 144	.....	.....	.....	Do.
3 miles southwest ²³	3, 042	.....	.....	.....	Do.
3 miles north ²⁴	2, 895	.....	.....	.....	Oil well.
6 miles northwest ²⁵	3, 010	.....	.....	.....	Do.
3 to 4 miles east ²⁶	3, 025	.....	.....	.....	Gas at 2,420 feet below the Pittsburg coal.
Near ²⁷	1, 877	.....	.....	.....	For oil or gas.
— ²⁷	3, 000	.....	.....	.....
	2, 631	.....	.....	.....	Do.
2 miles west ²⁷	1, 965	8½-5 7/8	.....	.....	Do.
	1, 970	8½-5 7/8	.....	.....
Near ²⁷	2, 400	10-4	.....	.....	Do.
	2, 630	8½-5 7/8	.....	.....
3 miles southwest ²⁷	2, 903	.....	.....	.....	Gas.
Near ²⁷	2, 255-3, 020	.....	.....	.....	11 wells, oil and gas.

¹ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), pp. 356-357.² Ibid., p. 369.³ Ibid., p. 374.⁴ U. S. Geol. Surv. Folio No. 69, p. 4.⁵ Record, W. Va. Geol. Surv. Rept. vol. 1, pp. 280-281.⁶ Ibid., vol. 2, pp. 694.⁷ Ibid., vol. 1 (a), 1904, pp. 152-154.⁸ Ibid., p. 165.⁹ Ibid., pp. 173-174.¹⁰ Ibid., pp. 167-168.¹¹ Ibid., pp. 154-155.¹² W. Va. Geol. Surv. Rept., vol. 1, pp. 239-241.¹³ Ibid., pp. 238-239.¹⁴ Record, ibid., vol. 1 (a), 1904, pp. 156-157.¹⁵ Record, Pa. 2d Geol. Surv. Ann. Rept. 1886, part 2, pp. 782-783.¹⁶ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 169-173.¹⁷ Ibid., p. 164.¹⁸ Ibid., pp. 165-167.¹⁹ Ibid., vol. 1, pp. 345-347.²⁰ Ibid., vol. 1 (a), 1904, pp. 174-176.²¹ Ibid., vol. 1, pp. 241-242.²² Ibid., pp. 242-243.²³ Ibid., pp. 243-244.²⁴ Ibid., pp. 244-246; vol. 2, pp. 129-130.²⁵ Ibid., pp. 246-247.²⁶ Ibid., vol. 1 (a), 1904, pp. 155-156.²⁷ Ibid., pp. 158-164.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Marion County—Continued.					
Manington district (west of Campbells Run). ¹	3,218	-----	-----	-----	Oil at 3,113 feet.
Metz (near) ²	2,992	-----	-----	-----	For oil or gas.
Township unknown.	2,811	-----	-----	-----	Dry.
Whiteday (near) ³	2,539	-----	-----	-----	For oil or gas.
Marshall County:					
Adaline (3 miles north-east). ⁴	2,970	-----	-----	-----	
2 miles southwest ⁵	2,869	-----	-----	-----	Good oil well.
3 to 4 miles southwest. ⁶	3,085	-----	-----	-----	Oil at 3,075 feet; gas at 3,085 feet.
Adaline (2 miles north) ⁶	2,798	-----	-----	-----	
Belleton (one-half mile west). ⁷	3,225	-----	-----	-----	Oil and gas.
Cameron (near) ⁸	3,249	-----	-----	-----	For oil or gas.
2 miles southwest ⁹	2,810	-----	-----	-----	
1 mile west ⁹	2,913½	-----	-----	-----	
Elmgrove Post-Office (¾ miles southeast). ¹⁰	904	-----	-----	-----	"Gas on top; best well in this field."
Do. ¹⁰	970	-----	-----	-----	"Struck oil at about 945 feet, and shot with 60 quarts below this depth which shut off the oil and opened up the gas."
Do. ¹¹	987	-----	-----	-----	"Use gas for drilling purposes, piped to Elmgrove, probably 2,000,000 feet, with rock pressure of 260 pounds."
3 miles southeast ¹¹	1,050	-----	-----	-----	
Franklin district ¹²	2,616	-----	-----	-----	
Garrett (near) ⁷	3,249	-----	-----	-----	
Liberty Township ¹³	2,934	-----	-----	-----	For oil or gas; unproductive.
Liberty District ¹⁴	2,656-3,108	-----	-----	-----	
Loudensville (5 miles north). ¹⁵	1,935	-----	-----	-----	For oil or gas.
Majorsville (near) ¹⁶	2,603	-----	-----	-----	
Do. ¹⁷	1,055	-----	-----	-----	Gas well.
Meade district ¹⁸	2,477-2,949	-----	-----	-----	For oil or gas.
Moundsville (east edge) ¹⁹	2,579	-----	-----	-----	Do.
near ²⁰	1,465	-----	-----	-----	For oil or gas.
vicinity	1,470	-----	-----	-----	Several oil wells.
3 miles northeast ²¹	1,400-1,413	-----	-----	-----	Numerous oil wells.
5 miles east ²²	578	-----	-----	-----	Dry.
Pioneer (1 mile west) ¹²	2,707	-----	-----	-----	Gas, 2,980 to 2,990 feet.
Rosebys Rock station (near). ²³	2,999	-----	-----	-----	
	2,920	-----	-----	-----	
St. Joseph Post-Office ⁵	2,945	-----	-----	-----	
2 miles northeast ²³	2,974	-----	-----	-----	2 wells.
one-half mile north-west. ²⁴	2,747	-----	-----	-----	
	2,875	-----	-----	-----	
Webster District ²⁵	2,756	-----	-----	-----	
Mason County:					
Brighton (mile 1 south). ²⁶	2,400	8½-4½	-----	-----	For oil or gas.
Clifton	1,800	-----	-----	-----	
Letart (near) ²⁷	2,139	-----	-----	-----	Do.
Point Pleasant (6 miles below). ²⁸	2,942	-----	-----	-----	Do.
2 miles from ²⁹	1,677	13-4½	-----	-----	Do.

¹ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 167.

² W. Va. Geol. Surv. Rept., vol. 1, 348.

³ Record, *ibid.*, vol. 1 (a), 1904, pp. 151-152.

⁴ *Ibid.*, pp. 215-216.

⁵ *Ibid.*, p. 218.

⁶ *Ibid.*, p. 219.

⁷ *Ibid.*, p. 214.

⁸ W. Va. Geol. Surv. Rept., vol. 1, p. 350.

⁹ Record, *ibid.*, vol. 1 (a), 1104, p. 215.

¹⁰ *Ibid.*, 225.

¹¹ *Ibid.*, p. 226.

¹² *Ibid.*, p. 222.

¹³ Record, Pa. 2d Geol. Surv. Rept., vol. 15, pp. 328-329.

¹⁴ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), pp. 216-217.

¹⁵ W. Va. Geol. Surv. Rept., vol. 1, pp. 351-352.

¹⁶ Record, *ibid.*, vol. 1 (a), 1904, pp. 227-229.

¹⁷ *Ibid.*, p. 230.

¹⁸ *Ibid.*, pp. 220-222.

¹⁹ *Ibid.*, pp. 223-224.

²⁰ *Ibid.*, vol. 1, 1899, pp. 362-363.

²¹ *Ibid.*, p. 364.

²² *Ibid.*, p. 223.

²³ *Ibid.*, pp. 218-219.

²⁴ *Ibid.*, pp. 219-220.

²⁵ *Ibid.*, p. 224.

²⁶ *Ibid.*, pp. 481-482.

²⁷ *Ibid.*, vol. 1, 1899, pp. 281-282; vol. 1 (a), 1904, pp. 479-481.

²⁸ *Ibid.*, pp. 273-274.

²⁹ *Ibid.*, vol. 1 (a), 1904, p. 481.

WEST VIRGINIA—Continued.

Location.	Depth.	Dia- meter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Mingo County:					
Dingess station (near) ¹	2, 126				For oil or gas.
Fairfax (northwest of) ²	1, 338				Do.
Monongalia County:					
Amos (4 miles north) ³	3, 174				
Amos (2 miles north) ³	3, 631				
Batelle district ⁴	3, 001-3, 520				6 wells.
Clay district ⁵	3, 342				2 wells.
Clay Township.....	3, 525				Gas.
Clay Township.....	550				
Crossroads (near) ⁶	3, 199				
Daybrook (near) ⁷	3, 276				Oil and water, 2, 195 to 2, 210; filled up about 1, 200 feet.
Fairview district ⁸	3, 408				
Flat Run Oil Pool ⁹	3, 012-3, 495				7 wells.
Hoovers Run (just south of) ¹⁰	3, 243				
Highland Church (near) ¹¹	3, 484	10-5			Oil well.
Miracle Run Post-Office (1½ miles southeast) ¹²	3, 170				2 wells.
Morgantown (¾ miles south) ¹³	2, 414				Slight flows of oil and gas; near Uffington.
Morgantown (¾ miles south) ¹⁴	2, 280				
Morgantown ¹⁵	2, 615				
Morgantown ¹⁵	2, 267				For oil or gas.*
St. Cloud (one-fourth mile northeast) ¹⁶	3, 406	10-6½			
St. Leo (near) ¹⁷	3, 155				
St. Leo (2 miles west) ¹⁸	3, 486	10-6½			Oil at 3, 015 and 3, 480 feet.
Wadestown (near) ¹⁹	3, 090				Oil well.
Do ²⁰	3, 112				Do.
Do ²¹	3, 300	6½			Gas well.
3 miles west ²²	3, 432				
Wordley (near) ²³	2, 830-2, 960				Do.
Noble County:					
Macksburg (near) ²⁴	1, 695				For oil or gas.
Ohio County:					
Wheeling (near center) ²⁵					Central Glass Co.'s well.
Wheeling Creek (3 miles above mouth) ²⁶	2, 445				
Wheeling (4 miles south- east) ²⁷	4, 500	4½			For oil or gas; temperature at 1, 350 feet is 68.75°; at 4, 462 feet it is 110.15°; dry; cased to 1, 570 feet.
Wheeling ²⁸	2, 095				For oil or gas.
Wheeling (3 miles east- northeast) ²⁹	2, 000				For oil or gas; unsucces- ful.
Pleasants County:					
Belmont (near) ³⁰	587				For oil or gas.
Bens Run station (near) ³¹	1, 605				
2 miles southeast ³²	1, 940				Oil; "3-barrel well."
Do. ³³	1, 900				Oil and gas.
Bens Run (3 miles east) ³⁴	+ 919				Oil; "about 20-barrel."
Bens Run ³⁵	+ 947				
Brothers Island ³⁶	1, 348				For oil or gas.
Eureka (near) ³⁶	+ 1, 348				2 oil wells.
French Creek (Right Fork) ³⁵	1, 602				For oil or gas.
	+ 708				

¹ Record, W. Va. Geol. Surv. Rept., vol. 1, 1899, pp. 278-280; U. S. Geol. Surv. Folio No. 69, p. 4.

² Ibid., pp. 276-277.

³ Ibid., vol. 1 (a), 1904, pp. 140-141.

⁴ Ibid., pp. 143-150.

⁵ Ibid., p. 140.

⁶ Ibid., pp. 142-143.

⁷ Ibid., pp. 135-136.

⁸ Ibid., p. 141.

⁹ Ibid., p. 136-139.

¹⁰ Ibid., p. 146.

¹¹ Ibid., vol. 1, 1899, pp. 231-232.

¹² Ibid., vol. 1 (a), 1904, p. 139.

¹³ Ibid., pp. 133-134.

¹⁴ Ibid., pp. 134-135.

¹⁵ Record, Pa. 2d Geol. Surv. Rept., Vol. 15, p. 329.

¹⁶ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 150.

¹⁷ Ibid., pp. 147-148.

¹⁸ Ibid., p. 148.

¹⁹ Ibid., vol. 1, pp. 233-234.

²⁰ Ibid., pp. 232-233.

²¹ Ibid., pp. 230-231; vol. 1 (a), 1904, p. 147.

²² Ibid., vol. 1 (a), 1904, pp. 148-149.

²³ Ibid., vol. 1, pp. 234-237.

²⁴ Ibid., pp. 238-239.

²⁵ W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 230.

²⁶ Record, ibid., p. 231.

²⁷ W. Va. Geol. Surv. Rept., vol. 1, pp. 364-365; record of temperatures, Am. Assoc. Adv. Sci. Proc., 1891, p. 258 (description, pp. 446-457); W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 230.

²⁸ Record, ibid., p. 366; vol. 1 (a), 1904, p. 94.

²⁹ Record, Pa. 2d Geol. Surv. Ann. Rept., 1886, part 2, pp. 781-782.

³⁰ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 277.

³¹ Ibid., p. 269.

³² Ibid., p. 272.

³³ Ibid., p. 273.

³⁴ Ibid., p. 279.

³⁵ Ibid., p. 280.

³⁶ W. Va. Geol. Surv. Rept., vol. 1, pp. 351-352; vol. 1 (a), 1904, pp. 280-281.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Pleasants County—Cont'd.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Grant district ¹	1,481	8½-6½			2 wells, for oil.
Hebron (near) ²	2,000				For oil or gas.
Do. ³	2,080				Do.
	2,012				
Jefferson district ¹	+ 576				3 wells, for oil.
	+ 636				
Do. ¹	+ 623				Oil and gas.
	1,470				
Lafayette district ⁴	+2,181				2 wells; for oil or gas.
	2,750				
Lytton (near) ⁵	1,770				For oil or gas.
Maxwell (near) ⁸	2,020				Gas at 1,965 feet.
1 mile east ³	1,779				"5- to 10-barrel well;" oil.
Middle Island Creek ⁶	1,932				For oil or gas (C. B. Barker well No. 1).
					For oil or gas.
Iron Bridge ⁷	+ 614				Do.
7 miles from mouth ⁷	+ 530				No oil or gas.
Parkersburg (5 miles northeast). ⁸	2,075				
Raven Rock (3 miles east). ⁷	+ 814				For oil or gas.
St. Marys (6 miles east) ⁷	+ 826				
St. Marys (2 miles south) ⁷	+ 468				2 wells, Dotsor farm, Nos. 1 and 2.
	+ 480				Many wells; for oil or gas.
St. Marys (2½ miles east) ⁸	600-1,000	8½-6½			Several wells.
Eliza De Long land ⁸	649-996	8½-6½			For oil or gas.
Sugar Creek (3-4 miles from mouth). ⁷	+686				
Union District ⁹	1,871				Do.
Waverly (1¼ miles east) ¹	1,438				Water, 1,180 to 1,220 feet; gas, 1,413 feet; oil, 1,423 and 1,428 feet.
Township unknown.....	2,309				Dry.
Preston County:					
Bretz (near) ¹⁰	2,000				For oil or gas; failure.
Henry.....	703	4½			
Newburg ¹¹	3,004				For gas; unsuccessful.
Do.....	865			-18	
Putnam County:					
Buffalo (near).....	400				
Hurricane (near) ¹²	2,198				Gas and oil; neither in paying quantities.
Red House (3 miles north). ¹²	1,875	10-4½			Small show of oil.
Winfield.....	500				2 wells.
Winfield (1 mile below) ¹³	1,670				Oil well.
Winfield (1 mile south) ¹⁴	2,603				For oil or gas.
Winfield (2 miles south) ¹⁴	2,603				Do.
Randolph County:					
Beaver Creek (1 mile north). ¹⁵	431				
Ritchie County:					
Auburn (near) ¹⁶	1,940				Do.
Berea (1 to 2 miles northeast). ¹⁷	1,775-2,062				Several oil wells.
Cabin Run (tollgate well). ¹⁸	2,712				For oil or gas.
Cairo ¹⁹	2,060				Do.
1½ miles northwest ²⁰	1,735				Do.
4 miles northeast ²¹	2,142				Do.
8 miles south ²²	1,652				Small supply of oil.
Vicinity ²³	1,469-2,045				Many wells; for oil and gas.
Cornwallis (vicinity) ²⁴	1,473-1,657				5 wells; for oil or gas.
Ellenboro (2 miles north). ²⁵	1,788				Oil well; "5-barrel well."
3½ miles from ²⁶	1,782-1,828				Several oil and gas wells.
Flannagan Field ²⁷	1,770-2,120				Many oil and gas wells.

¹ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 278.² W. Va. Geol. Surv. Rept., vol. 1, p. 360.³ Record, *ibid.*, vol. 1 (a), 1904, p. 275.⁴ *Ibid.*, p. 276.⁵ *Ibid.*, p. 272.⁶ *Ibid.*, pp. 273-274.⁷ *Ibid.*, p. 279.⁸ W. Va. Geol. Surv. Rept., vol. 2, p. 276, 277.⁹ Record, *ibid.*, vol. 1 (a), 1904, p. 273.¹⁰ W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 342.¹¹ Record, *ibid.*, pp. 342-344.¹² *Ibid.*, p. 483.¹³ W. Va. Geol. Surv. Rept., vol. 2, p. 401; U. S. Geol. Surv. Folio No. 72, p. 8.¹⁴ Record, *ibid.*, vol. 1 (a), 1904, p. 482.¹⁵ W. Va. Geol. Surv. Rept., vol. 2, pp. 360-361.¹⁶ Record, *ibid.*, vol. 1 (a), 1904, p. 423.¹⁷ *Ibid.*, pp. 422-424.¹⁸ *Ibid.*, p. 406.¹⁹ W. Va. Geol. Surv. Rept., vol. 1, 1899, p. 302.²⁰ *Ibid.*, pp. 303-304.²¹ *Ibid.*, pp. 305-307.²² *Ibid.*, pp. 308-309.²³ Record, *ibid.*, vol. 1 (a), 1904, pp. 430-439.²⁴ *Ibid.*, pp. 428-429.²⁵ *Ibid.*, p. 409.²⁶ *Ibid.*, vol. 1, pp. 311-315.²⁷ *Ibid.*, vol. 1 (a), 1904, pp. 420-422.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Ritchie County—Continued.</i>	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Harrisville	1,600-2,000	.....	.....	.....	Several oil wells.
Harrisville (near) ¹	2,500	.....	.....	.....	Oil well.
Do. ²	1,812-2,821	.....	.....	.....	3 wells; for oil or gas.
Harrisville (3 miles south) ³	1,941	.....	.....	.....	"Dry."
Harrisville (6 miles east) ⁴	2,675	.....	.....	.....	For oil or gas.
Highland (near) ⁵	1,905-2,085	.....	.....	.....	Oil well.
Holbrook (near) ⁶	2,670	.....	.....	.....	3 wells; for oil or gas.
Do. ⁷	1,759-2,061	.....	.....	.....	5 wells; for oil or gas.
Lawford (and vicinity) ⁸	1,986-2,271	.....	.....	.....	3 wells; for oil or gas.
Macfarlan (near) ⁹	1,783-2,326	.....	.....	.....	3 wells; for oil or gas.
Mellin (southeast of) ¹⁰	1,664-1,734	.....	.....	.....	On 5-barrel and two 10-barrel oil wells.
Murphy district (south of Ritchie mines) ¹¹	1,549-2,068	.....	.....	.....	4 wells; for oil or gas.
Murphy district ¹²	2,838	.....	.....	.....	For oil or gas.
Oxford ¹³	2,106	.....	.....	.....	Oil well.
1 mile northwest. ⁴	2,184	.....	.....	.....	"Fair gas well."
2 miles southwest. ¹⁴	1,646	.....	.....	.....	For oil or gas.
Pensboro (and vicinity) ¹⁵	1,815-2,615	.....	.....	.....	3 wells; for oil or gas.
Petroleum (3 miles southwest) ¹⁶	1,740	.....	.....	.....	Some oil.
Petroleum station (1½ miles north) ¹⁷	1,800	.....	.....	.....	Oil well.
Prunty field ¹⁸	1,825-2,134	.....	.....	.....	Several wells; oil or gas.
Pullman (near). ⁴	2,128	.....	.....	.....	"Dry."
Ritchie Court-House ¹⁹	1,724-1,918	.....	.....	.....	Several oil and gas wells.
Rush Post-office (near) ²⁰	1,825	.....	.....	.....	For oil or gas.
Smithville (south of) ²¹	1,509, 1,892	.....	.....	.....	2 wells; one "5-barrel."
Union district ²²	2,783	.....	.....	.....	4 wells for oil or gas.
Whisky Run Pool ²³	1,782-1,829	.....	.....	.....	2 wells for oil or gas.
Whiteoak (near) ²⁴	2,200, 2,700	.....	.....	.....	"Practically a dry hole."
1½ miles south ²⁴	1,756	.....	.....	.....	Miller wells; for oil or gas.
Wells 1, 3 and 4 ²⁵	1,506-1,910	.....	.....	.....
<i>Roan County:</i>					
Geary district	1,479	.....	.....	.....	Oil well.
Do.	1,637-3,178	.....	.....	.....	Do.
P. A. Talman farm ²⁶	1,627	.....	.....	.....	Little gas at 1,837 feet.
Roan-Clay county line ²⁷	1,952	84-6½	.....	.....	For oil or gas.
Spencer (asylum farm) ²⁸	2,750	.....	.....	.....	Several oil and gas wells.
Spencer (about 10 miles southwest). ²⁹	1,623-2,362	.....	.....	.....	3 wells for oil or gas; unsuccessful.
Spencer (about 6 miles east). ³⁰	1,700-1,951	.....	.....	.....	Water at 1,525 feet; show of oil at 1,695 feet.
Triplett (4 miles southeast).	2,600	.....	.....	.....
<i>Summers County:</i>					
Crumps Bottom ³¹	3,000	.....	.....	.....	Test well for oil or gas.
<i>Taylor County:</i>					
Booth District ³²	2,400	.....	.....	.....	For oil or gas.
Flemington (2 miles north). ³³	2,400	.....	.....	.....	"Dry hole?"
1 mile above ³⁴	3,019½	.....	.....	.....	Some gas.
Pruntytown (near) ³⁵	2,680	.....	.....	.....	Do.
<i>Tyler County:</i>					
Alva ³⁶	2,700	.....	.....	.....	For oil or gas.
Bird Post-Office (near) ³⁷	2,205	.....	.....	.....	For oil or gas; cave at 1,050 and 2,075 feet.
Beech Grove (vicinity) ³⁸	2,002	.....	.....	.....	For oil or gas.
Booher (1 mile north) ³⁹	1,867	.....	.....	.....
Bradin Post-Office (near). ³⁹	1,915	.....	.....	.....	First gas, 1,830 feet; second gas, 1,905 feet.

¹ W. Va. Geol. Surv. Rept., vol. 1, p. 319.² Record, *ibid.*, vol. 1 (a), 1904, pp. 409-411.³ *Ibid.*, p. 416.⁴ *Ibid.*, p. 417.⁵ *Ibid.*, pp. 407-408.⁶ *Ibid.*, vol. 1, p. 320.⁷ *Ibid.*, vol. 1 (a), 1904, pp. 424-425.⁸ *Ibid.*, pp. 427-428.⁹ *Ibid.*, p. 443.¹⁰ *Ibid.*, p. 441.¹¹ *Ibid.*, pp. 442-444.¹² *Ibid.*, p. 444.¹³ *Ibid.*, vol. 1, pp. 321-322.¹⁴ *Ibid.*, p. 418.¹⁵ *Ibid.*, pp. 408-409.¹⁶ *Ibid.*, p. 439.¹⁷ *Ibid.*, vol. 1, p. 301.¹⁸ *Ibid.*, vol. 1 (a), 1904, pp. 418-420.¹⁹ W. Va. Geol. Surv. Rept., vol. 1, pp. 317-318.²⁰ Record, *ibid.*, vol. 1 (a), 1904, pp. 439-440.²¹ *Ibid.*, pp. 440-441.²² *Ibid.*, pp. 426-427.²³ *Ibid.*, pp. 411-416.²⁴ *Ibid.*, p. 424.²⁵ *Ibid.*, pp. 444-445.²⁶ W. Va. Geol. Surv. Rept., vol. 2, pp. 398-400.²⁷ Record, *ibid.*, vol. 1 (a), 1904, pp. 472-473.²⁸ *Ibid.*, vol. 1, pp. 264-266.²⁹ *Ibid.*, pp. 267-269.³⁰ *Ibid.*, vol. 1 (a), 1904, pp. 470-472.³¹ *Ibid.*, pp. 504-505.³² *Ibid.*, pp. 338-339.³³ *Ibid.*, pp. 339-340.³⁴ *Ibid.*, pp. 340-342.³⁵ *Ibid.*, p. 338.³⁶ *Ibid.*, vol. 1, p. 336.³⁷ *Ibid.*, vol. 1 (a), 1904, p. 240.³⁸ *Ibid.*, pp. 253-254.³⁹ *Ibid.*, p. 242.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks
Tyler County—Continued.	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Centerville and vicinity ¹	1,961-2,199				4 wells; for oil or gas.
Conaway (near) ²	2,000	8			Capacity, 18,000,000 cubic feet of gas daily.
Doddridge (near) ³	1,692-2,979				For oil or gas; 13 wells.
Eagle Mills (?) (near) ⁴	2,922				Oil well.
Ellsworth district ⁵	1,895				For oil or gas; 2 wells.
	1,755				
Do. ⁶	1,919				Do.
	1,963				
Elk Fork Pool ⁷	1,700-2,150				5 wells; for oil or gas.
Falls Mills (2 miles east). ⁸	1,926				2 wells; for oil or gas.
	2,057				
Friendly (3 miles east) ⁹	1,620				3 wells; for oil or gas; 7 other wells, the records of which are not given.
	1,698				
	1,704				
Gordon Sand Pool (western edge). ¹⁰	2,975				2 wells; for oil or gas.
	2,818				
Hebron (near) ⁸	1,995				Do.
	2,046				
Hebron region ¹¹	1,746-2,085				4 wells; for oil or gas.
Indian Creek ¹²	1,800-1,921				Do.
Indian Creek (2 miles above mouth). ¹³	1,859				Kyle well No. 2.
Kidwell (near) ¹⁴	1,701-1,998				5 wells; for oil or gas.
Little Mills (near) ¹⁵	2,690				For oil or gas.
Long Reach (3½ miles east). ¹⁶	1,675				Do.
McElroy district ¹⁷	1,870				2 wells; for oil or gas.
	1,787				
Do. ¹⁸	2,548				
Do. ¹⁹	2,097-2,964				4 wells; for oil or gas.
McKim (near) ²⁰	1,942				For oil or gas.
1 mile north ²¹	2,220				"200-barrel" oil well.
One-half mile north ²¹	2,083				"20-barrel" oil well.
	1,890				
Meade district ²²	1,858				Oil and gas; 3 wells.
	1,704				
	1,863				
Meadville (4 miles northeast). ²¹					Gas, light, 1,793 feet.
Meadville (1 mile north). ²³	1,762				2 wells; for oil or gas.
	1,989				
Middlebourne (few miles below). ²⁴	1,562				Small supply of oil.
4 miles north ²⁵	1,638				Oil well.
Vicinity ²⁶	1,647-2,875				4 wells; for oil or gas.
	1,643				
Middle Island Creek ²⁷	1,630				2 wells; for oil or gas.
	1,910-2,023				
Plum region ²⁸	1,747				3 wells; for oil or gas.
Pursley and Kidwell (between). ²⁹					For oil or gas.
Ritchie County line (near). ³⁰	3,049				Do.
Sancho Creek ³¹	1,836-1,870				3 wells; for oil or gas.
Sisterville (near)					Large oil well.
2½ miles southwest ³²	1,865				For oil or gas.
Sisterville field ³³	1,002-1,970				Many wells; for oil and gas.
Union district ³⁴	1,699	10-6½			For oil or gas.
Do. ³⁵	1,743				Do.
Van Camp (near) ¹⁷	1,722				Do.
Wick (near) ³⁶	1,915				Do.

¹ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 252-253.

² Ibid., p. 250.

³ Ibid., pp. 242-245.

⁴ Ibid., vol. 1, pp. 334-335.

⁵ Ibid., vol. 1 (a), 1904, pp. 240-241.

⁶ Ibid., pp. 249-250.

⁷ Ibid., pp. 250-252.

⁸ Ibid., p. 256.

⁹ Ibid., pp. 266-267.

¹⁰ Ibid., pp. 246-247.

¹¹ Ibid., pp. 261-262.

¹² Ibid., pp. 241-242.

¹³ Ibid., vol. 1, p. 358.

¹⁴ Ibid., vol. 1 (a), 1904, pp. 249-250, 252.

¹⁵ W. Va. Geol. Surv. Rept., vol. 1, p. 335.

¹⁶ Record, ibid., vol. 1 (a), 1904, p. 266.

¹⁷ Ibid., p. 240.

¹⁸ Ibid., p. 241.

¹⁹ Ibid., pp. 244, 246 and 247.

²⁰ Ibid., vol. 1, p. 359.

²¹ Record, ibid., vol. 1 (a), 1904, p. 253.

²² Ibid., pp. 260-261.

²³ Ibid., p. 257.

²⁴ W. Va. Geol. Surv. Rept., vol. 1, p. 361.

²⁵ Ibid., p. 360.

²⁶ Ibid., pp. 255-256.

²⁷ Record, ibid., vol. 1 (a), 1904, p. 248.

²⁸ Ibid., p. 254.

²⁹ Ibid., p. 268.

³⁰ Ibid., p. 259.

³¹ Ibid., p. 255.

³² Ibid., vol. 1, p. 357.

³³ Ibid., vol. 1 (a), 1904, pp. 262-265.

³⁴ Ibid., p. 250.

³⁵ Ibid., pp. 267-268.

³⁶ W. Va. Geol. Surv. Rept., vol. 1, p. 359.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Tyler County—Continued.					
Wick (2 miles south) ¹	2, 101				Oil well.
Wick (near) ²	1, 254-1, 932				3 wells; for oil or gas.
Wilbur (one-half mile south) ³	1, 972				For oil or gas.
South Penn Oil Co. ⁴	2, 728-3, 139				6 wells; for oil or gas.
Upshur County:					
Buckhannon	2, 530				For oil.
Just northeast ⁵	2, 497				Some oil and gas shows.
Sago (near station) ⁶	2, 025				Showing of gas.
Wayne County:					
Big Sandy River (near Blaine Creek mouth) ⁷	1, 845				Gas.
Catlettsburg (1½ miles south) ⁸	2, 132				For oil or gas.
Twelvepole Creek (Arkansas Branch mouth) ⁹	1, 968				
Webster County:					
Cleveland (2 miles below) ¹⁰	1, 807	6½			For oil or gas; salt water at 1,125 feet.
Witzel County:					
Brash Township	3, 053				Gas.
Brink (near) ¹¹	2, 611				Water at 2,080 feet; gas at 2,470; oil at 2,556.
Do. ¹²	2, 753				For oil or gas.
Burton (1 to 2 miles east and northeast) ¹³	2, 263-3, 985				8 wells; for oil or gas.
Center district ¹⁴	3, 083				45 barrel well.
Church district	2, 265-2, 971				3 gas wells; 1 dry.
Clay district	2, 016-3, 375				Gas; some oil.
Dean (1 mile southeast) ¹⁵	3, 157				
Dulany (near) ¹⁶					200 to 300 barrels of oil.
Eastern Wetzel ¹⁷	2, 050-3, 273½				4 wells.
Do. ¹⁸	2, 043				2 wells; authority, South Penn Oil Co.
Folsom	2, 847	10-5			Deepest producing well known; 100 barrels daily.
	3, 560				For oil and gas.
1 to 2 miles from ¹⁹	3, 053-3, 451				Gas well.
Grant district ²⁰	3, 195				2 wells.
Do. ²¹	2, 939½				Do.
Do. ²²	2, 748				Gas well.
Do. ²³	2, 859				Gas and oil.
Do. ²⁴	3, 159				For oil or gas.
Do. ²⁵	2, 682				Do.
Do. ²⁶	3, 044				Gas well.
Do. ²⁷	2, 808-3, 540				Gas and oil.
Do. ²⁸	2, 642½				For oil or gas.
Do. ²⁹	2, 146-3, 317				Do.
Green district	2, 772-3, 136				3 gas wells; 1 well dry.
Hundred (near) ³⁰	3, 249				Gas well.
Jacksonburg (3 miles northeast) ³¹	1, 838-3, 067				
1 mile southeast ³²	2, 297-2, 697				5 wells.
Do. ³³	2, 590				
Near ³⁴	2, 571				2 wells.
Do. ³⁵	2, 605				Gas well.
Keough	2, 635	13-6			Gas well; salt water at 1,935 feet.
Do. ³⁶	3, 200	10-6½			5 wells; for oil or gas.
Littleton (1 to 2 miles south and southwest) ³⁷	2, 972-3, 377				
Lot (near) ³⁸	2, 588				For oil or gas.
Magnolia district ³⁹	2, 843				
Moberly (near) ⁴⁰	2, 002				Gas.

¹ Record, W. Va. Geol. Surv. Rept., vol. 2, pp. 390-392.

² Ibid., vol. 1 (a), 1904, pp. 254, 259.

³ Ibid., p. 261.

⁴ Ibid., pp. 244, 246-247.

⁵ Ibid., pp. 349-351.

⁶ Ibid., pp. 351-353.

⁷ Ibid., pp. 498-499.

⁸ Ibid., p. 497.

⁹ U. S. Geol. Surv. Folio No. 69, p. 4.

¹⁰ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 393-394.

¹¹ Ibid., p. 183.

¹² Ibid., vol. 1, p. 345.

¹³ Ibid., vol. 1 (a), 1904, pp. 176-179.

¹⁴ Ibid., pp. 202-203.

¹⁵ Ibid., p. 203.

¹⁶ W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, p. 201.

¹⁷ Record, *ibid.*, pp. 191-192.

¹⁸ Ibid., pp. 196-197.

¹⁹ Ibid., pp. 184-186.

²⁰ Ibid., pp. 183-184.

²¹ Ibid., p. 189.

²² Ibid., p. 190.

²³ Ibid., p. 191.

²⁴ Ibid., vol. 1, pp. 340-342.

²⁵ Ibid., vol. 1 (a), 1904, p. 192.

²⁶ Ibid., pp. 193-197.

²⁷ W. Va. Geol. Surv. Rept., vol. 1, p. 349.

²⁸ Record, *ibid.*, vol. 1 (a), 1904, pp. 197-198.

²⁹ Ibid., pp. 198-200.

³⁰ Ibid., p. 199.

³¹ Ibid., p. 206.

³² Ibid., pp. 181-183.

³³ Ibid., vol. 1, p. 339.

³⁴ Ibid., vol. 1 (a), 1904, p. 213.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Witzel County—Continued.	<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Fect.</i>	
Pine Grove (3 miles northeast). ¹	3,011	.....	.....	.....	Oil; 150-barrel well.
4 miles northeast ¹	3,460	.....	.....	.....
Near ¹	2,822	.....	.....	.....
Piney Fork ²	2,640	.....	.....	.....	For oil or gas.
Do. ³	2,040-3,187	.....	.....	.....	20 wells; for oil and gas.
Proctor district ⁴	2,100-2,980	.....	.....	.....	5 wells; for oil or gas.
Reader Post-Office (1½ miles southwest). ⁵	3,037	.....	.....	.....
Robinsons Mill (1½ miles east). ⁶	3,105	.....	.....	.....
Silver Hill (near) ⁷	2,710	.....	.....	.....	Upper Freepcrt coal at 575 feet.
Sincerity (1 mile northwest). ⁸	3,211	.....	.....	.....	Good gas well.
1 mile southwest ⁸	3,064	.....	.....	.....
1½ miles southeast ⁸	3,496	.....	.....	.....	Dry hole.
1½ miles north ⁸	3,896	.....	.....	.....	Oil and gas.
Smithfield (1 mile northeast). ⁹	3,092	.....	.....	.....
Smithfield region ⁹	1,120-3,106	.....	.....	.....
Smithfield (near) ¹⁰	3,282	.....	.....	.....	Oil well.
2 miles northeast ¹¹	3,106	.....	.....	.....	Do.
Uniontown (2 miles east). ¹²	3,293	.....	.....	.....
Wiley Fork (between Sincerity and Co-burn). ¹³	2,781	.....	.....	.....	Fair gas well.
Wileyville (2 miles northeast). ¹⁴	3,067	.....	.....	.....	Gas and oil at 3,048 feet; second pay at 3,059 feet.
2½ miles east ¹⁴	3,358	.....	.....	.....	12-barrel well; oil.
1½ miles northeast ¹⁵	3,157	.....	.....	.....	15-barrel well; oil.
.....	3,116	.....	.....	.....	20-barrel well; oil.
3 miles east ¹⁶	3,228	.....	.....	.....
.....	3,270	.....	.....	.....	10-barrel well; oil.
4 miles northeast ¹⁷	3,162	.....	.....	.....	20-barrel well; oil.
.....	3,413	.....	.....	.....
Township unknown.....	2,777-3,010	.....	.....	.....	3 wells; gas and oil.
..... ¹⁸	2,900	.....	.....	.....
..... ¹⁸	2,720-2,801	.....	.....	.....	3 wells.
..... ¹⁸	3,392	.....	.....	.....
Wirt County:					
Burning Springs (near) ¹⁹	2,010	.....	.....	.....	Oil well.
Do. ²⁰	428-1,128	.....	.....	.....	3 oil wells.
Devers Forks ²¹	1,480	.....	.....	.....
Elizabeth (4½ miles east). ²²	2,380	.....	.....	.....	Dry.
6 miles west-south-west). ²³	2,806	.....	.....	.....
9 miles west-south-west). ²⁴	2,802	.....	.....	.....	Do.
Munday (1½ miles south-west). ²⁵	2,205	.....	.....	.....	Oil well.
Northwest corner of Wirt. ²⁶	1,902	.....	.....	.....
.....	1,795	.....	.....	.....	2 oil wells.
Wood County:					
Chesterville (near) ²⁶	2,172	.....	.....	.....	For oil or gas.
Hendershot field ²⁷	2,145-2,332	.....	.....	.....	Many wells for oil or gas.
Kanawha Station (near) ²⁸	2,206	.....	.....	.....	For oil or gas.
Murphytown (vicinity). ²⁹	2,177	.....	.....	.....	Do.
Do. ³⁰	2,200-2,365	.....	.....	.....	Several wells for oil or gas.
Parkersburg (near) ³¹	2,095	.....	.....	.....	For oil or gas.
5 miles northeast ³²	3,016	.....	.....	.....	Do.
4 miles east ³³	2,230	.....	.....	.....	Do.

¹ Record, W. Va. Geol. Surv. Rept., vol. 1 (a), 1904, pp. 205-206.

² W. Va. Geol. Surv. Rept., vol. 1, p. 337.

³ Record, *ibid.*, vol. 1(a), 1904, pp. 206-211.

⁴ *Ibid.*, pp. 212-213.

⁵ *Ibid.*, p. 211.

⁶ *Ibid.*, p. 184.

⁷ *Ibid.*, pp. 200-201.

⁸ *Ibid.*, pp. 180-181.

⁹ *Ibid.*, pp. 186-189.

¹⁰ W. Va. Geol. Surv., Rept., vol. 1, p. 343.

¹¹ *Ibid.*, pp. 343-344.

¹² Record, *ibid.*, vol. 1(a), 1904, p. 200.

¹³ *Ibid.*, p. 201.

¹⁴ *Ibid.*, p. 202.

¹⁵ *Ibid.*, p. 203.

¹⁶ *Ibid.*, p. 204.

¹⁷ *Ibid.*, pp. 204-205.

¹⁸ *Ibid.*, pp. 189-193; authority, South Penn Oil Co.

¹⁹ W. Va. Geol. Surv. Rept., vol. 1, pp. 262-263; vol. 1 (a), 1904, pp. 463-464.

²⁰ Record, *ibid.*, vol. 1 (a), 1904, p. 464.

²¹ *Ibid.*, pp. 465-466.

²² *Ibid.*, p. 467.

²³ *Ibid.*, pp. 467-468.

²⁴ *Ibid.*, p. 468.

²⁵ *Ibid.*, pp. 466-467.

²⁶ *Ibid.*, p. 462.

²⁷ *Ibid.*, pp. 452-455.

²⁸ *Ibid.*, pp. 447-448.

²⁹ W. Va. Geol. Surv. Rept., vol. 1, pp. 292-294.

³⁰ Record, *ibid.*, vol. 1 (a), 1904, pp. 466-467.

³¹ W. Va. Geol. Surv. Rept., vol. 1, p. 285.

³² *Ibid.*, pp. 296-298.

³³ Record, *ibid.*, vol. 1(a), 1904, pp. 460-461.

WEST VIRGINIA—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Wood County—Continued.					
Redhill Post-Office (one-half mile northeast). ¹	2, 273	.....	.....	.....	For oil or gas.
Tygarts district. ²	3, 000	.....	.....	.....	Do.
Union district. ³	2, 042-2, 393	.....	.....	.....	Many wells for oil or gas.
Vienna station (near). ⁴	1, 924	.....	.....	.....	For oil or gas.
Volcano (near). ⁵	640	.....	.....	.....	2 wells for oil or gas.
Waverly (6 miles south). ⁶	1, 438	.....	.....	.....	.....
Waverly (near). ⁷	2, 261-2, 208	.....	.....	.....	Two oil wells.
Williamstown (1½ miles below). ⁸	2, 310	10-6½	.....	.....	For oil or gas.
4 miles below. ⁹	1, 504-1, 673	.....	.....	.....	Do.
3 miles above. ¹⁰	710-1, 138	.....	.....	.....	2 oil wells.
1½ miles south. ¹¹	1, 948	.....	.....	.....	For oil or gas.
Charleston Township.	1, 673	.....	.....	.....	Do.
.....	1, 840	.....	.....	.....	.....
.....	700	.....	.....	.....	.....
.....	1, 675	.....	.....	.....	3 wells.
.....	2, 608	.....	.....	.....	.....

¹ Record, W. Va., Geol. Surv. Rept., vol. 1 (a), 1904, pp. 459-460.

² Ibid., pp. 461-462.

³ Ibid., pp. 448-452.

⁴ Ibid., p. 459.

⁵ Ibid., pp. 446-447.

⁶ W. Va. Geol. Surv. Rept., vol. 1, pp. 292-294.

⁷ Ibid., vol. 1 (a), 1904, p. 452.

⁸ W. Va. Geol. Surv. Rept., vol. 1, pp. 290-291.

⁹ Ibid., p. 289.

¹⁰ Record, *ibid.*, vol. 1 (a), 1904, pp. 457-458.

¹¹ Ibid., pp. 458-459.

PRINCIPAL PUBLICATIONS RELATING TO DEEP BORINGS IN WEST VIRGINIA.

West Virginia Geological Survey Reports, Volume I, by I. C. White, 392 pages. Morgantown, 1899.

Seventh report on the oil and gas fields of western Pennsylvania for 1887-1888, by J. F. Carl: Pennsylvania Second Geological Survey, Volume I⁵, 356 pages, Harrisburg, 1890.

West Virginia Geological Survey Reports, volume 2, Morgantown, 1903.

Oil and gas levels, by I. C. White, state geologist: West Virginia Geological Survey Reports, volume 1 (a), 1904, Morgantown, W. Va.

United States Geological Survey Atlas, folios Nos. 69 and 72, by M. R. Campbell.

WISCONSIN.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
<i>Fect.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>		
Brown County:					
Askeaton	534	4½	7	- 75	Temp., 53°; several wells.
Greenbay	950	.....	70	+ 14	Temp., 65°.
West Depere	810	5	250	+ 26	.....
Buffalo County:					
Urne	471	6	.....	.....	.....
Calumet County:					
Sherwood	1, 035	.....	.....	.....	.....
Columbia County:					
Kilbourn	1, 320	.....	.....	.....	.....
Crawford County:					
Prairie du Chien ¹	960	8-5½	600	+ 60	Temp., 56°; water slightly salty; brine at 514 feet; several wells.
Dane County:					
Madison	736-821	10	Many.	+ 5½	Several wells; temp., 51°.
Do.	700	.....	.....	.....	2 wells.
Stoughton	1, 009	.....	.....	.....	.....
Door County:					
Tornado	1, 040	8-6	Many.	- 122	.....
Douglas County:					
Superior	927	6	.....	.....	Water brackish.
Fond du Lac County:					
Fond du Lac	750	10	Many.	- 10	2 wells.
Do.	600	10	Many.	- 10	Do.
Do.	480	10	Many.	- 10	.....
Do.	425	.....	.....	.....	.....
Waupun	800	6-5	.....	.....	.....

¹ Record, Wis. Geol. Surv. Rept., 1873-1879, vol. 4, pp. 61-62.

² Ibid., 1873-1877, vol. 2, p. 153.

WISCONSIN—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Grant County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Cassville	1,100	6	Many.	Flows.	
Millville	487	7	Several.	—369	
Patch Grove	487	9-6	Several.	—440	Good water; 2 other similar wells in vicinity.
Platteville	1,000				
Green County:					
Brodhead	1,000	4-8	Each 150	+ 12	2 wells; water from 250 to 300 feet mainly; granite, 700 to 1,000 feet; temp., 52°.
Monroe	+400				
Green Lake County:					
Berlin	425	6	40	+ 3	Temp., 52°.
Do	450		40	+ 3	
Jefferson County:					
Palmyra ¹	750			— 14	Water at 263 feet; oil at 257 feet.
Watertown	1,145	9	600	+ 11	Temp., 47°.
Juneau County:					
Elroy	500 or 600			No flow.	Not in use.
Do	900				
Kenosha County:					
Bristol	815	5		— 32	
Kenosha	1,805				
La Crosse County:					
La Crosse ²	573	6	100	— 16	Some lime and iron; city supply.
Onalaska	450		284	To surface.	
Manitowoc County:					
Two Rivers	1,700	8	Many.	No flow.	Abandoned; granite in bottom.
Marinette County:					
Marinette	716	4	Many.	+ 21	Water at 405 and 415 feet only; granite at 716 feet; temp., 49°.
Menomonee Falls	1,700	8	Many.	Nearly to top.	
Milwaukee County:					
Milwaukee ³	1,048	4	Many.	+ 60	
Milwaukee (near) ⁴	1,200		300	+ 50	
Do	940-1,700				11 wells.
Monroe County:					
Oil City ⁵	510		Many.	+ 25	Main body of water at 300 feet.
Tomah ⁶	492			No flow.	
Do	600				
Oconto County:					
Oconto	± 400		450	+ 24	Temp., 50°.
Outagamie County:					
Appleton	600				
Combined Locks	790				
Dale	490		Many.	— 15	
Kaukauna	629				2 wells.
Do	643				
Pepin County:					
Durand	550	6	180	+ 35	Good water.
Durand (5 miles southeast)	402	10-6	2	—282	Do.
Pierce County:					
River Falls	500	8-6	200	— 6	No water below 400 feet.
Do	400	8-6	200	— 6	
Rockelm	520	8		—120	Abandoned.
Racine County:					
Burlington	1,000	9	Many.	Flows.	
Do	800	9	Many.	— 8	
Racine	1,500				2 wells.
Do	1,609				
Racine ⁷	1,240		Many.	+ 65	Several wells.
Do	1,350	4	Many.	+ 92	
Richland Center	750	6	2,400	11	
Western Union Junction ⁸	1,263		Few.	— 40	
Rock County:					
Clinton	650		Many.	— 80	
Janesville ⁹	1,100-1,033	8	500	+ 35	2 wells and magnesia water to +48 at 683 feet.
Janesville (fair ground)	±1,100		Not any.	No flow.	Abandoned.

¹ Record, Wis. Geol. Surv. Rept., 1873-1877, vol. 2, pp. 161-162.² Ibid., 1873-1879, vol. 4, pp. 60-61.³ Ibid., 1873-1877, vol. 2, p. 164.⁴ Analysis, *ibid.*, p. 164.⁵ Record, *ibid.*, 1873-1879, vol. 4, pp. 59-60.⁶ Ibid., p. 60.⁷ Ibid., 1873-1877, vol. 2, p. 163.⁸ Ibid., pp. 162-163.⁹ Ibid., p. 153.

WISCONSIN—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
St. Croix County:	400-500				
Hudson					
Sheboygan County:					
Haven	600			- 40	
Do.	420			- 11	
Sheboygan ¹	1,475	4	225	+104	Temp., 59°; flow at 1,340 feet.
Trempealeau County:					
Independence	438			- 12	Well in bad order; abandoned.
Vernon County:					
De Soto	466	6	126	+ 26	Temp., 52°.
Genoa	460	6	200	- 30	
Walworth County:					
East Troy	2,200			No flow.	
Elkhorn	1,050	8-6	Many.	-155	
Whitewater	950		200	+ 20	
Washington County:					
Hartford	920		40		To be deepened.
Westbend	1,500		Many.	- 4	
Waukesha County:					
Waukesha	1,000-1,500			- 35	Several wells.
Winnebago County:					
Oshkosh ²	961	6	Many.	- 4	Granite below 700 feet.
Do.	700				
Do. ²	695	6	Many.	- 1	Granite below 665 feet.
Do.	537	5	Many.	- 1	
Oshkosh (normal school)	613	5	Many.	- 4	
Oshkosh	505	5	Many.	- 1	Several other similar wells.

¹ Record and analysis, Wis. Geol. Surv. Rept., 1873-1877, vol. 2, p. 164.

² Record, *ibid.*, p. 156.

PUBLICATIONS RELATING TO DEEP BORINGS IN WISCONSIN.

Wisconsin Geological Survey Reports, 1873-1877, volume 2, part 2, pages 97-405.

Wisconsin Geological Survey Reports, 1873-1879, volume 4, part 1, 98 pages.

WYOMING.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Albany County:					
Jerome ¹	520				
Judson	540		Few.	Flows.	Sulphur water.
Laramie	1,015		30	Flows.	Good water.
Do.	1,470				
Leach	510	5		No flow.	
Oxford Ranch	540		Few.	Flows.	For oil; unsuccessful.
Carbon County:					
Rawlins	450	4½	200		Several wells.
Do.	487		400	Flowed originally.	
Do.	928		350	Flowed originally.	Water from 466 feet.
Converse County:					
Douglas	590			+ 20	Some oil; much water.
Crook County:					
Aladdin	±1,000				No water.
Do.	1,150				
Croton	803				
Felix	1,080				
Gillette	865			-485	
Moorcroft (5 miles north-west)	1,300				For oil; unsuccessful.
Moorcroft (10 miles northwest)	800				2 small oil wells.
Rozet	883				
Fremont County:					
Dallas	800-1,200			Flow.	Oil wells.
Mullen	1,200		Several.		Oil and sulphur water.
Johnson County:					
Sussex	1,300		Few.		Water at 358 and 1,120 feet.

¹ Analysis, U. S. Geol. Survey, 21st Ann. Rept., 1889-1890, part 4, p. 571.

WYOMING—Continued.

Location.	Depth.	Diameter.	Yield per minute.	Height of water.	Remarks.
Laramie County:	<i>Feet.</i>	<i>Inches.</i>	<i>Gallons.</i>	<i>Feet.</i>	
Cheyenne	1,145	.....	.....	.....	No water below surface supplies.
Fort D. A. Russell	800	.....	.....	.....
Natrona County:					
Oil City ¹	1,130	.....	.....	.....	Oil and gas.
Salt Creek Oil Field ²	809-1,200	.....	.....	.....	Oil wells.
Sheridan County:					
Clearmont	700	.....	.....	-100	Moderate supply of water.
Sheridan	500	2½	½	.....	Do.
Verona	540	.....	.....	-100	
Sweetwater County:					
Almond	1,000	.....	.....	.....	Strong sulphur water.
Rock Springs (6 miles south)	2,400	13	.....	.....	Water-bearing beds at 30 and 90 feet; small showing of oil at 625 feet.
Wamsutter	1,363	.....	.....	.....
Uinta County:					
Evanston	1,200	14-10	.....	+½	For oil; unsuccessful.
Hilliard	484	.....	.....	.....
Weston County:					
Cambria ³	2,345	.....	.....	.....	Mineral water.
Clifton (north of) ⁴	1,002	.....	Few.	Flows.	
erome Siding (on Burlington and Missouri River R. R.)	520	.....	.....	.....
Newcastle	1,950	.....	Several.	Flows.	For oil; unsuccessful.
Do.	1,340	.....	.....	.....	Some oil at about 400 feet.
Do.	420	.....	.....	.....	Some oil.
Newcastle (¾ miles southwest)	720	.....	.....	.....	No product.
Newcastle (1½ miles southwest)	650	.....	.....	.....	Large supply of water.
Thornton	980	.....	.....	No flow.	Satisfactory supply for railroad use.

¹ Record, etc., Wyo. Geol. Ann. Rept., 1898, p. 32.² Record, Wyo. Univ. Bull. No. 1 (Petroleum series), 1896, pp. 18-19.³ Record, U. S. Geol. Surv., 21st Ann. Rept., 1899-1900, pt. 4, p. 572.⁴ Ibid., p. 571.

PUBLICATIONS RELATING TO DEEP BORINGS IN WYOMING.

Petroleum of Salt Creek, Wyoming, by W. C. Knight: University of Wyoming Bulletin No. 1 (Petroleum series), 47 pages, June, 1896.

Petroleum of the Shoshone anticlinal, by W. C. Knight: University of Wyoming Bulletin No. 2 (Petroleum series), 34 pages, January, 1897.

Oil fields of Crook and Uinta counties, Wyoming, by W. C. Knight: University of Wyoming Bulletin No. 3 (Petroleum series), 31 pages, November, 1899.

Preliminary report on the artesian basins of Wyoming, by W. C. Knight: University of Wyoming Experiment Station Bulletin No. 45, 251 pages, plates, map, June, 1900.

Preliminary description of the geology and resources of the southern half of the Black Hills and adjoining regions in South Dakota and Wyoming, by N. H. Darton: United States Geological Survey, Twenty-first Annual Report, 1899-1900, pages 489-599, plates, maps, Washington, 1901.

Preliminary report on the geology and underground water resources of the Central Great Plains, by N. H. Darton: United States Geological Survey Professional Paper No. 32, Washington, 1905.

PUBLICATIONS OF UNITED STATES GEOLOGICAL SURVEY.

[Water-Supply Paper No. 149.]

The serial publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Professional Papers, (4) Bulletins, (5) Mineral Resources, (6) Water-Supply and Irrigation Papers, (7) Topographic Atlas of United States—folios and separate sheets thereof, (8) Geologic Atlas of United States—folios thereof. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists may be had on application.

Most of the above publications may be obtained or consulted in the following ways:

1. A limited number are delivered to the Director of the Survey, from whom they may be obtained, free of charge (except classes 2, 7, and 8), on application.

2. A certain number are allotted every member of Congress, from whom they may be obtained, free of charge, on application.

3. Other copies are deposited with the Superintendent of Documents, Washington, D. C., from whom they may be had at prices slightly above cost.

4. Copies of all Government publications are furnished to the principal public libraries in the large cities throughout the United States, where they may be consulted by those interested.

The Professional Papers, Bulletins, and Water-Supply Papers treat of a variety of subjects, and the total number issued is large. They have therefore been classified into the following series: A, Economic geology; B, Descriptive geology; C, Systematic geology and paleontology; D, Petrography and mineralogy; E, Chemistry and physics; F, Geography; G, Miscellaneous; H, Forestry; I, Irrigation; J, Water storage; K, Pumping water; L, Quality of water; M, General hydrographic investigations; N, Water power; O, Underground waters; P, Hydrographic progress reports. This paper is the forty-eighth in Series O, the complete list of which follows (PP=Professional Paper; B=Bulletin; WS=Water-Supply Paper):

SERIES O, UNDERGROUND WATERS.

- WS 4. A reconnaissance in southeastern Washington, by I. C. Russell. 1897. 96 pp., 7 pls.
- WS 6. Underground waters of southwestern Kansas, by Erasmus Haworth. 1897. 65 pp., 12 pls.
- WS 7. Seepage waters of northern Utah, by Samuel Fortier. 1897. 50 pp., 3 pls.
- WS 12. Underground waters of southeastern Nebraska, by N. H. Darton. 1898. 56 pp., 2 pls.
- WS 21. Wells of northern Indiana, by Frank Leverett. 1899. 82 pp., 2 pls.
- WS 26. Wells of southern Indiana (continuation of No. 21), by Frank Leverett. 1899. 64 pp.
- WS 30. Water resources of the Lower Peninsula of Michigan, by A. C. Lane. 1899. 97 pp., 7 pls.
- WS 31. Lower Michigan mineral waters, by A. C. Lane. 1899. 97 pp., 4 pls.
- WS 34. Geology and water resources of a portion of southeastern South Dakota, by J. E. Todd. 1900. 34 pp., 19 pls.
- WS 53. Geology and water resources of Nez Perces County, Idaho, Pt. I, by I. C. Russell. 1901. 86 pp., 10 pls.
- WS 54. Geology and water resources of Nez Perces County, Idaho, Pt. II, by I. C. Russell. 1901. 87-141 pp.
- WS 55. Geology and water resources of a portion of Yakima County, Wash., by G. O. Smith. 1901. 68 pp., 7 pls.
- WS 57. Preliminary list of deep borings in the United States, Pt. I, by N. H. Darton. 1902. 60 pp.
- WS 59. Development and application of water in southern California, Pt. I, by J. B. Lippincott. 1902. 95 pp., 11 pls.
- WS 60. Development and application of water in southern California, Pt. II, by J. B. Lippincott. 1902. 96-140 pp.

- WS 61. Preliminary list of deep borings in the United States, Pt. II, by N. H. Darton. 1902. 67 pp.
- WS 67. The motions of underground waters, by C. S. Slichter. 1902. 106 pp., 8 pls.
- B 199. Geology and water resources of the Snake River Plains of Idaho, by I. C. Russell. 1902. 192 pp., 25 pls.
- WS 77. Water resources of Molokai, Hawaiian Islands, by W. Lindgren. 1903. 62 pp., 4 pls.
- WS 78. Preliminary report on artesian basin in southwestern Idaho and southeastern Oregon, by I. C. Russell. 1903. 53 pp., 2 pls.
- PP 17. Preliminary report on the geology and water resources of Nebraska west of the one hundred and third meridian, by N. H. Darton. 1903. 69 pp., 43 pls.
- WS 90. Geology and water resources of a part of the lower James River Valley, South Dakota, by J. E. Todd and C. M. Hall. 1904. 47 pp., 23 pls.
- WS 101. Underground waters of southern Louisiana, by G. D. Harris, with discussions of their uses for water supplies and for rice irrigation, by M. L. Fuller. 1904. 98 pp., 11 pls.
- WS 102. Contributions to the hydrology of eastern United States, 1903, by M. L. Fuller. 1904. 522 pp.
- WS 104. Underground waters of Gila Valley, Arizona, by W. T. Lee. 1904. 71 pp., 5 pls.
- WS 110. Contributions to the hydrology of eastern United States, 1904; M. L. Fuller, geologist in charge. 1904. 211 pp., 5 pls.
- PP 32. Geology and underground water resources of the central Great Plains, by N. H. Darton. 1904. 433 pp., 72 pls.
- WS 111. Preliminary report on underground waters of Washington, by Henry Landes. 1904. 85 pp., 1 pl.
- WS 112. Underflow tests in the drainage basin of Los Angeles River, by Homer Hamlin. 1904. 55 pp., 7 pls.
- WS 114. Underground waters of eastern United States: M. L. Fuller, geologist in charge. 1904. 285 pp., 18 pls.
- WS 118. Geology and water resources of east-central Washington, by F. C. Calkins. 1905. 96 pp., 4 pls.
- B 252. Preliminary report on the geology and water resources of central Oregon, by I. C. Russell. 1905. 138 pp., 24 pls.
- WS 120. Bibliographic review and index of papers relating to underground waters published by the United States Geological Survey, 1879-1904, by M. L. Fuller. 1905. 123 pp.
- WS 122. Relation of the law to underground waters, by D. W. Johnson. 1905. 55 pp.
- WS 123. Geology and underground water conditions of the Jornada del Muerto, New Mexico, by C. R. Keyes. 1905. 42 pp., 9 pls.
- WS 136. Underground waters of the Salt River Valley, by W. T. Lee. 1905. — pp., 24 pls.
- B 264. Record of deep-well drilling for 1904, by M. L. Fuller, E. F. Lines, and A. C. Veatch. 1905. 106 pp.
- PP 44. Underground water resources of Long Island, New York, by A. C. Veatch and others. 1905.
- WS 137. Development of underground waters in the eastern coastal plain region of southern California, by W. C. Mendenhall. 1905. 140 pp., 7 pls.
- WS 138. Development of underground waters in the central coastal plain region of southern California, by W. C. Mendenhall. 1905. 162 pp., 5 pls.
- WS 139. Development of underground waters in the western coastal plain region of southern California, by W. C. Mendenhall. 1905. 105 pp., 7 pls.
- WS 140. Field measurements of the rate of movement of underground water, by C. S. Slichter. 1905. — pp., 15 pls.
- WS 141. Observations on the ground waters of Rio Grande Valley, by C. S. Slichter. 1905. — pp., 5 pls.
- WS 142. Hydrology of San Bernardino Valley, California, by W. C. Mendenhall. 1905. 124 pp., 13 pls.
- WS 145. Contributions to the hydrology of eastern United States: M. L. Fuller, geologist in charge. 1905. — pp., 6 pls.
- WS 148. Geology and water resources of Oklahoma, by C. N. Gould. 1905. — pp., 22 pls.
- WS 149. Preliminary list of deep borings in the United States. Second edition with additions, by N. H. Darton. 1905. 175 pp.

The following papers also relate to this subject: Underground waters of Arkansas Valley in eastern Colorado, by G. K. Gilbert, in Seventeenth Annual, Pt. II: Preliminary report on artesian waters of a portion of the Dakotas, by N. H. Darton, in Seventeenth Annual, Pt. II; Water resources of Illinois, by Frank Leverett, in Seventeenth Annual, Pt. II; Water resources of Indiana and Ohio, by Frank Leverett, in Eighteenth Annual, Pt. IV; New developments in well boring and irrigation in eastern South Dakota, by N. H. Darton, in Eighteenth Annual, Pt. IV; Rock waters of Ohio, by Edward Orton, in Nineteenth Annual, Pt. IV; Artesian well prospects in the Atlantic coastal plain region, by N. H. Darton, Bulletin No. 135.

Correspondence should be addressed to

THE DIRECTOR,

UNITED STATES GEOLOGICAL SURVEY,

WASHINGTON, D. C.

SEPTEMBER, 1905.

LIBRARY CATALOGUE SLIPS.

[Mount each slip upon a separate card, placing the subject at the top of the second slip. The name of the series should not be repeated on the series card, but the additional numbers should be added, as received, to the first entry.]

Darton, N[elson] H[oratio] 1865-

Author.

. . . Preliminary list of deep borings in the United States, 2d ed. with additions; by N. H. Darton. Washington, Gov't print. off., 1905.

175, iii p. 23^{cm}. (U. S. Geological survey. Water-supply and irrigation paper no. 149)

Subject series: O, Underground waters, 48.

1st ed. issued in 2 pts. as Water-supply and irrigation papers nos. 57 and 61. Bibliographies interspersed.

1. Borings—U. S.

Darton, N[elson] H[oratio] 1865-

Subject.

. . . Preliminary list of deep borings in the United States, 2d ed. with additions; by N. H. Darton. Washington, Gov't print. off., 1905.

175, iii p. 23^{cm}. (U. S. Geological survey. Water-supply and irrigation paper no. 149)

Subject series: O, Underground waters, 48.

1st ed. issued in 2 pts. as Water-supply and irrigation papers nos. 57 and 61. Bibliographies interspersed.

1. Borings—U. S.

U. S. Geological survey.

Series.

Water-supply and irrigation papers.

no. 149. Darton, N. H. Preliminary list of deep borings in the United States. 2d ed. 1905.

Reference.

U. S. Dept. of the Interior.

see also

U. S. Geological survey.

